PROCEEDING INTERNATIONAL CONFERENCE ON MULTIDISCIPLINARY RESEARCH
“Improving Human Resources Quality Through Research and Development in the Era of AFTA”, SERAMBI MEKKAH UNIVERSITY

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Banda Aceh, Indonesia
July, 30th 2015
In the name of Serambi Mekkah University, I would like to welcoming for you all, especially for our guest, keynote speakers, presenters, and all participants. We are so glad you are all to be here in Serambi Mekkah University in International Conference.

This international conference is taken place on campus of Serambi Mekkah University Banda Aceh city, Aceh Province. The title of the international conference is “Improving Human Resource Quality Through Research and Development in the Area of AFTA”, Banda Aceh, July 29-30, 2015.

This international conference would also follow by more than 40 presenters that they would take place to presentage various of field study. There are four major field of study would be discussed in this conference that are: Sciences and Engineering, Natural Sciences, Applied Social Sciences and Social and Educational.

With this international conference, we do hope it will give benefit and a prospective for future science development especially Serambi Mekkah University future academic development, and also we do hope this event is not only a single event but it will have another international events which will be held with broad perspective of new field studies.

On behalf of Serambi Mekkah University, I would like to express my sincere thanks and wishes to organizers and participants of conference and I hope that we can learn much and sharing our knowledge and also develop our skill quality through this event.

Thank you for joining us to this event. I hope all of participants will take opportunity to enjoy this conference and have sweet memories in joining with this conference.

Banda Aceh, July, 29th, 2015
Rector, Serambi Mekkah University

Dr. H. Abdul Gani Asyik, MA
Welcome from Organizing Committee

It is a great pleasure to welcome delegations of Serambi Mekkah University of International Conference 2015. The international conference is a part of Serambi Mekkah University calendar. This international conference take place on campus of Serambi Mekkah University, Banda Aceh city.

There are more than 40 articles in four parallel sessions, four articles will be read by keynote speakers. Four parallel sessions are sciences and engineering, natural sciences, (applied) social science and educational perspective. Invited speakers are Prof. Dr. Nurahimah Mohd. Yusoff from Universiy Utara Malaysia, Mr. Mucayit Auci, from Turkey, from Provincial Program Coordinator USAID PRIORITAS, Drs. Ridwan Ibrahim, M. Pd., Prof. Dr. H. Djamaluddin Idris, M. Ed. Kopertis Coordinator Region XIII Banda Aceh.

The topic of this international conference is “Improving Human Resources Quality Through Research and Development in the Era of AFTA 2015”, held by Serambi Mekkah University Banda Aceh.

I would like to thanks to all of committee members for the hard work, time and effort in organizing this conference. Also, I would like to thanks to all of our partners for their generous support and contribution in great long-term cooperation and find the solutions for long term coorporation.

Banda Aceh, July 2015
Head of Committee

Musriadi, S. Pd., M.Pd
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MATERIALS BARRIER TESTING DESIGNED IN RFID SYSTEMS BASED ON MICROCONTROLLER ARDUINO ATTENDANCE SYSTEM

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ABSTRACT

Many applications can utilize the RFID system, for example for security systems rooms, shopping security even just for employee identification. RFID system consists of three main components, namely the tag or transponder, reader, and a database. Presence system to call a class often identified with the name of the student in the classroom that made it ineffective. The purpose of this study are to design the RFID tag identification system using Arduino Uno microcontroller and to determine the extent of the RFID tag reading to the RFID reader by using a variety of barriers in implementing the smart class system. This study has successfully designed with using RFID, which consists of an Arduino Uno microcontroller, RFID reader and tag / RFID cards. The result shows that the designed tool worked properly. Testing RFID tag reading with a thickness of barrier made unreadable paper with a thickness of up to 5.4 cm, illegible wooden barrier with a thickness up to 4.4 cm, a barrier made of plastic legible with a thickness of up to 7.5 cm. While barrier materials used either aluminum metal as well as tin are not readable by RFID reader.

Keywords: RFID Reader, Tag, Arduino

1. Introduction

The development of technology currently so rapid that the emergence of a new technology increasingly indulgent the human. Even a sentence of automation is also becoming familiar to us, it indicates that the reduction in human intervention in performing a routine activity in daily activities. Automation systems are now starting to break into the educational environment known as the Smart Classroom systems'.

Conventional classroom System is usually identified with the manual attendance system governed by the lecturer by calling the names of students each meeting and noted the attendance book. Similarly, the use of system in the classroom, there is usually a serving officer to open classrooms that starts from early hours of lectures until the late hours of lecture that is locking the lecture hall as security rules classrooms. It is also in the utilization and management of power often occurs the waste of energy both in usage of air conditioner and lights that sometimes these devices are left turned on from the beginning until the end of the lecture hour lecture hours, either in a state there are no class hour lecture or otherwise.

Therefore it requires an intelligent management system that integrates in classroom and automation of information systems in the efficiency of absenteeism, security and energy in learning indoor activities. System information in relation to this study first focused on student attendance information system integrated automation system based on RFID (Radio Frequency Identification).
RFID is a technology that uses radio frequency as the automatic identification of an object. RFID can be seen as one way of labeling an object explicitly with the use of computer equipment. In other words, RFID is a data capture technology that can be used electronically to identify, track and store information stored in RFID tags [4].

According to Ahson [1] that the advantages of RFID with Barcode is a unique identifier in the RFID can serve as a pointer to the entry database that stores a lot of transaction history for individual items and RFID can be read without line-of-sight contact and without placement precision. RFID reader can scan the RFID tag as many as hundreds per second.

Meanwhile, according to Bhudtani [2] that “in broad outline, an RFID system consists of three main components: tags, readers and databases (as shown in Figure 1)”. In summary, the mechanism of action that occurs in an RFID system is that a reader radio frequency scanning of the data stored in the tag, and then sends the information to a database that stores the data contained in the tag. The main components of an RFID system can be seen in Figure 1.

![Figure 1. Main Components An RFID System](image1)

An RFID tag or transponder, comprising a microchip and an antenna, (as shown in Figure 2). Microchip itself can be as small as a grain of sand, about 0.4 mm. The chips store a unique serial number or other information depending on the type of memory. The type of memory itself can be read-only, read-write, or write-once read-many. An antenna installed on a microchip sends information to the RFID reader. Usually indicated by the magnitude of the reading range of the antenna. Larger antenna indicating further reading range. The tag is attached or embedded in the object to be identified. Tags can be scanned with a moving or stationary RFID reader.

![Figure 2. Tag RFID or Transponder](image2)
According to Milles [4] that for the proper functioning of the RFID system, it would require a reader or scanning tool that can read the tags correctly and communicating the results to an existing database. A reader using their own antennae to communicate with tags. When the reader emits radio waves, all the tags are designed in such frequency as well as being in the range of reading will give you a response.

A reader can also communicate with the tag without a direct line of sight, depending on the radio frequency and type of tag (active, passive or semipassif) used. Reader can process many items at once. According to its shape, the reader may be a handheld reader to move such equipment, or stationary equipment such as point-of-sale in supermarkets. Reader distinguished by its storage capacity, processing capability, and frequency can be read. Inside there is a reader who works as an antenna chip reader. One chip that is often used is the chip ID-12 Innovations as shown in Figure 3.

![ID-12 Innovations Device as Reader RFID](image)

**Figure 3. ID-12 Innovations Device as Reader RFID**

2. **Methodology**

RFID reader manufacture utilizing IC ID-12. RFID circuit can be seen as Figure 4 below. Output on the circuit will be connected to the Arduino Uno microcontroller system by utilizing Port RXD as the output of the RFID circuit. This pin will be used as a data transmission path is read from the tag. Way communication with the RFID circuit microcontroller is serially, meaning the delivery bit-by-bit data performed alternately follow a particular clock cycle.

![The series of RFID Systems](image)

**Figure 4. The series of RFID Systems**
In the overall of testing system has a testing phase for each component, including the RFID Testing RFID readings using a barrier material between the RFID tag and RFID Reader include paper materials, wood, plastic and metal materials with a thickness of 0.5 cm to a maximum reading of the RFID Reader.

3. Results and Discussions

Results of system design RFID reader that is connected to the Arduino microcontroller can be seen in Figure 5.

The second experiment using a sheet of paper that has a different thickness from 0.5 cm to a maximum readings. Results of experimental readings tag / RFID card with a thickness of the barrier with paper material can be seen in Table 1.
Table 1. The results of the reading of paper barrier

<table>
<thead>
<tr>
<th>#</th>
<th>thickness (cm)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
<td>Legible</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Legible</td>
</tr>
<tr>
<td>3</td>
<td>1.5</td>
<td>Legible</td>
</tr>
<tr>
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</tr>
<tr>
<td>13</td>
<td>5.5</td>
<td>Unreadable</td>
</tr>
</tbody>
</table>

The next trial is testing using wood materials that have different thickness by using wood thickness of 0.5 cm and 5 cm with the results read by the RFID reader shown in Table 2.

Table 2. The results of the reading of wood barrier

<table>
<thead>
<tr>
<th>#</th>
<th>thickness (cm)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
<td>Legible</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>3</td>
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<td>9</td>
<td>4.5</td>
<td>Unreadable</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>Unreadable</td>
</tr>
</tbody>
</table>

The next trial is testing the use of plastic material which has a different thickness by using a thickness of 0.5 cm and 6 cm with the results read by the RFID reader is shown in Table 3.

Table 3. The results of the reading of the plastic barrier

<table>
<thead>
<tr>
<th>#</th>
<th>thickness (cm)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
<td>Legible</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Legible</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
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<tr>
<td>6</td>
<td>5</td>
<td>Legible</td>
</tr>
<tr>
<td>7</td>
<td>5.5</td>
<td>Unreadable</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>Unreadable</td>
</tr>
</tbody>
</table>
The next trial is testing the use of sheet metal with the results read by the RFID reader is shown in Table 4.

Table 4. The results of the reading metal material

<table>
<thead>
<tr>
<th>#</th>
<th>Type Sheet Metal</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aluminum</td>
<td>Unreadable</td>
</tr>
<tr>
<td>2</td>
<td>Iron/Zinc</td>
<td>Unreadable</td>
</tr>
<tr>
<td>3</td>
<td>Brass</td>
<td>Unreadable</td>
</tr>
<tr>
<td>4</td>
<td>Tin</td>
<td>Unreadable</td>
</tr>
</tbody>
</table>

From testing the readability of RFID tags made of paper with barrier thickness in Table 1 suggest that the reading of the RFID tag unreadable to 5 cm is legible, while 5.2 cm. on testing wooden barrier can be read up to 3.5 cm and testing on plastic materials legible up to 6 cm.

4. Conclusion

Conclusion of the locking system design jewelry storage box menggunakan RFID is testing RFID tag reading with a paper barrier produce that maximum reading at 5.2 cm, the maximum reading on the wooden barrier is 3.5 and the maximum reading on the plastic barrier is 5 cm. While on metallic materials such as aluminum, iron, brass and tin did not show a reading. From the results of this study that the use of a cross-section or barrier between the RFID reader and the RFID tag is non-metallic materials such as barrier made of paper, wood or plastic with a maximum thickness readings that have been shown in Table 1, Table 2 and Table 3.

References


ABSTRACT

Aceh as rich province of plantation sector produces abundant crops, it also resulted in increased generation of solid waste such as coconut shell, coffee endocarp and coffee grounds. The solid waste will be more useful when it can be utilized as activated carbon. Activated carbon can be produced from a variety of raw materials that contain element carbon. This study is discusses the potential of coconut shell and coffee waste in Aceh that can be used as raw material for activated carbon which has great benefits for the environment solution. Utilization of activated carbon as adsorbent is increased along with the growth and development of industrial technologies, especially in separation and purification unit. The activated carbon are used to adsorb, purify, filter, discolor or alter the concentration of many liquid and gaseous materials. The advantage using activated carbon are easy application, good efficiency and economically viable.

Keywords: Crops, solid waste, activated carbon, efficiency and economically viable

Introduction

Environmental damage caused by industrial pollutants have increased research into the development of methods and materials that reduce the environmental problems. Many methods have been made in reducing environmental problems, such as adsorption. Adsorption is a process of mass transfer adsorbate to the adsorbent surface, due to the attractive forces between adsorbate molecules with active pore. Adsorption process using activated carbon are easy, efficient, and economical (Demirbas, et al., 2008).

According Yustinah and Hartini (2011), activated carbon is charcoal that processed at high temperatures using a gas CO\textsubscript{2}, N\textsubscript{2}, vapor or chemicals materials for decrease hydrocarbon content in the surface of charcoal shell. Activated carbon has been widely used in the food and beverage industry, petroleum, pharmaceutical, as well as hazardous metal waste adsorbent material.

Aceh has potential solid waste that can be raw material for activated carbon, such as: coconut shells, coffee grounds, bagasse, pine, bamboo and many more. This potential deserves great attention because in addition to transform solid waste into higher value products, also can be a solutions for solid waste management.
Activated Carbon

Activated carbon is carbon that has been improved the adsorption power through the activation process. In this process occurs removal of hydrogen gas, other gas and water from the carbon surface, causing physical changes in the structure of the carbon surface. Activated carbon is widely used in industrial water treatment, removal of organic and inorganic pollutants in industrial waste effluents (gas and liquid), solvents purification and hydrocarbons, as air purification katalisisator, gas mixtures separation, as a hydrogen store, and energy storage (Prauchner and Rodriguez, 2012). The chemical composition of activated carbon is highly dependent on the activated material carbon. Generally, activated carbon composition are : 85-95% carbon, 0.6 to 7.8% hydrogen, 0.04 to 0.45% organic compounds and inorganic compounds (ash) 1 2 - 3.3%.

Many research of activated carbon to resulting products with good quality One feasibility of activated charcoal is referring to the SNI (Indonesian National Standard). Table 1 show the quality requirement of activated carbon referring to SNI 06-3730-1995.

<table>
<thead>
<tr>
<th>No.</th>
<th>Properties</th>
<th>Requirement</th>
<th>Particle</th>
<th>Powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Missing parts on heating 950 °C (%)</td>
<td>Maks 15</td>
<td>Maks 25</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Water (%)</td>
<td>Maks 4.4</td>
<td>Maks 15</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Ash (%)</td>
<td>Maks 2.5</td>
<td>Maks 10</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>I₂ absorption (mg/g)</td>
<td>Min 750</td>
<td>Min 750</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Pure Carbon (%)</td>
<td>Min 80</td>
<td>Min 65</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Benzene absorption (%)</td>
<td>Min 25</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Methylene blue absorption (mg/g)</td>
<td>Min 60</td>
<td>Min 120</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Density (g/ml)</td>
<td>0.45 – 0.55</td>
<td>0.30 – 0.35</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Mesh size 325 %</td>
<td>-</td>
<td>Min 90</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Mesh distance %</td>
<td>90</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

(Source: DSN, 1995)

Heavy Metal

Heavy metals are divided into two types of essential and non essential heavy metal. Essential heavy metals presence in a certain amount is needed by living organisms, but in excessive amounts can cause toxic effects. Examples of these metals are Zn, Cu, Fe, and Mn. Non essential heavy metal, where its presence in the body can be toxic, such as Hg, Cd, Pb, and Cr. These heavy metals cause health effects for humans. The toxicity would work as a barrier action of the enzyme, so that the metabolism process will be interrupted. Furthermore, these heavy metals will act as allergens, mutagens, carcinogens and can even cause death to humans. Heavy metal entry through the skin, respiratory and digestive (Vouk, 1986 ; Saeni , 1989).
Result and Discussion

Coconut shell

Aceh province has abundant crops from plantations, such as: coconut, palm oil, coffee, chocolate, sugar, cloves, nutmeg rubber and many more. The use of farm products annually increases solid waste as well. Potential data of coconut, and coffee are shown in Figure 1 and map of potentially plantation area district is shown in figure 2.

![Figure 1. Production of coconut and coffee](image1)

![Figure 2. Map of potential plantation area in Aceh Province](image2)
Activated Carbon from Coconut Shell

Generally, coconut shells as by-product of the palm plantations is more often used as fuel and charcoal for roasting food. Besides coconut shell can also be used as a raw material for activated carbon with good quality so that it can function for metal adsorption, gas purification, beverage industry, drinking water purification, beauty industry, pharmaceutical industry, many more. Activated carbon from coconut shell effective for separation of Cr (VI), Cr (II), As (V) and Cd (II) (Pino, et al., 2006). The composition of coconut shell charcoal shown in Table 3, and activated carbon from coconut shell shown in Figure 2.

Table 3. Composition of coconut shell charcoal

<table>
<thead>
<tr>
<th>No.</th>
<th>Compound</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Water</td>
<td>6.24</td>
</tr>
<tr>
<td>2.</td>
<td>Volatile</td>
<td>5.46</td>
</tr>
<tr>
<td>3.</td>
<td>Fixed carbon</td>
<td>85.76</td>
</tr>
<tr>
<td>4.</td>
<td>Ash</td>
<td>2.54</td>
</tr>
</tbody>
</table>

Figure 2. (a) Cazetta, 2011, (b) Pujianto, 2010, (c) Alfatah, 2015

Science and technology Developments have resulted the manufacture of activated carbon derived from coconut shells are shown in Table 4.

Table 4. Development of Activated Carbon Research

<table>
<thead>
<tr>
<th>No.</th>
<th>Research</th>
<th>Process</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Production of activated carbon from coconut shell: Optimization using response surface methodology (Gratuito dkk., 2008)</td>
<td>Surface respon method</td>
<td>Resulting good bulk density, and pore diameter</td>
</tr>
<tr>
<td>2.</td>
<td>Production super activated carbon from coal and coconut shell (Pujianto, 2010)</td>
<td>KOH activation</td>
<td>BET surface area 684 m²/g</td>
</tr>
<tr>
<td>3.</td>
<td>NaOH-activated carbon of high surface area produced from coconut shell : kinetics and equilibrium studies from the methylene blue adsorption (Cazetta dkk., 2011)</td>
<td>NaOH activation</td>
<td>BET surface area 2825 m²/g</td>
</tr>
<tr>
<td>4.</td>
<td>Removal of Bi (III) with Adsorption</td>
<td>Chemical</td>
<td>Maximum adsorption</td>
</tr>
</tbody>
</table>
Table 4 proves that the activated carbon from coconut shell has better quality in characteristics carbon and good capacity to absorb heavy metals. Therefore, it takes great attention and support that coconut shell waste utilization can be maximized.

**Activated Carbon from Coffee Grounds**

Aceh Province is national center of area coffee production. Acehnese people can not be separated from the coffee, so there are many of coffee shop in Aceh Province. Drinking coffee for the people of Aceh have been entrenched. Almost all places, both traditional and modern markets there is a coffee shop with a visitor who has never stopped. So coffee shop will dispose a lot of coffee grounds every day, so to increase the added value of the coffee grounds it can process into activated carbon. There are many research to produce activated carbon from coffee solid waste is shown in Table 5.

<table>
<thead>
<tr>
<th>No.</th>
<th>Research</th>
<th>Process</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Influence of preparation conditions in the textural and chemical properties of activated carbons from a novel biomass precursor: The coffee endocarp (Nabais, dkk., 2008)</td>
<td>CO₂ and KOH activation</td>
<td>Pore volumes up to 0.22 and 0.43 cm³/g</td>
</tr>
<tr>
<td>2.</td>
<td>Characterization of activated carbon produced from coffee residues by chemical and physical activation (Sanches, 2011)</td>
<td>chemical and physical activation</td>
<td>BET surfaces areas, around 690 m²/g</td>
</tr>
<tr>
<td>3.</td>
<td>Optimization process to produce activated carbon from coffee grounds with ZnCl₂ activation (Rasdiansyah, dkk., 2014)</td>
<td>ZnCl₂ activation</td>
<td>Optimum iodine absorption of 799.659 mg/g</td>
</tr>
<tr>
<td>4.</td>
<td>Low-cost Activated Carbon Materials Produced from Used Coffee Grounds for Electric Double-layer Capacitors (Nabuhito, dkk., 2014)</td>
<td>KOH and CO₂ activation</td>
<td>Surface area (SBET) value of 1971 m²/g</td>
</tr>
<tr>
<td>5.</td>
<td>Maximum capacity of Pb adsorption by activated carbon from coffee grounds with HCl and H₃PO₄ Activation (Anita and Adhityawarman, 2015).</td>
<td>HCl and H₃PO₄ Activation</td>
<td>Capacity of Pb adsorption by HCl activation is 3.3255 mg/g and by H₃PO₄ Activation is 2.609 mg/g</td>
</tr>
</tbody>
</table>

Table 5. activated carbon from coffee solid waste
Table 5 showed that the coffee waste has great potential as activated carbon. The Differences between activated carbon with ordinary carbon when viewed by the nature of the surface. Ordinary charcoal has a surface pore that still covered with a deposit of hydrocarbons, while the surface of activated charcoal has been clean of deposits so as to perform maximum adsorption. High surface area can improve the adsorption capacity, so the effectiveness of absorption more maximal (Alfatah, 2015).

Closing

Activated carbon is black solid that has pores from burning material that containing carbon compounds. Many plantation solid waste are containing carbon so enable for processing into activated carbon. The use of activated carbon as adsorbent is expected to reduce the problem of environmental pollution and become solid waste management solutions.

Reference


Pujiyanto., 2010, Production super activated carbon from coal and coconut shell, Master of Chemical Engineering, Indonesia University, Depok.


OPTIMIZATION AND EFFECTIVENESS OF BRIDGE CONSTRUCTION DEVELOPMENT BASED ON VALUE ENGINEERING

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Email: hafnidar.ar@teknik.unmuha.ac.id

ABSTRACT

Bridge construction is a very important infrastructure because it connects two separate places due to several conditions. This research was done under the bridge of Lamnyong Bridge doubling construction in Banda Aceh, by providing the most economical costs but still meet the strengthen requirements specified or without losing the value and function of the building. The scope of this research is limited to the implementation cost of under Lamnyong Bridge construction structural works, such as: foundation, bridge abutments and pillars works. The method used in this research is value engineering method that is analysis oriented to evaluate the function of construction project planning of the work. This analysis has a systematic and focused approach in evaluating the object being surveyed. The objective of this study is to apply value engineering to the construction implementation method of concrete conventional bridge construction. There are some implementation phases in value engineering, they are information phase continuing to identify the budget starting from the highest to the lowest prices by using Pareto law distribution graph, the creative phase by using cost/worth method, analysis phase, and the last is recommendation phase. From the value engineering application of the early design with the budget is IDR. 72,486,508,196.71 then carried out some alternatives, they are alternative I obtained the cost is IDR. 40,616,598,222.56 or it is 43.97% cost saving, for alternatives II obtained the cost is IDR. 41,699,143,362.90 or it is 42.47% cost saving and alternative III obtained the cost is IDR. 41,243,208,716.90 or it is 43.10% cost saving. Therefore value engineering method can optimize project cost saving in order to improve effective development quality.

Keywords: Bridge construction, value engineering, optimization

1. Introduction

Good transportation infrastructure and facility will smooth the traffic flow to be safe, comfortable and efficient from both time and cost sectors. Therefore, road and bridge as the infrastructure must get the primary attention in development. The bridges condition that are less good or inadequate can obstruct the traffic smooth, so it is necessary doubling or widening of the bridges to overcome the problems and it is useful to smooth the traffic.

The optimization and effectiveness need of project budget requires well planned project technique and controlling. Value engineering is a creative and planned approach that has the objective to identify and create the efficiency of the unnecessary cost. It can be done by revising the project design to allow the cost saving without reducing the quality and function of the project itself.

Lamnyong Bridge doubling construction in Banda Aceh especially for the work done under the bridge can be carried out by value engineering approach because it can give positive effect. The objective of the bridge doubling construction is to overcome the
traffic jam that often occur as the results of vehicle growth that become more crowded. This research is to identify the works that can be done by value engineering to the cost of the works under the bridge and find the best alternatives that can replace the early design to the selected work items, and to know the project cost difference between the project that has been early planned and the project that has been done the value engineering analysis.

2. Material and Method

2.1. Bridge

Supriyadi and Munthor (2007) stated that bridge is very important infrastructure because it has the function as the connection between two separate places because of some conditions. The bridge planning and design should consider the function of transportation need, technical requirements and aesthetic-architectural including traffic, technical and aesthetic aspects.

The parts of the bridge including upper structure, surface, under structure, foundation, oprit, bridge safety construction. Beside the bridge parts, there are also bridge components such as girder, abutment (bridge placement), roiling (bridge roiling pole), bridge floor plate.

2.2. Value Engineering

Soeharto (1995) stated that value engineering is the systematically organized effort applying the recognized technique, it is the technique that identify the product and service functions which objective is to meet the required function to the lowest price (the most economical).

According to Wilson (2005), value engineering is defined as the effort that is systematic and organized done to analyze system, product and service functions to achieve or conduct the essential function of the lowest life cycle cost and consistent to the required performance, reliability, quality and security. Life cycle cost is live cycle cost model to show the total cost of the ownership for each building system, sub system, functional area and maintenance cost.

2.3. Value Engineering Application

Wilson (2005) mentioned that the value engineering will be effective if it is applied as early as possible in design phase to produce most possible cost saving. Value engineering theory can be applied in every phase during the project run. But if value engineering application is applied later, it will reach smaller cost saving potential, while the cost create the change because of value engineering will be higher. At a time, cost saving potential and changing cost will reach the break even and it means no cost saving achieved.

a. Value

According to Kelly & Male (2004), value is defined as the relation among cost, time and quality which the quality consists of a number of variables determined from someone skill and experience or some people in a group, explicit made to decide choices among various suitable function options.
b. Cost

Dell’Isola (1997) stated that cost is sum of all efforts and expenditures executed in developing and producing the products. The cost analysis improved because value engineering has the objective to detect the relation between the actual function and cost required and provide decision making method regarding next required efforts.

c. Function

Function is not anything but an expected performance. Someone buy something based on the function and result (outcomes) achieved from something. Design analysis of a component must determine the componen function and feature designed to obtain required results (Kaufman & Jerry, 2006).

2.4. High Cost Identification

According to Berawi (2014), there are some techniques used to identify the high cost, they are breakdown analysis, cost model, function analysis, life cycle cost impact. Value basic theory is the relation between cost and worth.

\[
Value = \frac{\text{Cost}}{\text{Worth}} > 1
\]  

2.5. Value Engineering Job Plan

Kelly & Male (2004) defined the job plan is a systematic approach of value engineering. This job plan is directed plan to carry out the value engineering including result implementation of the value engineering. Job plan also become a success key determinant of value engineering study. The phases in value engineering application are information phase, creative phase, analysis phase and recommendation phase.

2.6. Research Phase

The research was carried out under bridge work of Lamnyong Bridge doubling in Banda Aceh that connect Banda Aceh Boundary Road Section to Darussalam, with span length is 307.6 m and width is 10.0 m (1,75 x 2 m). Value engineering analysis is carried out in four phases, they are information phase, creative phase, analysis phase and recommendation phase. The phases are explained as below:

a. Information Phase

The steps applied in information phase mentiones as below:

1. Information design repitition;
2. Study target determination;
3. Element selection with optimum cost saving potency.

b. Creative Phase

This creative phase uses brain storming method that is one of the tools/techniques used in creative phase to produce the ideas relted to other method to perform the functions. Brain storming is also a technique that is almost always done in value engineering application. The alternatives can be viewed from the various aspects, they are:

1. Material;
2. Work implementation method;
3. Work implementaion time.

c. Analysis Phase
The methods used in assessment and alternatives selection are benefit and loss analysis methods by giving the value and ranking. To produce the cost saving, value engineering can be done by five phases, they are:
1. Material used replacement in the work items
2. Getting the work items that will be carried out the value engineering.
3. Finding the best alternative design to replace the early design in the selected work items.
4. Alternatives design collection.
5. Calculating the cost saving from value engineering application.

d. Recommendation Phase
This is the last phase in value engineering planning by collecting all the results of information, creative, and analysis phases and then all the phases summarized so that it can be recognized which items that can be replaced from the work selected items and how much the cost saving can be achieved after applying the value engineering then make a report to decide which design will be selected and better to be carried out.

3. Result and Discussions
3.1 Result

<table>
<thead>
<tr>
<th>No.</th>
<th>Work Item</th>
<th>Cost</th>
<th>Cummulative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rp</td>
<td>Rp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Steel Piles Procurement: 500 mm of diameter and 10 mm of the thickness</td>
<td>33,738,468,578,31</td>
<td>45.70</td>
</tr>
<tr>
<td>2</td>
<td>Reinforcing Steel of screw BJ 32</td>
<td>10,987,079,719,29</td>
<td>14.88</td>
</tr>
<tr>
<td>3</td>
<td>Procurement of Precast Pre stressed Concrete Piles: 500 mm of diameter</td>
<td>8,789,732,012,35</td>
<td>11.91</td>
</tr>
<tr>
<td>4</td>
<td>Type I girder precast unit: 26.6 m of the span length</td>
<td>4,293,102,138,08</td>
<td>5.82</td>
</tr>
<tr>
<td>5</td>
<td>Medium quality concrete with fc’ = 30 MPa (K-350)</td>
<td>3,169,152,516,03</td>
<td>4.29</td>
</tr>
<tr>
<td>6</td>
<td>Medium quality concrete with fc’= 25 MPa (K-300)</td>
<td>2,603,791,422,92</td>
<td>3.53</td>
</tr>
<tr>
<td>7</td>
<td>Type I girder precast unit:</td>
<td>2,249,950,754,04</td>
<td>3.05</td>
</tr>
<tr>
<td>No.</td>
<td>Work Item</td>
<td>Cost</td>
<td>Cumulative</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------</td>
<td>-----------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rp</td>
<td>%</td>
</tr>
<tr>
<td>8</td>
<td>31.6 m of the span length</td>
<td>2,229,916.489,86</td>
<td>3.02</td>
</tr>
<tr>
<td>9</td>
<td>Pile staking of precast reinforced concrete: 500 mm of diameter</td>
<td>1,151,898,750,00</td>
<td>1.56</td>
</tr>
<tr>
<td>10</td>
<td>Deck Slap Procurement</td>
<td>1,141,820,000,00</td>
<td>1.55</td>
</tr>
<tr>
<td>11</td>
<td>Mobilization</td>
<td>1,031,736,309,20</td>
<td>1.40</td>
</tr>
<tr>
<td>12</td>
<td>Pile staking of Steel Pipe: 500 mm of diameter and 12 mm of the thickness</td>
<td>468,942,593,28</td>
<td>0.64</td>
</tr>
<tr>
<td>13</td>
<td>Medium quality concrete with fc‘= 20 MPa (K-250)</td>
<td>438,181,767,03</td>
<td>0.59</td>
</tr>
<tr>
<td>14</td>
<td>Railing</td>
<td>337,720,326,50</td>
<td>0.46</td>
</tr>
<tr>
<td>15</td>
<td>Concrete Diaphragm K350 (fc ‘30 MPa) including tension work after casting</td>
<td>243,758,492,89</td>
<td>0.33</td>
</tr>
<tr>
<td>16</td>
<td>Additional cost for item 7.6.(7) s/d 7.6.(10) for pile</td>
<td>177,431,847,91</td>
<td>0.24</td>
</tr>
<tr>
<td>17</td>
<td>Elastomer placement for type 1 (300 x 350 x 36)</td>
<td>147,349,752,90</td>
<td>0.20</td>
</tr>
<tr>
<td>18</td>
<td>Low quality concrete with fc‘= 15 MPa (K-175)</td>
<td>144,604,980,25</td>
<td>0.20</td>
</tr>
<tr>
<td>19</td>
<td>Expansion Joint of Type Asphaltic Plug</td>
<td>111,212,130,00</td>
<td>0.15</td>
</tr>
<tr>
<td>20</td>
<td>Reinforcing steel of plain BJ 24</td>
<td>69,884,952,02</td>
<td>0.09</td>
</tr>
<tr>
<td>21</td>
<td>Utility relocation and existing PDAM (Drinking Water Institution) Service</td>
<td>60,000,000,00</td>
<td>0.08</td>
</tr>
<tr>
<td>22</td>
<td>Utility relocation and existing PLN (Electricity Institution) Service</td>
<td>60,000,000,00</td>
<td>0.08</td>
</tr>
<tr>
<td>23</td>
<td>Utility relocation and existing and other services</td>
<td>50,000,000,00</td>
<td>0.07</td>
</tr>
<tr>
<td>24</td>
<td>Concrete Demolition</td>
<td>41,192,953,55</td>
<td>0.06</td>
</tr>
<tr>
<td>25</td>
<td>Additional filler</td>
<td>27,018,749,90</td>
<td>0.04</td>
</tr>
<tr>
<td>26</td>
<td>Stone masonry</td>
<td>24,528,668,31</td>
<td>0.03</td>
</tr>
<tr>
<td>27</td>
<td>Traffic Management and Savety</td>
<td>20,000,000,00</td>
<td>0.03</td>
</tr>
<tr>
<td>28</td>
<td>Quality Management</td>
<td>5,000,000,00</td>
<td>0.01</td>
</tr>
<tr>
<td>29</td>
<td>Demolition product transportation exceeding 5 km</td>
<td>4,289,461,92</td>
<td>0.01</td>
</tr>
<tr>
<td>30</td>
<td>Rip rap</td>
<td>3,374,616,04</td>
<td>0.00</td>
</tr>
<tr>
<td>31</td>
<td>Bridge Name Plank</td>
<td>1,666,964,03</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>73,822,806,946,61</td>
<td>100</td>
</tr>
</tbody>
</table>
After high cost analysis phase then it is carried out analysis phase to pareto graph to detect the percentage of cost cumulative and work items.

![Pareto Analysis Graph of Under Bridge Works of Lamnyong Bridge Doubling in Banda Aceh](image)

The method used in the creative phase of this research is brain storming method. This method is one of the methods that is often used in creative phase to produce the ideas related to other methods used to carry out the function. For cost/worth ratio value can be shown in Table 2 below.

<table>
<thead>
<tr>
<th>No</th>
<th>Component</th>
<th>Function</th>
<th>PS</th>
<th>Cost</th>
<th>Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Construction</td>
<td>Creative Phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bridge</td>
<td>Function analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lamnyong</td>
<td>Item: Foundation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Banda Aceh</td>
<td>Function: Load restrain to the bridge</td>
</tr>
<tr>
<td>1</td>
<td>Divisi Struktur</td>
<td>Noun</td>
<td>Verb</td>
<td>Cost</td>
<td>Worth</td>
</tr>
<tr>
<td></td>
<td>Medium quality concrete with fc’=30 MPa (K-350)</td>
<td>Floor Concrete casting</td>
<td>S</td>
<td>3,169,152,516,03</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Medium quality concrete with fc’=25 MPa (K-300)</td>
<td>Trotoar casting</td>
<td>S</td>
<td>2,603,791,422,92</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Medium quality concrete with fc’=20 MPa (K-250)</td>
<td>Trotoar casting</td>
<td>S</td>
<td>438,181,767,03</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Low quality concrete with fc’=15 MPa (K-175)</td>
<td>Work floor casting</td>
<td>S</td>
<td>144,604,980,25</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Girder Precast Unit of Type I</td>
<td>girders</td>
<td>precast</td>
<td>Cost</td>
<td>Worth</td>
</tr>
<tr>
<td></td>
<td>? Span is 26,6 meter</td>
<td></td>
<td></td>
<td>S</td>
<td>4,293,102,138,08</td>
</tr>
<tr>
<td></td>
<td>? Span is 31,6 meter</td>
<td></td>
<td></td>
<td>S</td>
<td>2,249,950,754,04</td>
</tr>
<tr>
<td>6</td>
<td>Deck Slap Procurement</td>
<td></td>
<td></td>
<td>S</td>
<td>1,151,898,750,00</td>
</tr>
<tr>
<td>7</td>
<td>Concrete Diaphragm K350 (fc’ 30 MPa)</td>
<td>Concrete Distance</td>
<td>S</td>
<td>243,758,492,89</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(post-tension)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Reinforcing steel of plain BJ 24</td>
<td>Structure Strengthen</td>
<td>S</td>
<td>69,884,952,02</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Reinforcing steel of screw BJ 32</td>
<td>Structure Strengthen</td>
<td>S</td>
<td>10,987,079,719,29</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Sheet Pile</td>
<td>Joint Distance</td>
<td>S</td>
<td>1,031,736,309,20</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Procurement of pile, size:</td>
<td>Procurement coating</td>
<td></td>
<td>P</td>
<td>33,738,468,578,31</td>
</tr>
</tbody>
</table>

Figure 1. Pareto Analysis Graph of Under Bridge Works of Lamnyong Bridge Doubling in Banda Aceh

Table 2. Cost/Worth on foundation work item
On the abutment foundation and bridge pillar work items obtained cost/worth ration value is 1.60 or cost/worth value >1 then it can be continue to the function analysis phase. Then it is done the alternative replacement from the early design phase, in alternative 1 phase conducted design replacement on pillar 5 and pillar 6 foundations of early design foundation using steel piles foundations and then continue the alternative using precast prestressed concrete piles.

3.2 Discussions

Alternative 1: Early design cost in pile foundation work is IDR.72,486,508,196.71. After applying value engineering by replacing all foundations to precast concrete pile foundation, it is obtained the alternative cost become IDR. 40,616,593,282.28. The saving cost achieved is IDR. 31,869,909,914.43.

Alternative 2: Early design cost is IDR.72,486,508,196.71. After applying value engineering by replacing all foundations to pile drill foundation, it is obtained the alternative cost become IDR. 41,699,143,562.90. The saving cost achieved is IDR. 30,787,364,633.81.

Alternative 3: Early design cost is IDR.72,486,508,196.71. After applying value engineering by replacing all foundations to precast concrete pile foundation, and pillar 5 and pillar 6 are replaced with pile drill foundation using steel cassing that has the function to protect the foundation from the water so it is obtained the alternative cost become IDR.
The saving cost achieved is IDR. 31,243,299,479.77. Table 3 below shows the value engineering results to the three alternatives.

### Table 3. Value Engineering Recapitulation

<table>
<thead>
<tr>
<th>No</th>
<th>Work Item</th>
<th>Early Cost</th>
<th>Alternative Cost</th>
<th>Difference</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alternative I</td>
<td>72,486,508,196.71</td>
<td>40,616,598,222.56</td>
<td>31,869,909,974.15</td>
<td>43.97</td>
</tr>
<tr>
<td>2</td>
<td>Alternative II</td>
<td>72,486,508,196.71</td>
<td>41,699,143,562.90</td>
<td>30,787,364,633.81</td>
<td>42.47</td>
</tr>
<tr>
<td>3</td>
<td>Alternative III</td>
<td>72,486,508,196.71</td>
<td>41,243,208,716.90</td>
<td>31,243,299,479.77</td>
<td>43.10</td>
</tr>
</tbody>
</table>

Criteria ranking to see the value difference in value engineering recapitulation results. From the table above can be shown that the best alternative is alternative 1 by replacing all work items in foundations using precast concrete pile foundation.

### 4. Conclusion

Alternative solution selected by considering the cost efficiency, easy of implementation and material quality. Based on the results of item analysis carried out to value engineering on pile foundations and bridge pillars. The highest cost item on steel pile work item is analyzed. In this item, steel piles are carried out to pillar 5 and pillar 6 which located under the water so it is necessary to coat the steel. By the additional of steel piles cause the higher price so that it needs to be applied value engineering for cost saving.

In value engineering application, there are three alternatives, they are alternative I used in all foundations of the bridge and the early design using precast concrete pile and steel pile, then is replaced the alternative using precast concrete pile to all bridge foundations. For alternative II, the early design is same with alternative I so this alternative is replace by pile drill foundation for all foundation items. For alternative III, the early design is same with alternative I and alternative II, they are replaced by precast concrete pile and for pillar 5 and pillar 6 are used pile drill foundation using steel cassing. After carrying out the value engineering, it is obtained that the most effective and efficient alternative design is alternative I by using precast concrete pile.

### References


PERFORMANCE MEASUREMENT OF SUPPLY CHAIN MANAGEMENT IN THE PLASTIC WASTE RECYCLING INDUSTRY

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ABSTRACT

The purpose of this study is to determine the level of effectiveness and efficiency of supply chain management in the plastic waste recycling industry from the raw plastic waste material to the manufacture of plastic chips by suppliers to the plastics industry using a SCORcards and gap analysis model method of approach. Supply chain performance appraisal values obtained from the eleventh matrix are delivery performance (10%), fill rate (17%), order fulfillment leadtime (2%), production flexibility (10%), response time (7%), cost of goods (10%), SCM cost (5%), HR cost / value added employees cost (2%), return cost (41%), cash to cash cycle time (1%), inventory days of supply (14%). Some major causes of supply chain performance being less efficient and required further repair and improvement were production processes and improvement in the quality of product plastic waste, processing in particular improved sorting of raw materials, maintenance and improvement of production and improved engine performance are needed as well as improved employee performance and performance optimization for manufacturers.

Keywords: SCORcards’ and gap analysis model, Process Analysis Hierarchy, Improved supply chain performance.

1. Introduction

Supply chains for manufacturing industries are already well understood. A supply chain is a co-ordinates network that provides raw materials for industry involving various suppliers and/or distributors. In a supply chain the parties involved, consist of suppliers, manufacturers, distributors, warehousers, sales centers and other related parties that form a network. In a supply chain the key considerations for determining the performance of the supply chain, are the total costs and the minimization of time in accordance with quality requirements.

Supply chain management can further assist the development of strategies to minimize risk and fix problems that occur in the supply chain. It can also be used to avoid problems that are complicated and inefficient which can result in higher costs for the manufacturing.

The industrial processing of waste plastics into semi-finished or finished products is a relatively simple industry and does not require highly advanced technology. The plastic waste processing industry needs a lot of sources of plastic waste; these are actually in the urban environment from the housing and business areas around the city until the final waste disposal sites (TPA or landfill sites). Industrial processing of plastic waste into plastic chips is a common small business and there are many of them in Aceh.
As an illustration, the process of collecting the plastic waste is a tiered chain starting from scavengers or scavenger-collectors using sacks and becak barang (motorized goods trikes) that collect plastic waste every day and sell it to collectors i.e. collecting agents. Gatherers also range from small and medium-scale up to large scale. In the chain of activities there are also small collectors that are selling the plastic waste they collect to other larger collecting agencies or directly to manufacturers for processing into chips for making new plastic products.

After the plastic chips are produced by local manufacturers they are sold to other larger manufacturers and of course a large manufacturer will then process the plastic chips into finished products that have a higher resale value. All the activities begin with the collection, storage, sale and subsequent processing in a chain of activities that have sustained economic value. Of course, these activities from the initial collector to the supplier to the consumer at the end of the industrial chain of activities are integrated into a network called the supply chain, better known as supply chain management.

2. Literature Review

2.1. Supply Chain Management for Waste Plastic

Supply chain management [SCM] mainly focuses on the integration and management of the flow of goods and services and the flow of information through the supply chain to make it more responsive to customers’ needs while lowering total cost, Russell and Taylor (2006: 12). According to Li Ling (2007: 5), the supply chain is a set of activities and decisions that are interlinked with each other to integrate suppliers, manufacturing, warehousing, transportation services, retailers and consumers more efficiently. It can be concluded that the goods and services needed can be distributed in the amount, timing and location to minimize costs in order to meet the needs of the end consumer.

One of the key to their success is the distribution of activities and this is an important thing to be considered for distribution directly affects the cost of the supply chain and also the needs of consumers. A proper distribution network can be used to achieve various objectives of the supply chain, starting from low cost to high response to requests from customers (Chopra 2010: 86).

One of concern in the business is the impact of an increase in competition and the types of adaptive strategies needed to succeed in a dynamic business environment and how to continue to meet these changes. Success in the competition will be determined by the level of success in building and maintaining co-operation and alliances (Morgan and Hunt, 1994), this is a basic concept in SCM. SCM is highly dependent on coordination and interaction between different companies and business related products, services, financial resources and information. The objective of SCM is to coordinate relations between actors in the supply chain, which in this case means creating an organized supply chain that interacts one with another. The scope of the supply chain will depend on the consensus of the actors involved in building relationships in the supply chain system.

In an increasingly competitive business environment with changing conditions and high uncertainty, an adaptive supply chain is required that is able to respond to the market environment which is easy to change. There is the possibility that the supply chain is not
sustainable, due to inefficiency, lack of value-added and external competition. Therefore, the supply chain must develop the capacity to adapt to environmental changes.

2.2. Supply Chain Performance Measurement

Measurement of the supply chain performance needs to be done on each link in the supply chain starting from the bottom-most supplier to the final consumer. This measurement is done so that companies can learn what to do better so that the supply chain performance can be better in the future. Performance measurement is necessary to monitor and control, and then to be able to communicate the goals of the organization for the supply chain to function better. Also to know what the position of an organization is relative to it’s competitors and the goals to be achieved, and further so that the direction of improvements needed can be determined in order to create a competitive advantage.

The SCOR Model (Supply Chain Operation Reference)

SCOR is one of the methods for measuring the performance of a supply chain. This method was introduced by the Supply Chain Council (SCC), an independent non-profit organization in the US. This model is designed for use in all kinds of industries that have a supply chain. This method is also used to map parts of the supply chain. In addition, Huang, et al. (2005) conducted a study that is written up in the journal Computers & Industrial Engineering. This study discusses applications using the SCOR model and the use of the SCOR Thread Diagram.

Limitations of SCOR

The limitations of implementing the SCOR model for the plastics recycling industry is the wide range of interactions found in the supply chain which in this research is provider until the final consumer that is the end buyer or manufacturer, from the input order up to the payment of the invoice, or all plastic waste product transactions from the scavenger until the end buyer.

SCOR Work Map

There are four levels on SCOR’S Work Map:- refer Supply Chain Operation Reference. . The SCOR work map aims to analyze the activities undertaken in the supply chain as a whole. The work map for SCOR is described in Figure 1.

Figure 1: Four levels of SCOR
The four levels of the SCOR work map are: Level One: to analysis corporate competition and their focus on the supply chain matrix. Level Two, the configuration of material flows in the supply chain. Level Three, is synchronization of performance and analysis of work flows for the materials as well as flow of information. Level Four, implementation of repairments and improvements in the performance of the supply chain.

Furthermore, the philosophy for the supply chain is to manage the supply chain from the raw materials to the final customer as an integrated Process, and not to manage the product steps as a series of activities that are separate and not integrated.

According to Christopher (1998), connection of purchasing activities and manufacturing processes with distribution networks to supply markets is the way in which customers can be served at the highest level with the lowest cost. In other words, to achieve competitive advantage through cost reductions and improvement of service (service enhancement).

SCOR Hierarchy Process Model

According to the SCOR model of process hierarchy, there are three hierarchical processes that are elaborated by SCOR processes from the most general to the most detailed. The first hierarchical level, defines the number of steps, their scope and their content in the supply chain and how supply chain management performance is to be measured. At the second level, each step in the chain is illustrated further by the type of process in that step. Whilst the third level contains the definitions of business processes that are used for transactions of sales orders, purchase orders, work orders, the right of return and forecasting of demand and of availability of raw materials.

The Advantages of using the Supply Chain Management Method

According to Indrajit and Djokopranoto (2002), among the benefits of supply chain management are reductions in inventory since what generally occur in a company is
excessive inventories. Supply Chain Management ensures the smooth running of the inventory of goods, ranging from original raw materials through suppliers to manufacturers and to the company itself with distribution through wholesalers to retailers and finally to the end customer, the consumer.

3. **Research Methods**

The research method follows a problem-solving approach in which the stages of research to be conducted as follow:

a. Supply chain activities begin with the collection of plastic waste that is sorted and sold to agents and distributors and then bundled and sold to manufacturers to be processed into chips which are then sold to the final buyer i.e. the major manufacturers (plastic conversion industry) to be processed into various types of plastic products. So that the activities start with the collection at the beginning until the end of processing and sales, including here also are logistical transport services to deliver goods to their destinations.

b. The supplier or distributor of plastic waste that is conducted by collecting plastic waste both collecting small scale and large scale collectors are sometimes called collecting agents of plastic waste. Sometimes the scavengers may also act as a distributor if they can collect a relatively large amount of plastic waste and there are agreements between the manufacturer and the suppliers (including scavengers).

c. Many different types of plastics are collected and sold by the supplier, but the ones of most interest in the market are the PP (polypropylene) injection products, PET bottles (Polyethylene Terephthalate) and HDPE (High Density Polyethylene). All raw materials (waste plastic) is made from plastic waste from various kinds of products in a wide range of colors.

d. The SCORcard and gap analysis model (Model SCOR) is a reference model for analyzing supply chain operations, this model is designed to assist analysis from within and from without the company.

4. **Discussion And Analysis**

**Supply Chain Performance Measurement**

SCOR has three hierarchical levels of processes that SCOR uses to perform the analysis processing from the most common to the most detailed. Level 1 is the highest level, with a common definition of the five processes viz: plan, source, make, deliver and return. Level 2 is where the supply chain company can be configured in detail based on 30 core processes. Whilst Level 3 is also called the level of process elements that consists of input, output, the metric for each element of the process as well as the references (benchmark and best practice). Furthermore, measurement of supply chain performance is done using three-phases viz:

a. **First Phase Supply Chain**

The first level of the process hierarchy for the SCOR model is the highest level where the company analyzes its own performance using a general definition of the five core processes viz: plan, source, make, deliver, and return.
b. Second Phase Supply Chain

In the second phase of supply chain, measurement, the actual performance of the supply chain will use SCOR cards for each step. At this phase, performance measurement will be performed using internal benchmarking based on the’ targets of the company.

Table 1: Attributes and Performance of SCOR Version 7.0 SCORcards (Quantitative Performance)

<table>
<thead>
<tr>
<th>SCOR CARD</th>
<th>DEFINITIONS</th>
<th>SCOR MATRIX LEVEL 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>Ability of Supply Chain to meet its commitments, such as deliveries to customers or get supplies from suppliers with proper quality, in time, sufficient amounts and acceptable price.</td>
<td>Delivery performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fill rate: The percentage of the number of items available, when requested by the customer.</td>
</tr>
<tr>
<td>Availability</td>
<td>Supply chain capability to provide products or services at the required price, place and time</td>
<td>Order Fulfillment Lead-time: Ordering Lead-time</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Supply chain capability to quickly change according to the needs of the work/product required</td>
<td>Production flexibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Production flexibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Response time</td>
</tr>
<tr>
<td>Cost</td>
<td>Costs associated with labor, materials, equipment and other inputs</td>
<td>Cost of goods</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCM cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Return cost</td>
</tr>
<tr>
<td>Assets</td>
<td>Assets owned by the companies used to meet customer needs.</td>
<td>Cash to cash cycle time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inventory : days of supply</td>
</tr>
</tbody>
</table>

Tabel 2: SCORcards (Quantitative Performance)

<table>
<thead>
<tr>
<th>Performance Attribute</th>
<th>Matrix Measurement</th>
<th>Target</th>
<th>Actual</th>
<th>Achievement</th>
<th>0%-20% major opportunity</th>
<th>20%-40% disadvantage</th>
<th>40%-60% medium</th>
<th>60%-80% advantage</th>
<th>80%-100% best in class</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC Reliability</td>
<td>Delivery Performance</td>
<td>100%</td>
<td>90%</td>
<td>90%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Fill rate</td>
<td>48%</td>
<td>56%</td>
<td>117%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td>85%</td>
</tr>
<tr>
<td>SC Availability</td>
<td>Order fulfillment Lead-time</td>
<td>12 days</td>
<td>7 days</td>
<td>58%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td>90%</td>
</tr>
<tr>
<td>SC Flexibility</td>
<td>Production flexibility</td>
<td>8 days</td>
<td>4 days</td>
<td>50%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Response time</td>
<td>30 days</td>
<td>28 days</td>
<td>93%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td>85%</td>
</tr>
<tr>
<td>SC Cost</td>
<td>Cost of Goods</td>
<td>10%</td>
<td>7%</td>
<td>70%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>SCM Cost</td>
<td>12%</td>
<td>9%</td>
<td>75%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>HR Cost</td>
<td>12%</td>
<td>7%</td>
<td>58%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>Return Cost</td>
<td>18%</td>
<td>7%</td>
<td>39%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td>90%</td>
</tr>
</tbody>
</table>
Performance Attribute | Matrix Measurement | Target | Actual | Achievement | 0%-20% major opportunity | 20%-40% disadvantage | 40%-60% medium | 60%-80% advantage | 80%-100% best in class |
<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SC Assets</td>
<td>Cash to cash cycle time</td>
<td>48%</td>
<td>38%</td>
<td>79%</td>
<td>50%</td>
<td>85%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inventory days of supply</td>
<td>7%</td>
<td>6%</td>
<td>86%</td>
<td>50%</td>
<td>85%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c. Third phase Supply Chain
The next step, the final step is the third phase, where this phase is an assessment of the performance of the supply chain for the manufacturers.

d. Analysis
In this phase of the assessment of supply chain performance in the manufacturing (industry) for processing of plastic waste into plastic chips, the Gap Analysis application was subsequently carried out on the SCOR model is described in Table 6 the result of the analysis of the supply chain follows next.

In terms of performance, delivery of orders on schedule (delivery performance) that are in the best position in class, when compared to the best in class value gap is 10%. The results obtained indicated that the performance of the transmission of orders on schedule was very good. Availability of items requested buyer (Fill rate), was in the best position in it’s class. Compared to the best in class the gap in value was 17%. Furthermore, the time required by the buyer from start of booking the order up to receiving it (Order fulfillment lead-time) on the SCORcard was in the medium position, with the ratio of the value gap only 2%, where this value indicates that the response time to customer demand remained at an average limit, so that its performance can still continue to be improved.

Rapidity of response time is also supported by the flexibility that occurs in the production (Production flexibility), both from the supply of raw materials, of machinery and labor used to work on these manufacturers. Production flexibility that could happen by the company are in the intermediate position (medium), where the difference in value gap was 10%. The results obtained showed that the production flexibility for improved performance still can be by way of maintenance / repairs to machinery, increasing the ability of workers, better quality control and continuous material inventory control.

Rapidity of manufacturer’s response to market changes (Response time) already meets the best in class, with a value gap of 7%. The performance that has been achieved can be maintained by way of partnerships with several collection agencies already established previously and simultaneously continuing cooperation to ensure long-term availability and consistency to meet production needs. The calculation of performance for delivery performance, fill rate, and other measures is obtained from the following formula:

\[
\frac{1}{\frac{1}{\text{Target}}} = \frac{1}{\frac{1}{\text{Actual}}} = \frac{\text{Target}}{\text{Actual}}
\]
When the achievement of the matrices of performance measurement attribute supply chain costs are lower than the set target attainment percentage will be higher. Achievement of cost of plastic chips goods sold was in an advantageous position, which shows that the performance has been very good and there is a possibility to rise to the position of best in class. The difference in the gap value was only 10%. Further efforts that can be undertaken to improve its performance include reduction in the cost of raw materials which can maybe be done by further streamlining the working of machinery and labor.

The costs of supply chain management (SCM cost) were also measured against the results obtained from the application of SCM by the manufacturer. The result of this measurement showed that the cost of SCM had been successful with the value of the resulting gap being only 5% (absolute), however this cost factor is not a criterion that can be used as a benchmark for the supply chain management in the company to be said to be successful or not, because there are many other external factors that can affect it.

HR development costs (value added to cost of workers) as shown in Table 3 are in a low to medium position, that is 2%, this indicates that attention to improving the performance of workers can still show a performance improvement from the workers so as to provide an optimal contribution for the manufacturer. Thus, in the future, the manufacturer shall give priority to human resource development so as to provide positive benefits for the company.

Finished products received by consumers and also the raw materials from suppliers that are not in accordance with quality criteria that have been set, that were guaranteed can be returned, and the business costs of return (return costs) were 39% with the advantage gap set at 41%.

From the SCORcard it can be seen that the time between payments to the supplier companies up to getting payments from customers (cash to cash cycle time) is in an advantageous position with the value gap at a low 1%. These results can still be improved further by cutting back the plastic waste raw material costs and by rescheduling loan repayments for the manufacturer.

An inventory day of supply at the factory is already good with a value gap of 14% at the level of best in class. Low storage time results in lower storage costs and facilitates the flow of materials.

Table 3: SCORcards with Gap Analysis

<table>
<thead>
<tr>
<th>Performance Attribute</th>
<th>Matrix Measurement</th>
<th>Achievement</th>
<th>0%-20% major opportunity</th>
<th>20%-40% disadvantaged</th>
<th>40%-60% medium</th>
<th>60%-80% advantage</th>
<th>80%-100% best in class</th>
<th>Best in class Gap (%)</th>
<th>Advantage Gap (%)</th>
<th>Medium Gap (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC Reliability</td>
<td>Delivery Performance</td>
<td>90%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-10</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Fill rate</td>
<td>117%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>17</td>
<td>37</td>
<td>57</td>
</tr>
<tr>
<td>SC Availability</td>
<td>Order fulfillment leadtime</td>
<td>58%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-42</td>
<td>-22</td>
<td>-2</td>
</tr>
<tr>
<td>Performance Attribute</td>
<td>Matrix Measurement</td>
<td>Achievement</td>
<td>0%-20% major opportunity</td>
<td>20%-40% disadvantaged</td>
<td>40%-60% medium</td>
<td>60%-80% advantage</td>
<td>80%-100% best in class</td>
<td>Best in class Gap (%)</td>
<td>Advantage Gap (%)</td>
<td>Medium Gap (%)</td>
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<td>-----------------</td>
</tr>
<tr>
<td>SC Flexibility</td>
<td>Production flexibility</td>
<td>50%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-50</td>
<td>-30</td>
<td>-10</td>
</tr>
<tr>
<td></td>
<td>Response time</td>
<td>93%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-7</td>
<td>13</td>
<td>33</td>
</tr>
<tr>
<td>SC Cost</td>
<td>Cost of Goods</td>
<td>70%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-30</td>
<td>-10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>SCM Cost</td>
<td>75%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-25</td>
<td>-5</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>HR Cost</td>
<td>58%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-42</td>
<td>-22</td>
<td>-2</td>
</tr>
<tr>
<td></td>
<td>Return Cost</td>
<td>39%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-61</td>
<td>-41</td>
<td>-21</td>
</tr>
<tr>
<td>SC Assets</td>
<td>Cash to cash cycle time</td>
<td>79%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-21</td>
<td>-1</td>
<td>19</td>
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<tr>
<td></td>
<td>Inventory days of supply</td>
<td>86%</td>
<td>20%</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>100%</td>
<td>-14</td>
<td>6</td>
<td>26</td>
</tr>
</tbody>
</table>

5. **Conclusions**

Based on the analysis using the SCORcard and gap analysis model, conclusions obtained:

1. The assessment of the performance of the supply chain for the processing of plastic waste into plastic chips was still considered to have low efficiency. It was characterized by the value of the eleventh measurement metric that represents the manufacturer's business was in the medium gap. The eleventh matrix along its value line was: delivery performance (10%), fill rate (17%), order fulfillment lead-time (2%), Production flexibility (10%), response time (7%), cost of goods (10%), SCM cost (5%), HR cost / value added employees cost (2%), return costs (41%), cash to cash cycle time (1%), inventory days of supply (14%).

2. Some of the major ways to improve performance in the supply chain are improving the quality of plastic waste for processing into chips i.e. better sorting of plastic waste raw materials, better maintenance and improved performance of machinery and also improved performance of workers.

3. To meet the orders for raw materials for manufacturing (processing plastic waste into plastic chips), there is a need to co-operate with several suppliers for specific types of plastics waste that are required by the manufacturer where the orders are a reflection of the demand by buyers in the plastics conversion industry for raw materials for processing into finished plastic products.

**References**


**Other Related Supply Chain Bibliography**


ABSTRACT

In Indonesia there are many industries outraging from small industries to large industries, arising from the activities of waste containing high organic matter. The content of organic matter in the wastewater out potentially pollute the environment, so it needs processing before it enters the environment. It is therefore necessary to attempt to handling the waste warising. This study aimed to determine the ability of water hyacinth to reduce the content of COD, TSS, improve/normalized pH and lowering value of color arising from the wastewater. The research conducted at Environmental Engineering Laboratory of Serambi Mekkah University and the local case study is Tofu Factory “Solo” Banda Aceh. This study used water hyacinth as biosorption media to treat wastewater out, which has high organic value, high COD, low pH, murky color and overpowering smell. The experimental procedure consist of a bioreactor from glass bath volume 100 Liters and then observed the wastewater decreased in the content of COD, pH increase, TSS reduction, change of color that arises everyday for 9 days cycles, using water hyacinth as biosorption media. The experimental results the decrease of COD from 2,880 mg/L to 583 mg/L, TSS value from 250 mg/L to 41 mg/L and increase in pH value from the wastewater 3.7 up to 6.4 and color dropped from 250 PtCO to 75PtCO.

Keywords: biosorption, tofu wastewater, water hyacinth

1. Introduction

The last few years, many concern reported on mass media about the river pollution that caused by industrial and non-industrial wastewater in Indonesia. This water pollution cannot be abandoned because most of the industrial wastewater flow directly to the river without prior treatment. Same situation happened with some non-domestics wastewater that arises from other industries, agriculture, livestock, etc (Mukhsin, 2002). Negative effects that could arises from industrial wastewater are:

- Bad odour/smell
- Infiltration of wastewater into soil and polluted the surface water.
- Skin (ita-ita) disease
- Waterborne disease such as diarrhoea, if the water source uses for cooking and bathing.

Soya – food processing industry such as tofu industry, has range from small to medium scale production. Soya and its food product are an easy and cheap nutritious source, with high protein content. But most of the tofu processing industries dumped their wastewater directly to the waterbody without prior treatment and its become environmental pollution. Most of the tofu wastewater came from the separation process of tofu flocs, which form white murky concentrat that called air dadih. The concentrate contain high
protein and its easily to degrade. This type of wastewater usually dumped to waterbody without prior treatment and produce bad smell that can polluted the waterbody. Other wastewater source come from soya washing before processing, soya soaking water, soya boiling, tools processing washing, and floor cleaning. Amout of wastewater produced by tofu processing industry range from 15 to 20 L/kg soya feedstock, while the pollutant contained TSS 30kg/kg soya feedstock, BOD 65g/kg soya feedstock and COD 130 g/kg soya feedstock (EMDI and BAPEDAL, 1994).

Tofu wastewater has a white yellowing murky color, bubbleing and smell like boiled soya. If the degradation process occurred, it roused very bad odour to environment. Table 1. Present the local Banda Aceh Tofu wastewater.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Jumlah</th>
<th>Satuan</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>12 000</td>
<td>mg/l</td>
</tr>
<tr>
<td>TSS</td>
<td>1000</td>
<td>mg/l</td>
</tr>
<tr>
<td>PH</td>
<td>4.5</td>
<td>-</td>
</tr>
<tr>
<td>Suhu</td>
<td>40</td>
<td>°C</td>
</tr>
<tr>
<td>Bau</td>
<td>Bau revusan kedelai</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Industrial Board of Banda Aceh, 1999.

Some of wastewater treatment technics to remove pollutant has been tried and developed but has not give optimal result yet (Fadholi, 2010). Thus, to overcome the pollution problem its needed an effective, efficient and renewable method. One of the wastewater treatment methods applied is biosorption using water hyacinth (*Eichornia crassipes*) to remove COD content specially in tofu wastewater. Water hyacinth working by decomposing cell into wastewater plant cycle and adding amount of dissolved oxygen into wastewater in order to force microorganism to decompose the pollutants.

Little and Lawrence ((1968) in Moenandir (1990), Haider (1991), Sukman and yakup (1991), mention that water hyacinth plants raise a lot of pollution problems in river and lake, but it also has many advantages, e.i:

a. Its able to filter biologically the chemical or industrial wastewater content.
b. Its useful for land covering and composting for agriculture and farmland.
c. Its function as gas sources, such as ammonium sulphate, hydrogen, nitrogen, methane which only could be get from fermentation process.
d. Its useful as raw material for paper and board industries.
e. Its useful as raw material for carbon active.

Based on the background mention above, the aim of this research is to be able to acknowledge the biosorption ability of water hyacinth (*Eichornia crassipes*) in removing the Tofu wastewater content (in the form of COD, TSS, pH and color) from local industry (CV Tahu Solo) Banda Aceh.
2. Material and Method

Materials used in the research:

a. Tofu wastewater from local Tofu Industry Solo Banda Aceh
b. Water hyacinth as biosorption media, collected from freshwater ponds nearby campus Serambi Mekkah University.

c. Aquadest as solvent.

Research Procedure:

a. Pre-study on characteristics of tofu wastewater, COD; TSS; pH; color before given any biosorption treatment.

b. Prepared bioreactor from acrylics and the tofu wastewater was filled into 100 L bioreactor, and then water hyacinth were planted for covering the water surface 50% of the area.

c. Wastewater content was analyzed everyday for 9 days cycle, taken 500 ml sample wastewater routinely to examine the COD, TSS, pH and color changes after treatment process. The wastewater was analyzed using APHA method (2005).

Figure 2.1 Biosorption process of water hyacinth in bioreactor
The schematics process of the experiment explained in the Figure 2.2 below:

![Schematics of the experimental procedure](image)

Figure 22. Schematics of the experimental procedure

3. Results and Discussion

3.1 COD Removal

Water hyacinth could absorb dissolved nutrients in wastewater through its root. The absorption conducted by roots because there are many microorganism simbiotics lived in roots; such as Zoogela ramigera, Pseudomonas, Alcaligens, Bacillus, Nitrosomonas, Nitrobacter and Bacterium (Widowati, 2000). Based on prior research, most of Chemical Oxygen Demand (COD) removal has range from 60 to 99%. This study shown a 79.75% removal of COD from tofu wastewater used.

Biosorption treatment process using water hyacinth could reduce COD from 2880 mg/L to 583 mg/L, while without treatment COD removal only 21% or reduction process from 2880 mg/L to 2275 mg/L. The COD removal could happened because organics matter in tofu wastewater has been absorbed by water hyacinth through photosynthesis process and metabolism process that uses nutrien from tofu as their feedstock. The percentage of COD removal in tofu wastewater shown in Figure 3.1.
The tofu wastewater content after biofiltration treatment using water hyacinth has been reduced into 79.75%. This means that tofu wastewater prior to treatment was under Standard Quality of COD referred to as 100 mg/L for Type I and 300 mg/L for Type II. While after biofiltration treatment process, the wastewater nearly reaches the Standard Quality Type II, after 9 days biofiltration using water hyacinth.

### 3.2 TSS Removal

Percentage of TSS removal in tofu wastewater for 9 days treatment cycles, presented in Figure 3.2. Percentage of TSS removal in tofu wastewater represents the decreasing concentration of TSS within 8 days reaching 41 mg/L (83.6%) using water hyacinth, while the treatment without water hyacinth shows a decrease reaching 94 mg/L or 62.4% removal. This data proved that TSS concentration in tofu wastewater after biofiltration treatment with or without water hyacinth has met standard quality referred by Environmental Department year 1995. (No. Kep – 51/MENLH/10/1995).
3.3 pH Removal

Percentage of pH changes during the biosorption process by water hyacinth was shown in Figure 3.3 below. The biosorption process could increase the pH from 3.4 to 6.4, which is more suitable for living organisms to use it in metabolism process.

![Figure 3.3 Percentage of pH changes in tofu wastewater.](Image)

From Figure 3.3, we could see the pH in tofu wastewater were changed close to neutral. The percentage of removal a little higher in water hyacinth treatment than without treatment. The pH changes because most of plants outlet CO2 as product of respiration, and its reuse by water hyacinth for photosynthesis process. Widowati (2000), explained that CO2 reduction because of water hyacinth photosynthesis process will drive the equilibrium reaction to produce product, and this process reduced H+ ion (acid) in wastewater into neutral condition.

3.4 Color Removal

Normal water didn’t have color, looks clear, and no odour. If the water color changed, it is an indication that the water has been polluted. Industrial wastewater that contain high organics and anorganics usually dissolved in water and made the water color changed. Water color differentiate from (1) true color, which come from dissolved matter; and (2) apparent color, which come from suspended mater in water such as colloids. The percentage of color removal in tofu wastewater after 9 days biosorption treatment presented in Figure 3.4 below.

![Figure 3.4 Percentage of color removal from tofu wastewater](Image)
Figure 3.4 showed the percentage of color removal using biofiltration process of water hyacinth was 72.8% (decreased from 250 PtCO to 68 PtCO), while natural process without water hyacinth showed the percentage of removal 33.6% (decreased from 250 PtCO to 166 PtCO). This happened because most of the organics content which form the murky white yellowish color has been removed by metabolism process of water hyacinth through its roots and its evapotraspiration process. Beside color, tofu wastewater also form a bad odour for aesthetics after few days degradation process. The odour aroused from tofu wastewater also could be reduced by biosorption process using water hyacinth or other water plants.

4. Conclusions
Based on the research conducted, we concluded that:

1. The use of water hyacinth as biosorption media in local Banda Aceh tofu wastewater was able to remove the COD concentration from 2880 mg/L to 583 mg/L; TSS concentration from 250 mg/L to 94 mg/L; pH improvement from 3.4 to 6.4 nearly neutral; and color change from 250 PtCO to 75 PtCO. The percentage of removal was higher in water hyacinth treatment than without hyacinth treatment.
2. Removal efficiency for water hyacinth treatment for each parameter, respectively: COD 72.63%; TSS 19.26%; pH raised to 68.87% and Color changes 50.35%.

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EMDI dan BAPEDAL, 1994, Limbah Cair Berbagai Industri di Indonesia: Sumber, Pengendalian dan Baku Mutu, Project of Ministry of Environment, Republic of Indonesia and Dalhousie University, Canada.
FISH WASTE CONVERSION AS ADSORBENT ON EXTRACTION OF CANANGA ODORATA (YLANG-YLANG FLOWERS) USING ENFLEURAGE METHOD

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ABSTRACT

Fish oil is one of nutrients that contain fatty acids, it contains approximately 25% saturated fatty acids and 75% unsaturated fatty acids. In enfleurage method, oil or fat acts as an adsorbent media that will absorb smell of ylang-ylang flowers. The aims of research is to study the production process in essential oil in particular ylang-ylang oil using enfleurage method. The production process of fatty fish is prepared by collecting waste of tuna and other small fish from the fish markets in the city of Banda Aceh. The fish waste into fish oil produced through the selection phase, washing, grinding, steaming and drying step using the oven for 2 hours at a temperature of 105 °C to remove the moisture content up to 18.3%. Drying the fish waste is then performed pressed to obtain oil. Fish oil yield obtained was 50.4%. The process of making fish oil from tuna waste is expected to reduce the environmental pollution of coastal communities who feel disturbed by its odor. The best yield obtained in extraction time of 60 minutes with a yield of 0.81% on the stirring speed of 200 rpm. Refractive index of best ylang-ylang oil is obtained from 1.4547 to 1.5001. Viscosity and density of Ylang-ylang oil is 5.1 cp and 0.95 g /cm³, respectively. From chromatogram data using gas chromatography mass spectrometry (GCMS), the main component of ylang-ylang oil obtained is β-carophyllen that is equal to 35.98%. While the other component is α-humulene 11,38%, germacrene-D 8,6%, and linalool 5,96%.

Keywords: Fish waste, enfleurage, adsorbent, ylang-ylang flowers, essential oil

1. Introduction

Kenanga known as the icon and flora identity of Aceh region which has the Latin name “Cananga odorata”. In Aceh, ylang flowers called "Bungong Seulanga" Ylang flowers are very fragrant, is included in one of the flowers required in the pesuisuek event in Aceh. Ariana (2013) wrote that ylang (Cananga odorata) is the name for a type of flower and tree that produced it. There are two kind of ylang, namely macrophylla, known as ordinary ylang, and genuina, known as the Philippines or ylang-ylang. In addition, there is also known shrub ylang (Cananga odorata fruticosa), which is widely planted as an ornament on the yard.

Nurlaila et al (2008) states that flower is divided into two groups. The first class is a floral with temporary fragrance substances, while the second class is a floral that produces continuously fragrant substances induced processes in the cell life. If the flower is incorporated into the hot oil or fatty ester then the process of living in these cells will be stopped anyway. Conversely when the flowers placed on a fat (without heating), the cells are still alive for some time and fragrant substances emitted into the air will be absorbed by fat.
The fat which has absorbed the fragrance from ylang ylang flower will produce ylang oil through several stages of the process. Ylang oil can be extracted with enfleurage process. Enfleurage is the process of making essential oils to use fat as an adsorbent which has been saturated with the scent of flowers. Use enfleurage techniques for the production of flower oil has been reported to increase the oil yield up to 4-5 times larger than the solvent extraction or refining method.

The success of the enfleurage process depends on the fat quality used and the skill in preparing the fat. Experience of several years reported that fat cattle and lard (1: 2) is very good for enfleurage process. Aceh is a madani city and the lard forbidden its use in aceh community life that the majority of people is Muslim. So it is necessary to find an alternative to replace the lard. This research focuses on the utilization of fish waste derived from some markets and shelter fish that were in Banda Aceh, as a source of fat which is used as adsorbent in ylang oil extraction process. With the utilization of fish waste is expected to reduce the environmental pollution issues directly in the form of bad odor if not immediately removed. This research is expected to contribute in the handling of fish waste in the market centers are located in Banda Aceh.

2. Research Method
2.1 Tools and materials

The tools used in the study are hot plate, steamer, oven, container, grinders, hydraulic presses machine, perforated basket, separating funnel, Ostwald viscometer, pycnometer, digital scales, and several other glassware. The materials on the study include: fish wastes, distilled water, activated charcoal, ethanol 70%, and citric acid.

2.2 Fish Waste Preparation

Fish waste preparation process includes several stages of the process, namely:
   a. Collection
   b. Selection
   c. Washing
   d. Milling
   e. Steaming

2.3 Fish Oil Production

Fish oil is obtained by separating the oil and dry cake through the pressing process. Pressing technique is one of the extraction process to get the oil or grease in the materials of high oil content (30-70%).

2.4 Enfleurage Method

A total of 500 grams of fatty fish is mixed with 500 grams of fresh ylang flowers on a glass plate (chassis) at room temperature. Curing process conducted for 7 days with replacement of fresh flowers once every 24 hours. The mixture is separated.
2.5 Alcohol Solvent Extraction with 70%
Ylang oil which is mixed with fat and then extracted with 70% alcohol with a stirrer speed of 100, 200, and 300 rpm at a temperature of 60° C with a time variation of 30, 60, 90 and 120 minutes.

2.6 Kenanga Oil Purification
Oil purification is done by distillation at a temperature of 78 °C, is expected to separate the alcohol will evaporate and as a distillate.

2.7 Yield analysis, Refractive Index and Components analysis
The yield of oil from distillation process results will be analyzed viscosity, density, refractive index and ylang oil composition. The instruments used were Ostwald viscometer, pycnometer, refractometer and Gas Chromatography Mass Spectrometry (GCMS).

3. Result And Discussions
3.1 Fish Oil Production as Adsorbent in Ylang flower Extraction
Fish oil production from fish waste, especially tuna waste that much produced from marine region of Aceh through several stages of the process, namely the collection, sorting, washing, milling and steaming and extraction from steaming results in pressing techniques. Fish oil is obtained by separating the oil and dry cake through the pressing process. Pressing technique is one of the extraction process to get the oil or grease in the materials of high oil content (30-70%). The resulting fish oil yield is 50.4%. Pressing is done by using a hydraulic pressing machine with a pressure of 2000 pounds / inch² (140.6 kg / cm² = 136 atm).

The amount of oil or fat can be extracted depends on the duration of pressing, pressure used, as well as the oil content in the original material. By organoleptic, fish oil produced brownish yellow as shown in Figure 1.

Figure 1. Fish oil and water

The resulting filtrate from the pressing process is a mixture of fish oil and water. So we need a separation process using a funnel. Fish oil that has separated heating is then
performed for 1 hour to evaporate the residual water content is still bound with fish oil. Density and viscosity of fish oil is 0.924 g/ml (924 kg/L) and 60.1 centipoise.

### 3.2 Ylang Oil Production

Ylang oil production process using enfleurage technique. Enfleurage method is done with the ripening process ylang flowers fresh in the fat (fish oil). The flower oil in saturated fats resulting from the enfleurage called pomade (Lopez, 1999). The flower oil is filtered using filter paper and the extraction process is carried out by using ethanol 70% at a time and stirring speed variation of 60, 90, and 120 minutes as well as 100, 200 and 300 rpm. Time and stirring speed is one of the factors that affect the extraction process in this study. The resulting extraction results will continue the process of distillation to purify the ylang oil.

### Oil yield Kenanga

In the extraction process of the length of extraction time while yield of the resulting higher, this is due to the increasing number of components in contact with each other.

![Figure 2](image)

Figure 2. Charts the influence of extraction time on the yield of products of distillation

As seen in Figure 3.2, the increase in yield occurs at the extraction time of 60 minutes with a yield of 0.81% at stirring speed of 200 rpm, because the mixing speed of 200 rpm has occurred contacting all components with the fat, while the stirring speed of 100 rpm and 300 rpm highest yield obtained in the extraction time of 90 minutes and 120 minutes ie. 0.80% and 0.79%, the yield is lower than 200 rpm for components that into contact with each other are already experiencing saturation with the increasing speed of stirring.

The yield of oil from distillation process results will be analyzed viscosity, density, refractive index and ylang oil composition. Ylang oil sample of distilled is the best extraction sample on operating conditions within 60 minutes with a stirring speed of 100, 200 and 300 rpm.

### Refractive Index

The refractive index ylang oil obtained ranging from 1.4547 to 1.5001. Refractive index obtained in accordance with the criteria of physical properties essential oil on ylang...
flowers according Ketaren (1985) in the amount of 1.4999 to 1.5001. High and low refractive index to determine the value of the material has been mixed with other materials, for example such as water. The characteristic of water is easy to refract incoming light, but if the value of the refractive index increasingly under standard that means the sitral levels contained in lylang oil is slight. Besides chemical changes occur like resinification as a result of the polymerization reaction, hydrogenation or isomerization into an ingredient, can cause changes in the value of the refractive index (Fitriana, 2009).

**Viscosity and Density**

The viscosity will be determined by using Ostwald viscometer. Ylang oil viscosity obtained is equal to 2.4 to 5.1 centipoise and density of ylang oil are analyzed by pycnometer is equal to from 0.89 to 0.95 g/cm$^3$.

**Data Results The chromatograms**

Ylang oil distilled is yellow with a distinctive aroma of fresh ylang flowers. Ylang oil composition produced was analyzed by Gas Chromatography Mass Spectrometry(GCMS). From the ylang oil chromatogram data obtained four peaks of compounds with the greatest abundance of compounds represented by the fifth summit. Spectrogram data obtained fragmentation patterns of each compound. Based on the fragmentation pattern and typical basic peaks so the structure of each compound can be determined.

![Chromatogram ylang oil on the stirring speed of extraction of 200 rpm for 60 minutes](image)

Based on the chromatogram in Figure 3.3 can be seen ylang oil sample components as shown in Table 3.1. The main component of ylang oil obtained is β-kariofilen that is equal to 35.98%. The largest content ylang flower essential oil consisting of linalool, geraniol and eugenol, with a distinctive aroma unwelcome stinging insects (Ketaren 1985).
Table 1. Tabulations of ylang oil composition chromatogram results

<table>
<thead>
<tr>
<th>Peak</th>
<th>Waktu Retensi</th>
<th>Komponen</th>
<th>%</th>
</tr>
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<tr>
<td>2</td>
<td>10,239</td>
<td>Linalool</td>
<td>5.96</td>
</tr>
<tr>
<td>5</td>
<td>21.26</td>
<td>β-Kariofilen</td>
<td>35.98</td>
</tr>
<tr>
<td>6</td>
<td>22.33</td>
<td>α-Humulene</td>
<td>11.38</td>
</tr>
<tr>
<td>8</td>
<td>23.19</td>
<td>Gemacrene-D</td>
<td>5.96</td>
</tr>
</tbody>
</table>

Chemical constituents of essential oil from ylang flower is the class of aldehydes, ketones acetone, furfural, benzaldehyde, alkaline components (metilantranilat), class of terpenes (d-terpenes), phenols and phenol ether (phenol, eugenol, isoeugenol, methyl saliclylate, benzilsalisilat), alcohols and esters (metilbenzoat, l-linalool, terpineol, benzyl alcohol, Feni-ethyl alcohol, geraniol, fernesol), and sesquisterpen (d-caryophyllen, sesquisterpen-aliphatic, l sesquisterpen, dsesquisterpen) (Ketaren, 1985).

4. Conclusion

The conclusions that can be drawn from this study is the best yield of distillate products obtained at the time of extraction 60 minutes with a yield of 0.81% at stirring speed of 200 rpm. The refractive index of the best ylang oil obtained is 1.4547 to 1.5001. Ylang oil viscosity and density of 5.1 cp and 0.95 g/cm³, respectively. The main component of ylang oil obtained is β-kariofilen that is equal to 35.98%.

Thank-You

The author would like to thank the Ministry of Education and Culture of the Republic of Indonesia for the assistance funds Competitive Research Grant and the Serambi Mekkah University that facilitate the study.

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POTENTIAL OF KAOLIN JABOI IN SABANG AS RAW MATERIAL OF ALUM IN WATER PURIFICATION PROCESS

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ABSTRACT

In water treatment process, one of primary chemicals used is aluminum sulfate as a coagulant forming so the water becomes clean. Aluminum sulfate [Al₂(SO₄)₃] or better known as alum is one of the chemicals that are required both in industry and in water treatment company. This research purposes to study the operating conditions of the process of making aluminum sulfate liquid of kaolin and sulfuric acid to see the effect of temperature, time, ratio of sulfuric acid and kaolin, the concentration of sulfuric acid, the stirrer rotation and speed on the quality of liquid aluminum sulfate to be generated in order to obtain optimum operating variables conversion process to obtain optimal value. In this research, the process of mixing the sulfuric acid and kaolin, aluminum sulfate paste subsequently extracted with distilled water that has been heated to obtain aluminum sulfate. Fixed variable in this study are the weight and size of the kaolin particles each 25 grams and 250 μ, the condition of the extraction process at a temperature of 100 °C, the ratio of sediment and hot water 3: 1, while stirring for 1 hour at 3 times the amount of leaching and conditions bonedry drying. While changing the controlled variable is the time of surgery for 20, 50, 90 and 110 minutes, the ratio of sulfuric acid and kaolin 1: 2; 2: 2; 3: 1 and a sulfuric acid concentration of 30%; 50%; and 70%. The results obtained were the composition of kaolin Jaboi in a preliminary test using x-ray beam, results were obtained that the highest composition is SiO₂ as much as 96.9% whereas only 1.26% alumina. Judging from the influence of sulfuric acid concentration on reaction time obtained a yield of 92.13% at 50% concentration sulfuric acid at reaction time 110 minutes.

Keywords: water treatment, aluminum sulfate, alum, kaolin, kaolin Jaboi, extraction.

1. Introduction

Kaolin is a rock mass composed of clay material with a low iron content. Classified as non-metallic mineral kaolin and clay soil types (clay) primer that has a coarse-grained soils, fragile, is plastic when moist, harden when dry and harden when heated. In general, grayish white, there are also yellow, orange and reddish gray. Kaolin chemically formulated Al₂O₃.2SiO₂.2H₂O as minerals, kaolin nothing is pure, usually mixed with other oxides such as calcium oxide, magnesium oxide, sodium oxide, iron oxide and sometimes also mixed with titanium oxide (Othmer,1993).

Kaolin is a mineral whose presence is quite abundant in Indonesia, especially in Aceh province. It is mainly containing silica (45%) and alumina (38.5%). Other content is ferry oxide (0.98%), calcium oxide (0.49%), sodium oxide (0.48%), as well as other materials that are discharged by burning (13.78%). Kaolin is referred to by the public as white clay that it is a residual sludge or brittle rocks that occur as a result of hydrothermal processes.
Based on research conducted by Wicaksono (2013), in the production of aluminum sulphate using bauxite as raw materials that containing $\text{Al}_2\text{O}_3$ (alumina) 57.5%, stage of the process is done by modifying the Bayer process and Gaulini. The first stage is digestion process that operates at a temperature of 160 °C, 1 atm with the addition of 55% of NaOH solution. The second stage is the precipitation process which operates at a temperature of 70 °C, 1 atm to produce $\text{Al(OH)}_3$.

Furthermore, the addition of 66% wt sulfuric acid solution into the reactor at a temperature of 170 °C and 5 atm pressure to produce liquid aluminum sulfate. The third stage is the crystallization of molten aluminum sulfate in crystalizer belt to obtain crystals of aluminum sulphate. Utilization of kaolin as raw material for production alum was also studied by Ismayanda (2011) with the best conversion of dissolved aluminum in the reaction between kaolin and sulfuric acid was obtained by 82%, namely under conditions with a temperature of 180 °C, 90 minutes, and stirrer rotation speed of 350 rpm. The degree of acidity (pH) of aluminum sulfate products produced in this study was 3.15 to 3.2.

According to statistical data of kaolin (1995), in the province of Aceh are kaolin reserves of not less than 450 million tons. Finding the location of the backup is spreading in several areas, including Southeast Aceh district (District of Badr, long Kuta, Blang Kejeren) the number of 448 million tons, the town of Sabang (Subdistrict like work and Suka Jaya) with the amount of 2.88 million tons, Central Aceh District (District of Silih Nara) and Aceh Barat (area Krueng Seunangan). The highly using of alum in the water treatment industry, this study sought to obtain optimal results using a variety of research and explore the potential of natural resources in Indonesia, especially in province of Aceh.

2. Research Method

Kaolin is used in this study was kaolin from Sabang, yellowish white and mashed until passing 250 micron. Kaolin which is still in the form of chunks of dried kaolin which is still in the form of chunks until its water content decreases. And then put kaolin into a ball mill until the particle size kaolin passing 250 micron sieve. Poured kaolin and sulfuric acid into beaker glass with ratio of 1:2 ; 2:2 and 3:1, respectively. While simultaneously stirring using a stirrer to reach perfect mixing and the solution temperature is checked while the temperature is kept constant. Stirring speed and temperature variation used is 150 ; 200; 250 rpm and 130 ; 160 ; 190 ; 200; 210 °C, respectively. While sulfuric acid concentration used is 30; 50 ; 70% wt. The result from the reaction is a pasta and the length of reaction time that varied is 20; 50; 70 ; 90 and 110 minutes.

Pasta that has been produced is extracted with hot water to dissolve aluminum sulfate is formed. And dissolve aluminum analyzed with complexometric titration method. In the water treatment industry, alum can be used as a water purifier such as in sedimentation process because alum is dissolved in water is able to bind impurities and precipitate impurities in the water making the water becomes clear and we will see the performance of the alum that produced against sedimentation velocity of impurities.
3. Result and Discussion

3.1 Analysis of Kaolin Jaboi

Kaolin is a rock mass composed of clay material with a low iron content, and generally white or slightly whitish. Kaolin has a hydrous aluminum silicate composition (2H₂O·Al₂O₃·2SiO₂), along with accompanying minerals. Based on Province by the Ministry of Energy and Mineral Resources (2005), kaolin is a mineral whose presence is quite abundant in Indonesia, particularly in Aceh Province by the Ministry of Energy and Mineral Resources (2005). Kaolin mainly containing silica (45%) and alumina (38.5%). Other content is ferric oxide (0.98%), calcium oxide (0.49%), sodium oxide (0.48%), as well as other materials that are discharged by burning (13.78%) (Al-Zahrani and Majid, 2004). Based on analysis of the composition of kaolin originating from Sabang precisely in the Jaboi village presented in Table 1.

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>96.9</td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>1.26</td>
</tr>
<tr>
<td>Fe₂O₃</td>
<td>0.15</td>
</tr>
<tr>
<td>CaO</td>
<td>0.83</td>
</tr>
<tr>
<td>MgO</td>
<td>0.22</td>
</tr>
<tr>
<td>SO₃</td>
<td>0.13</td>
</tr>
<tr>
<td>K₂O</td>
<td>0.1</td>
</tr>
<tr>
<td>Na₂O</td>
<td>0.08</td>
</tr>
<tr>
<td>TiO₂</td>
<td>1.124</td>
</tr>
<tr>
<td>Mn₂O₃</td>
<td>0.008</td>
</tr>
</tbody>
</table>

(Resulting from Laboratorium Analysis of LCI,Lhoknga (2015))

The results obtained are the highest composition is SiO₂ as much as 96.9% whereas only 1.26% of alumina. This is consistent with the theory of reviews early that the main content of kaolin is silica. Geologically, the first forming of kaolin because the weathering process and hydro-thermal alteration in igneous rocks felspatik. Aluminum potash minerals silica and feldspar transformed into kaolin. Kaolinisasi process takes place in certain conditions, so that elements other than silica, aluminum, oxygen and hydrogen will experience exchange as shown in the following equation: 2KAlSi₃O₈ + 2H₂O → Al₂(OH)₄(SiO₅) + K₂O + 4SiO₂ (Felspar kaolinite).

Figure 1. Sampling location in Jaboi village, Sabang
The weathering process occurs at or near the soil surface, mostly occurs in igneous rocks. While the process of hydrothermal alteration occurs as hydrothermal solution flows through fractures, faults, and other permeable areas while converting limestone into sediment kaolin. According to Hendri (2010), differences in the composition of minerals and metals in the process of soil formation is influenced by water, air, sunlight, live in the soil and bodies of living things that exist around the region. Jaboi volcano crater area is one of the manifestations of geothermal energy that can be formed as a result of geothermal activity beneath the surface. Conditions sampling sites kaolin Jaboi presented in Figure 1. Jaboi is a name of the village located in the district of Sukajaya in Sabang which has an area of approximately 490.14 hectares.

3.2 Production of Kaolin Pasta

Manufacture of alum can be carried out by dissolving materials containing Al$_2$O$_3$ in nature contained in kaolin soil. Manufacture of pasta kaolin kaolin chunk begins with drying to reduce the moisture content. Chunks of dried kaolin was then performed downsizing. Heating process as much as 25 grams of kaolin with the solvent in a stirred reactor operating conditions at a temperature of 190 °C, for 20 minutes; 50 minutes; 70 minutes; 90 minutes and 110 minutes as well as kaolin and solvent ratio is 1: 2; 2: 2; and 3: 1. The solvent used is sulfuric acid (H$_2$SO$_4$) with a concentration of 30; 50 and 70% wt, respectively.

Kaolin which has been grinded by the ball mill and then mixed with sulfuric acid in various concentrations, the mixing is done with a magnetic stirrer with a variation it that proceed. Pasta aluminum sulfate resulting from the mixing process subsequently extracted with hot water aimed at dissolving aluminum sulfate formed. Extraction results obtained were then screened using a vacuum filter and then analyzed for levels of dissolved aluminium were formed. Content analysis conducted by the complexometric titration using a standard solution of ethylene diamine tetra acetic (EDTA) in each predetermined variation. The results also will be tested performance in agglomerate or speed the formation of flocs foreign material in the water produced by the Regional Water Company like PDAM, especially in the area of Banda Aceh.

3.3 Reaction Mechanism and Effect of Sulfuric Acid Concentration

Kaolin with chemical formula Al$_2$O$_3$.2SiO.2H$_2$O reacted with sulfuric acid will produce aluminum sulfate (alum) with the formation reaction as follows: 2Al(OH)$_3$ + 3H$_2$SO$_4$ + 8H$_2$O.Al$_2$(SO$_4$)$_3$.14H$_2$O the endothermic reaction conditions with the enthalpy of formation -156 kJ/mol (Donaldson, 2014). Aluminium sulphate is produced in a batch reactor equipped with a stirrer is resistant to heat and acidity of the reaction. Dealumination process involves sulfuric acid and alumina. The concentration of sulfuric acid is one of the factors that affect the rate of conversion of alumina into aluminum sulfate. Ismayanda (2011) the process of the formation of aluminum sulphate by using a concentration of 25, 45 and 65% with the best concentration of sulfuric acid for reacting kaolin is 65% with a yield of nearly 80%. While Al Azzahrani (2004) states leaching process to produce the best aluminum sulfate obtained at concentrations sufficient dilute sulfuric acid that is 40% with a conversion of 90.9%.
Sulfuric acid which acts as a reactant that convert alumina into aluminum sulfate is generally used sulfuric acid and dilute concentrations. It is also explained by Jibril (2013) which produces alum from Nigeria with mempreparasikan kaolin kaolin through the crystallization process and using sulfuric acid at low concentrations in degrading the alumina into aluminum sulfate. Yield obtained was 90% by using acid solvent to a concentration of 25%. Based on Figure 2, can be seen in 30% sulfuric acid concentration at the time 20, 50, 70, 90 and 110 minutes respectively obtained yield 78.91; 79.57; 80.16; 80.78; and 81.34. Graphs are formed obtained maximum points at a concentration of 50% and the operating time 110 minutes obtained a yield of 92.13%. Conversion of aluminum sulfate dissolved along with the increasing concentration of sulfuric acid. But decreases when the concentration of sulfuric acid increased by 70%. According Ismayanda (2011) it is influenced by the low volume of fluid that is not capable of dissolving the entire surface of kaolin powder so that the mixing disrupted due to one cavity in kaolin reacted with sulfuric acid in large numbers, but instead with another cavity, even no sulfuric acid nothing at all.

4. Conclusion

Based on the research and observations that have been made can be concluded that composition kaolin Jaboi obtained main composition of silica (SiO$_2$) as much as 96.9% wt, while the composition of alumina (Al$_2$O$_3$) by 1.26% wt. The concentration of sulfuric acid is best obtained at a concentration of 50% with a yield of 92, 13%. Maximum operating time obtained during 110 minutes with a yield range of 78-94% on each review concentration of sulfuric acid.

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DESIGN OF MULTIMEDIA CONTENT FOR MEDIA INFORMATION SECURITY
PASSES CROSS-BASED 2D ANIMATION MULTIMEDIA

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ABSTRACT

Advances in technology over the years to support the increasingly sophisticated animation work and grow very rapidly, ie 2D, 3D, and 4D, has become part of the entertainment that is enjoyed by the community. In fact, the cartoons have now become a promising business prospects. The design of public service announcements "Traffic Light" based 2D animation as a medium of socialization Dishubkominfo Banda Aceh aims to make people aware of the importance of obeying traffic signs on the highway. The process of making a good animation there are three stages: the Pre-Production, Production and Post Production. Pre-production stage is the stage of designing the framework of a concept that is appointed and designed the cast of characters. Production stage is the process of turn. And post-production is to edit the final touches. Software used to create 2D animation ads are Macromedia Flash MX-2004. Results of this design have been able to create a story and imagination to visualize the quality ads that consists of video and audio to produce a compelling ad concept.

Keywords: 2D animation, public service announcements, Traffic Light

1. Introduction

Nowadays, the development of science and technology has been very rapid, especially in terms of multimedia information technology itself. The presence of various types of multimedia information technology has unwittingly facilitate manufacturers in conveying information means especially with the use of multimedia information technology in particular. As the growth of population, the increase in vehicles on the highway any significant cuku thus increasingly congested highways are so potentially many traffic violations that occur. One factor that affects so many such violations due to the lack of public awareness and knowledge about the dangers of traffic violations. One example is the offense committed on a traffic light, causing the accident that caused loss of property and life. Therefore, in this study the researchers want to design public service announcements about the dangers of traffic violations in Traffic Light which will be made through Macromedia Flash MX-2004-based 2D animation as a medium of socialization for users of the highway. Expected from the results of this research community has knowledge about the dangers of breaking the traffic lights so as to increase public awareness to obey the traffic, especially at a crossroads. Animation boundary problem in the design of public service announcements related to "Traffic Light" as the media socialization is berlalulintas security analysis and design of multimedia content on the safety of traffic on the traffic light multimedia-based 2D animation. Based on the background of the exposure, the formulation of the problem of this research is the analysis and design of multimedia content on the safety of traffic on the traffic light multimedia-based 2D animation. Based
on the formulation of the problem, the purpose of the research is the design of multimedia content on the safety of traffic on the traffic light multimedia-based 2D animation. The research is expected to produce an animated movie about traffic safety so as to improve the knowledge, understanding and awareness of the importance of mentatati regulations in traffic on the highway, especially at the traffic light so as to minimize the accidents that occur due to traffic violations.

Multimedia is a media that combine various types of other media, such as the incorporation of visual and auditory [12]. Multimedia is the use of computers to create and combine text, graphics, audio, moving images (videos and animations) by combining links and tools that allow users to navigate, interact, creating, and communicating [1]. Society is a group of people who live in a particular area within a relatively long time, have norms that regulate life towards the aspired goal together, and where the members do regeneration [11]. Public Service Announcements (PSAs) are short of information delivery is typically used by charities, non-profit, and community organizations. ILM used on radio and televisi to educate the public, promote the program or service and provide a source for change in behavior or a community[10].

2. Material and Methode

Tools and materials research used in this study are the Hardware (Hardware) and Software (Software). The hardware used in the ad creation process based 2D animation using Macromedia Flash MX-2004 include Intel Core i3 CPU, Memory 2 GB, Hard Disk 330 GB HDD, A4 size paper HVS necessary. The software used for the ad creation process based 2D animation using Macromedia Flash MX-2004 include Windows 7 Ultimate operating system, the operating system used to create 2D animation based advertising. Microsoft Word 2007, for typing papers thesis Macromedia Flash MX 2004, Adobe Audition 1.0, Adobe Photoshop CS4, Adobe Premiere.

This study begins by identifying the problems of the many violations of traffic rules by road users, especially related to the Traffic Light. From the results of this identification, the authors propose a solution in the form of an increase in berlalulintas safety information for road users in the form of transmission of knowledge to the public about the dangers of breaking the traffic lights by using 2D animation multimedia products. Chronology of more detailed research is described in the flowchart below:

![Figure 3.1 Research Methods](image-url)
3. Result and Discussion

Results from this study is a 2D-based multimedia products for public service announcements about traffic safety. In this product displayed character, the conditions and the atmosphere on the highway. In this study also show the condition of the accident that occurred due to negligence of road users and the impact because of it. The study is very useful for residents nagar road users always careful on the road, especially while driving. This research can be made even better by using 3-D animation that is more attractive and more aktratif.

4. Conclusion

This research has produced a multimedia product on traffic safety. This study is expected to add information for the public to always keep and obey traffic rules.

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MADCOMS. 2009. Panduan Lengkap Editing Video dengan Adobe Premiere PRO CS4 Enrich the skills you need. Yogyakarta: ANDI.
EXPECTATION, OPTIMISM, RESILIENCE, AND SATISFACTION OF EMPLOYEES: STUDY IN PT. BANK BRI (PERSERO) TBK BRANCH BANDA ACEH

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ABSTRACT

This study aims are to investigate the influence of expectation, optimism, resilience and job satisfaction of employees at PT. Bank BRI (Persero) Tbk. branch Banda Aceh. The research was conducted in the city of Banda Aceh, with number of samples 106 respondents, who were used as the samples. The method used was census respondents, which made the entire population of employees of PT. Bank BRI (Persero) Tbk. branch Banda Aceh as respondents. The data analyzed in this study was distribution of primary data questionnaire. The data was then processed through multiple linear regression analysis with SPSS. The objects in this study were expectation, optimism, and resilience as independent variables, while dependent variable was job satisfaction. The result of this study indicated that simultaneously variables expectation, optimism, and resilience significantly influence job satisfaction. Partially, only variables expectation and resilience significantly influence job satisfaction.

Keywords: Expectation, Optimism, Resilience, and Job Satisfaction

1. Introduction

Feeling of satisfaction and dissatisfaction for a person is a mood experienced by someone who is not in line with expectations. Mood experienced by someone in work should not be overlooked by the owner of organization (Luthans, Youssef, & Avolio, 2007). The achievement of organizational goals is generally an employee commitment, in which they promise to themselves to work in accordance to what is desired by the organization. Commitment is built together between employees and owner of organization can work well if both parties are satisfied. There are companies who are very concerned that employees must be satisfied to work in the organization, there are also companies that do not care about whether or not someone who works in the organization feels satisfied (Avey, Luthans, Smith, & Palmer, 2010).

There are several factors that can affect a person's sense of satisfaction working in an organization, including expectation that corresponds to reality, but it is a feeling of optimism believed by someone that transforms into reality, in addition there is a feeling of resilience that continues to be owned by a person in the work (Vohra and Goel, 2009). Strauss et al. (2009) found that there is a positive relation between expectation and task adjustment of employee. Besides, Cetin (2011) found that expectation, optimism, and resilience have positive influence on job satisfaction.

Given that every individual in the company comes from various backgrounds, it is important for companies to look at what the needs and expectations of employees, what
talents and skills possessed and how are plans of the employees in the future (Luthans, 2007).

2. **Material and Method**

This study took the data at Bank Rakyat Indonesia (BRI) (Persero) Branch Banda Aceh. Primary data was obtained through questionnaires distributed to employees of BRI with a total of 106 people, using the method of census. Questionnaires distributed in two parts that is Characteristic of respondents and perception of variables. There are four questions for variable expectation, four questions for variable optimism, seven questions for variable resilience, and five questions for job satisfaction variable. Each question in this second part used Likert scale with a scale of 1 to 5, from strongly disagree to strongly agree (Sugiyono, 2007; Suprianto, 2009). Respondents select one of the answers provided in accordance with their perception.

The data was analyzed using multiple regression with SPSS ver. 20 with formula (Ghozali, 2005) as follow:

\[ Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \]

Description:
\( Y \) = Job Satisfaction; \( X_1 \) = Expectation; \( X_2 \) = Optimism; \( X_3 \) = Resilience; \( \beta_1 \ldots \beta_3 \) = Regression Coefficients \( X_1 \ldots X_3; e \) = Error Term

![Figure 1. Research Framework](image)

Figure 1. Research Framework

The obtained data from field was tested with some tests such as reliability and validity. Moreover, it was also tested using classical assumption such as normality test, multicolinearity.

3. **Result and Discussions**

Table 1 is the result of correlation analysis and determination. The correlation coefficient (R) of 0.505, this means that the correlation between independent and dependent variables is 50.5%. So there is a close relationship between (X1), (X2), (X3), and (Y).
Table 1. The Results of Correlation Analysis and Determination Variables

<table>
<thead>
<tr>
<th>R</th>
<th>R Square</th>
<th>Adjusted R²</th>
<th>Std. Error of the estimate</th>
<th>Durbin Watson</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.505*</td>
<td>0.255</td>
<td>0.234</td>
<td>0.422</td>
<td>1.962</td>
<td>Close Relation</td>
</tr>
</tbody>
</table>

Source: Primary data, 2014.

Table 1 also shows that coefficient determination (R²) is 0.255, this means that 25.5% of employee’s job satisfaction (Y) at Bank BRI branch Banda Aceh was influenced by expectation (X1), optimism (X2), and resilience (X3) variables, while the rest of 74.5% was influenced by other factors outside of the three variables as described above.

Table 2 is the result of multiple regression analysis showing the influence of independent variables on dependent variable. The analysis was performed individually by using t-test.

Table 2. The Results of t-Test Effect of Variables X1, X2, and X3 on Y

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Standard Error</th>
<th>t-test</th>
<th>t-table</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constanta</td>
<td>1.599</td>
<td>0.442</td>
<td>3.126</td>
<td>1.9826</td>
<td>0.002</td>
</tr>
<tr>
<td>Expectation</td>
<td>0.244</td>
<td>0.111</td>
<td>2.208</td>
<td>1.9826</td>
<td>0.029</td>
</tr>
<tr>
<td>Optimism</td>
<td>0.050</td>
<td>0.117</td>
<td>0.425</td>
<td>1.9826</td>
<td>0.672</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.340</td>
<td>0.105</td>
<td>3.250</td>
<td>1.9826</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Source: Primary Data, 2014.

From the results of statistical analysis (Table 2) with SPSS, the multiple linear regression equation is as follow:

\[ Y = 0.244 \, X_1 + 0.050 \, X_2 + 0.340 \, X_3 + e \]

From the multiple regression equation above, it can be explained that: regression coefficient for variable expectation (X1) is 0.244, this means that any change in one unit of variable expectation can influence an increase in employee satisfaction at Bank BRI branch Banda Aceh by 24.4%, with assumption that variables optimism (X2) and resilience (X3) are constant. Furthermore, regression coefficient of optimism (X2) is 0.050, this could mean that any change in one unit of variable optimism may influence an increase in employee satisfaction at Bank BRI branch Banda Aceh by 05.0% with assumption that expectation (X1), and resilience (X3) variables are considered constant. In addition, regression coefficient of resilience variable (X3) is 0.340 means that any change in one unit of resilience variable can affect the increase in employee satisfaction at Bank BRI branch Banda Aceh by 34.0% with assumption that expectation (X1) and optimism (X2) variables are constant.
The result of t-test on expectation variable (X1) showed t-count of 2.208, while the score of t-table is 1.9826. This result showed that t count > t table with a significance level of 0.029. Thus the result of statistical calculation showed that in partial variable (X1) significantly influences employee satisfaction at Bank BRI branch Banda Aceh.

The result of t-test on optimism variables (X2) showed t-count of 0.425, while the score of t-table is 1.9826. This result showed that t count < t table with a significance level of 0.672. Thus the result of statistical calculation showed that in partial optimism did not significantly affect the job satisfaction of employees at Bank BRI branch Banda Aceh.

The result of t-test on resilience variable (X3) showed t-count of 3.250, while the score of t-table is 1.9826. This result showed that t count > t table with a significance level of 0.002. Thus the result of statistical calculation showed that in partial resilience significantly influences employee satisfaction at Bank BRI branch Banda Aceh.

From the analysis, it is also found that variable resilience has a greater effect on job satisfaction than other variables, namely by 34.0%. This shows that resilience is very much cared for by the majority of employees at Bank BRI branch Banda Aceh. Meanwhile, expectation and optimism become footstools for their satisfaction in carrying out their daily work.

Job satisfaction can be increased or not, depending on whether the remuneration is in accordance with the expectations, needs and desires of employees. If the better performance can improve the reward for employees fair and balanced, then the job satisfaction will increase. In another case, an employee satisfaction is a feedback that affects self-image and motivation to improve performance.

Table 3 showed the results of simultaneous analysis using F test. The result showed F-count of 11.663, while F table at significant level of α = 5%, is 2.696. This shows that F count > F table, with a significance level of 0.000. This suggests that expectation variable (x1), optimism (x2), and resilience (x3), simultaneously and significantly influence the improvement of employee satisfaction at Bank BRI branch Banda Aceh. In other words, all respondents who worked at Bank BRI branch Banda Aceh stated that expectation, optimism, and resilience influence employee job satisfaction at Bank BRI branch Banda Aceh.

Tabel 3. Analysis of Variance (ANOVA)

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Squares</th>
<th>F-count</th>
<th>F-table</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>6.226</td>
<td>3</td>
<td>2.075</td>
<td>11.663</td>
<td>2.696</td>
<td>0.000</td>
</tr>
<tr>
<td>Residue</td>
<td>18.151</td>
<td>102</td>
<td>0.178</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24.377</td>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Primary Data, 2014

4. Conclusion

Variable expectations (X1), variable resilience (X3) significantly influence employee satisfaction Bank BRI branch Banda Aceh, while optimism variables (X2) not significantly influence to job satisfaction variable (Y). Furthermore, based on the results of the F test can be concluded that the variables of hope, optimism, and resilience variables
simultaneously affect the job satisfaction of employees of Bank BRI branch of Banda Aceh. Variable resilience is greatest effect on employee job satisfaction variables, compared with hope and optimism variables.

Variable expectation (X1) and variable resilience (X3) significantly influence employee satisfaction at Bank BRI branch Banda Aceh, while optimism variable (X2) do not significantly influence job satisfaction variable (Y). Furthermore, based on the results of the F test, it can be concluded that variables expectation, optimism, and resilience simultaneously influence job satisfaction of employees at Bank BRI branch Banda Aceh. Variable resilience has greatest effect on employee job satisfaction variable, compared with expectation and optimism variables.

References


INFLUENCE OF PROFITABILITY AND FINANCIAL LEVERAGE ON CASH DIVIDEND AND ITS EFFECT ON STOCK PRICE: A STUDY ON CONSUMER GOODS COMPANIES LISTED AT THE INDONESIA STOCK EXCHANGE

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ABSTRACT

The objective of this study is to examine the influence of profitability, financial leverage on cash dividend and its effect on stock price. The population of this study are consumer goods companies. This study uses census method and there are 48 observation (companies-years) for six years since 2007 until 2012 (pooled data). To test the hypothesis, this study uses path analysis or standardized regression. Results show that (1) profitability and financial leverage, simultaneously, have moderate influence on cash dividend, (2) profitability has positive and moderate influence on cash dividend, (3) financial leverage has negative and moderate influence on cash dividend, and (4) cash dividend has negative and very weak influence on stock price.

Keywords: profitability, financial leverage, cash dividend, and stock price

1. Introduction

Indonesia capital market has high growth and important role in mobilizing fund from investors to be invested in capital market. One alternative of investment in Indonesia capital market is investment in stock. Investment in stock has high risk and relative high return (Sunarko and Kartika, 2003). Thus, investment in stock market should consider two things, expected return and possible received risk. Regarding, investors must have some significant information, such as information about company performance relating to dynamic stock price change that enable them making decision on more appropriate chosen company. Commonly, information of company performance is reflected on financial statements (Sunarko and Kartika, 2003).

Consumer goods companies is part of manufacturing sectors having significant role in Indonesia capital market known as Indonesia Stock Exchange. Consumer goods companies is also sustainable industry because commonly consumer goods is primer need for people. For period January-June 2009, some shares from consumer goods industry listed at Indonesia Stock Exchange experienced price decreasing, but some other shares show price increasing. This phenomenon is interested in us to be studied about factors influencing stock prices.

One of those factors affecting stock prices is cash dividend. It is known widely that investors invested their funds in purpose gaining return, either dividend or capital gain (return from difference between selling price and buying price of a stock). Some investors have attitude “dividend oriented” because payment of cash dividend can reduce uncertainty
(risk) for investors in comparison with capital gain. Regarding, if a company distributes cash dividend, investor will react positively and this will increase stock price, and otherwise. On other hand, if investors are “capital gain oriented”, of course distributed dividend will not increase stock prices. In fact, investors will react negatively if cash dividend paid when a company is having high growth. As a consequence, it will reduce stock prices.

Cash dividend can be affected by profitability. A company will pay dividend for signaling about the profitability (Sulistiyowati, Anggraini, and Utaminingtyas, 2010). Thus, the higher profitability the higher cash dividend paid to investors. This statement is in accordance with Krisyanto finding (2009) showing that profitability measured by ROA has positive influence on cash dividend.

Besides, cash dividend can also be affected by financial leverage. According to Brigham and Ehrhardt (2002) in Suherli and Harahap (2004), the bigger leverage of a company, the lower dividend paid by a company to reduce dependency on external funding. The higher used debt proportion to a company’s capital structure, the higher obligation to creditor that can reduce proportion of distributed dividend, and otherwise. Thus, it can be stated that financial leverage can affect stock prices.

Regarding the explanation above, it can motivates us conducting research about influence of profitability and financial leverage on cash dividend and its effect on stock prices of consumer goods companies listed at Indonesia Stock Exchange. Next, this paper will be divided into several sections: theoretical framework, research method, result and discussion, as well as conclusion, limitation, and suggestion.

1.1 Relationship Between Profitability and Cash Dividend

As mentioned formerly, profitability is one of factors affecting cash dividend. Profitability shows the ability of a company to gain income in relation to sales, asset, and equity (Foster, 1986; Sartono, 2001). Therefore, profitability can be measured by ROA (return on asset) or by ROE (return on equity). Regarding cash dividend, a company will pay cash dividend for signaling about the profitability (Sulistiyowati, Anggraini, and Utaminingtyas, 2010). Thus, the higher profitability the higher cash dividend paid to investors. This statement is in accordance with the findings of Arilaha (2009), Jannati (2011), and Krisyanto (2012) showing that profitability measured by ROA has positive influence on cash dividend. Suharli (2007) stated that manager of a company will pay dividend to convey signal about ability of a company to gain profit. According to explanation above, it can be concluded that profitability will affect cash dividend positively.

H1: Profitability has positive influence on cash dividend

1.2 Relationship Between Financial Leverage and Cash Dividend

Other factor affecting cash dividend is financial leverage. Financial leverage describes the ability of a company to pay its liabilities by using its assets (Avianti, 2000). Block and Hirt (2000) stated that financial leverage shows debt level used in a company’s capital structure.

Increasing in financial leverage shows a company quality. The longing of manager to increase financial leverage is a positif signal (Ross, 1977). It expresses the manager
longing about a company prospect in the future. Based on that thing, the higher financial leverage the higher cash dividend distributed to investors. On the other hand, the higher financial leverage the higher financial risk faced by a company like the failure risk to pay debt plus its interest (Van Horne and Wachowicz, 1995). In this condition, a company will give priority to pay debt and its interest in compared with pay dividend. Budiyanti (2010) and Jannati (2011) found that financial leverage affected dividend policy. Based on explanation above, it can be concluded that financial leverage will affect cash dividend. 

\[ H_2: \text{Financial leverage has influence on cash dividend} \]

1.3 Relationship Between Cash Dividend and Stock Price

The stock is one form of securities traded in capital market. For some investors, buying stocks is one way to gain huge wealth (capital gains) fast. While for other investors, stock can receive return in dividends. Stock price can be formed from interaction between seller and buyer of stock affected by their expectations for corporate profit (Yarnest, 2002). Part of corporate profit distributed to investor is called dividend. If dividend distributed to investor in cash is called cash dividend. As mentioned before, some investors have attitude “dividend oriented” because payment of cash dividend can reduce uncertainty (risk) for investors in compare with capital gain. Therefore, a company distributing cash dividend will affect investors to react positively and it will increase stock price, and otherwise. The Bird in the hand theory proposed by Gordon and Linther (1956) explained that investors prefer the high dividend to capital gain because received dividend likes bird on hand where it has the lower risk than capital gain. This school is of the opinion that increasing dividend can increase stock price.

On other hand, investors orienting “capital gain”, distributing dividend will not increase stock prices. In fact, investors will react negatively if cash dividend paid when a company is having high growth. As a consequence, it will reduce stock prices. Modigliani and Miller (1961) in Gallagher and Andrew, 1997) stated that dividend policy is irrelevant because dividend policy does not influence firm value. Therefore, it is all the same to investors whether now they receive dividend or capital gain in the future. Van Horne and Wachowicz (1992) stated that dividend has effect on stock price because dividend communicates information or signal about profitability of a firm. Pujiono (2002) found that dividend policy has influence significantly on stock price. Based on explanation above, it can be concluded that cash dividend paid to investors will affect stock price positively. 

\[ H_3: \text{Cash dividend has influence on stock price} \]

2. Research Method

This study uses quantitative approach by applying hypothesis testing study. Thus, before hypothesis is tested, theoretical framework must be organized to generate hypothesis. It applies census method where its population are 48 companies-years (observation) from consumer goods companies since 2007 until 2012. So, this study combines cross section and time series called pooled data (Gujarati, 2003).

There are three variables applied in this study. Those are exogenous variable, endogenous variable, and intervening variable. Exogenous variables applied are profitability \(X_1\) and financial leverage \(X_2\). Profitability is ability of a company to gain
income in relation to sales, asset, and equity (Sartono, 2001). Thus, long term investors will very interested in profitability analysis. It applies ROA (return on asset) as measurement of profitability.

Financial leverage shows amount of debt used in capital structure of a company. As stated by Block dan Hirt (2000), financial leverage is debt level used in capital structure of a company. The measurement of financial leverage applied in this study is DER (debt to equity ratio).

Endogenous variables applied are cash dividend (Y) and stock price (Z). Dividend distributed to investor in cash is called cash dividend. Stock price can be defined as price formed from interaction between seller and buyer of stock affected by their expectations for corporate profit (Yarnest, 2002). Dividend is measured by applying DPR (dividend payout ratio) and stock price is measured by applying stock price per share.

Intervening variables applied in this study is cash dividend. As mentioned previously that cash dividend shows amount of dividend distributed to investor in cash and it is measured by applying DPR.

To analyze data, this study uses standardized regression model. Standardized regression model is called path analysis model (Li, 1975), formulated as follows:

\[ Y = \rho_{yX_1} X_1 + \rho_{yX_2} X_2 + \epsilon_1 \] ...................................................(1)

\[ Z = \rho_{zy} + \epsilon_2 \] .................................................................(2)

Description:

Y = Cash dividend
Z = Stock Price
\( \rho \) = Path coefficient
X1 = Profitability
X2 = Financial leverage
\( \epsilon \) = error term

To test the hypothesis whether it is accepted or rejected, this study applies path coefficient value of each variable. Whereas to test the effect strength, it is applies determination coefficient value (R^2). Because this study uses census method, so that not test for significance, both t-test and F-test. The conclusion is taken from path coefficient value of each variable and the coefficient value of determination. Strength of correlation can be classified as mentioned by Sarwono (2007) as follows:

0-0.25 : very week correlation
>0.25-0.50 : moderate correlation
>0.50-0.75 : strong correlation
>0.75-1.00 : very strong correlation

Based on classification above, it can be classified the influence strength of exogenous variable on endogenous variable (R Square) as follows:

0-0.063 : very week influence
>0.063-0.25 : moderate influence
To test the influence of profitability and financial leverage on cash dividend and its effect on stock price is applied standardized regression model or path analysis model. The influence of profitability and financial leverage on cash dividend can be seen in Table 1.

Table 1. The Influence of Profitability and Financial Leverage on Cash Dividend

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>.213</td>
</tr>
<tr>
<td></td>
<td>ROA</td>
<td>.788</td>
</tr>
<tr>
<td></td>
<td>DER</td>
<td>-.084</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DPR

As mentioned previously that this study applies census method. In census method all elements of population are observed. It is differed from survey method where part of population elements are observed. Therefore, there is no significance testing to examine the influence of exogenous variable on endogenous variable. The conclusion is taken from path coefficient value of each variable.

Based on Table 1, path coefficient value ($\rho$) of profitability is 0.371. Because its coefficient value is bigger than zero, it can be concluded that profitability has influence on cash dividend. The sign of coefficient value is positive. It means that the higher profitability the higher cash dividend distributed to investors. If profitability increases 1%, cash dividend increases 0.371%. To know how the influence strength of profitability on cash dividend is done by squaring path coefficient value. Thus, the influence strength of profitability on cash dividend is $(0.371)^2 = 0.14$ or 14%. It means that profitability has moderate influence on cash dividend of consumer goods companies listed at Indonesia Stock Exchange for the year 2007-2012, that is 14%, while 86% remaining is explained by other variables, including financial leverage.

This finding is consistent with the findings of Arilaha (2009), Jannati (2011), and Krisyanto (2012) showing that profitability has positive effect on cash dividend. Gaining the higher earnings can cause paying the higher cash dividend. However, this finding is not consistent with the finding of Sulistiyowati, Anggraini, dan Utaminingtyas (2010) showing that profitability has negative effect on cash dividend. Gaining the higher earnings can cause paying the lower cash dividend.

It is still based on Table 1, path coefficient value ($\rho$) of financial leverage is -0.395 where that value is bigger than zero, so that it can be stated that financial leverage has influence on cash dividend. The sign of coefficient value is negative. It means that the higher financial leverage the lower cash dividend distributed to investors. If financial leverage increases 1%, cash dividend decreases 0.395%. The influence strength of financial leverage on cash dividend is $(-0.395)^2 = 0.16$ or 16%. It also means that in the
same manner as profitability, financial leverage has moderate influence on cash dividend of consumer goods companies listed at Indonesia Stock Exchange for the year 2007-2012, that is 16%, while 84% remaining is explained by other variables, including profitability. This finding is in accordance with the statement of Van Horne and Wachowicz (1995) stating that the higher financial leverage the higher financial risk faced by a company like the failure risk to pay debt plus its interest. In this condition, a company will give priority to pay debt and its interest in compared with pay dividend. This finding is also consistent with the finding of Jannati (2011) showing that financial leverage has effect on cash dividend. However, this finding is not consistent with the finding of Sulistiyoowati, Anggraini, dan Utaminingtyas (2010) showing that financial leverage has no effect on cash dividend.

The influence of profitability and financial leverage simultaneously on cash dividend can be seen in Table 2.

Table 2. The Influence of Profitability and Financial Leverage simultaneously on Cash Dividend

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.477</td>
<td>.228</td>
<td>.193</td>
<td>.25053</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), DER, ROA

According to Table 2, R Square value is 0.228. That result shows that the influence strength of profitability and financial leverage simultaneously on cash dividend is 22.8%, while 77.2% remaining is affected by other variables not included in this study model (ε₁). It means that profitability and financial leverage simultaneously have moderate influence on cash dividend.

The path equation model for the influence of profitability and financial leverage on cash dividend is showed on following equation:

\[ Y = 0.371X_1 - 0.395X_2 + \varepsilon_1 \]

Furthermore, the influence of cash dividend on stock price can be seen in Table 3.

Table 3. The Influence of Cash Dividend on Stock Price

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>4776.191</td>
<td>2113.920</td>
</tr>
<tr>
<td>DPR</td>
<td>-2114.089</td>
<td>5386.895</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Stock Price

Based on Table 3, path coefficient value (\( \rho \)) of profitability is -0.058. Its coefficient value is bigger than zero, so that it can be concluded that cash dividend has influence on cash dividend. The sign of coefficient value is negative. It means that the higher cash dividend the higher stock price. If cash dividend increases 1%, stock price decreases
0.058%. The influence strength of cash dividend on stock price is 

\[(0,058)^2 = 0.003\] or 0.3%. It means that cash dividend has very weak influence on stock price of consumer goods companies listed at Indonesia Stock Exchange for the year 2007-2012, that is 0.3%, whereas 99.7% remaining is explained by other variables \((\varepsilon_2)\). This finding is not consistent with investors having attitude “dividend oriented” and also inconsistent with statement of Black and Scholes (1974) in Suherli and Harahap (2004) stated that in order to increase the stock price in future managers will decide to pay the higher dividend in comparison with last year. This finding is in accordance with the finding of Pujiono (2002) that found that dividend policy affected stock price negatively. This finding may be caused by the majority of investors in Indonesia Stock Exchange are short term investors, where short term investors prefer capital gain to dividend.

The path equation model for the influence of cash dividend on stock price is showed on following equation:

\[Z = -0.058Y + \varepsilon_2\]

The Results in path diagram form is showed in Figure 1.

![Figure 1 The Results in Path Diagram](image)

**Description:**
- \(X_1\) = Profitability
- \(X_2\) = Financial leverage
- \(Y\) = Cash dividend
- \(Z\) = Stock price
- \(\varepsilon_1\) = Influence of other variables on \(Y\)
- \(\varepsilon_2\) = Influence of other variables on \(Z\)

### 3.1 Implication

The results shows that profitability and financial leverage both partially and simultaneously affect cash dividend distributed to investors, and then cash dividend affect stock prices of consumer goods companies listed at Indonesia Stock Exchange, although they have moderate influence. Investors, investor potential, and other users can use these findings to analyze factors affecting cash dividend distributed to investors. Before investing his fund or increase his investment into a company, investor can study
profitability of a company, because this research findings shows that profitability affect cash dividend positively, meaning that the higher profitability the higher cash dividend distributed to investor. Besides, investor can also study financial leverage before doing investment or add his investment into a company, because the result of this study shows that financial leverage affect cash dividend negatively. It means that the higher financial leverage the lower cash dividend distributed to investor.

4. Conclusion

The results show that profitability and financial leverage, either partially or simultaneously influence cash dividend, and then cash dividend influences stock price of consumer goods companies listed at Indonesia Stock Exchange. Profitability influences cash dividend positively, whereas financial leverage influences cash dividend negatively. Furthermore, cash dividend influences stock price positively. Profitability and financial leverage, both partially and simultaneously has moderate influence on cash dividend, while cash dividend has very weak influence on stock price.

To examine factors influencing cash dividend, this study only applies two variables, those are profitability and financial leverage. It can ignore other variables probably give very strong effect on cash dividend. R Square value is 0.228 or epsilon value ($\varepsilon_1$) is 0.772. It shows that there are several other variables affecting cash dividend not included in this study model.

Based on limitation above, it is suggested for next researchers to add other variables, such as free cash flows, liquidity, operating cash flows, etc. in analyzing factors influencing cash dividend and its effect on stock price. Next study can also be done not only on Consumer Goods Companies but also it can be done on all manufacturing companies or all companies listed at Indonesia Stock Exchange.

References


ISOLATING ANTIBACTERIAL ACTIVE COMPOUND FROM FRUITS OF LABAN
(Vitex Pinnata Linn)

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ABSTRACT

The fruits of Laban (Vitex pinnata Linn.) was traditionaly used by the peoples of Aceh as abscess therapy. Our previous research was reported that methanol extracts from the fruit of Laban (Vitex pinnata Linn.) can inhibit bacterial growth of Staphylococcus aureus and Pseudomonas aeruginosa. Continuing on from the previous research, our new work has isolated and purified active compounds in the methanol extract from the fruits of Laban using vacum coloumn chromatographic and gravity coloumn chromatographic methods with silica gel 60 in there in dual phase. This research produced 0.05 gram of a positive isolate flavonoid, obtained as a yellow amorphous powder with melting point 106-108°C. Based on the spectrometry datas of UV-Vis and IR and also on phytochemical test, the isolate compound was presumably 3'-metoxy-3'-prenylflavon-5-ol. This isolate compound inhibits the bacterial activity of Staphylococcus aureus and pseudomonas aeruginosa.

Keywords: Laban, Vitex pinnata, flavonoid, Staphylococcus aureus and pseudomonas aeruginosa.

1. Introduction

Laban (Vitex pinnata Linn.) or it’s synonym Vitex pubescens Vahl., was a member of the Verbenaceae family that was widespread through out Indonesia and other Asian countries especially Pacific Rim countries like Malaysia, India, Sri Lanka, Bangladesh, Myanmar, Vietnam, Thailand and the Philippines (Lemmens et al., 1995).

V. pinnata is a tropical Asian plant with much potential for medicine. Almost all parts of the plant are used in traditional medicine. The leaves are used to treat fever, loss of appetite and wounds. The bark is reported to cure stomach aches and injuries whilst the roots are also used to treat stomach aches Ogata et al., 1995). Furthermore Burkill (1966) also said that extracts from boiling the bark of V. pinnata can cure stomach aches and from the leaves can be used for fevers and wounds. In Aceh V. Pinnatais known as “mane” and the fruit is used to treat boils and fevers. From an ethnobotanical approach it can be assumed that V. pinnata has active components that can treat stomach aches, stomach ulcers, boils and fevers.

Based on the above, it appears that there is need for research into the antibacterial characteristics of V. pinnata especially of the fruit because the fruit or berries are often used by the Acehnese to cure stomach aches and boils. Because of that, this research is focussed on isolating and determining the structure of active antibacterial components from the fruit of Laban(V. pinnata).
2. Material and Method

Fruit of Laban (V. pinnata Linn.) were collected from Lamno in Aceh Jaya District, Blang Pidie in Abdya District and Sabang Township in Aceh Province. Results were obtained from chromatography with a vacuum treating 20 grams of methanol extract using a silica gel 60 stationary phase (230-400 mesh, 200 gram), with ten successive active phases using n-heksane 100%, mixed with n-heksane-ethyl acetate in ratios of (9:1), (8:2), (7:3), (6:4), (5:5), (4:6), (3:7), (2:8), (1:9), and with pure ethyl acetate 100%, each test comprising 200ml. Fractions were collected for every 50mL which resulted in 22 fractions. Each fraction was analyzed using thin layer chromatography with active phase n-heksane-ethyl acetate in ratio (5:5), the fractions with the same polarity were collected together and then the solvent was steamed off.

From the 22 fractions, 5 fractions resulted from combining them. Thin layer chromatography of the fractions resulted in combining into 5 groups based on their polarity. Fractions which showed the same polarity with the thin layer chromatography were collected together and concentrated, this resulted in fraction A (1-8) total 0.40 gram, fraction B (9-10) total 0.15 gram, fraction C(11-16) total 0.21 gram, fraction D (17-19)total 0.08 gram and fraction E (20-22) total 0.10 gram.

The E fraction with 0.10 gm was then treated with gravity column chromatography using a silica gel 60 (70-230 mesh, 50 gram) passive phase; the 50 cm. Long, 1.2cm. diameter column used an n-heksan-etil asetat (5:5) active phase. Four (4) fractions were obtained from the gravity column chromatography, where each fraction collected totaled 50mL. These 4 fractions respectively were fraction E$_1$ with 0.01 gram; fraction E$_2$ with 0.015 gram; fraction E$_3$ with 0.02 gram; and fraction E$_4$ with 0.05 gram of isolate with a single node consisting of an amorphous yellow powder positive flavonoid.

To ascertain the purity of the isolate the melting point was measured using Fisher Johns Melting Point micro equipment for measuring melting point. Also the UV and IR spectrum were measured using a Shimadzu UV-210 A spectrometer and a Shimadzu. FTIR-8510 A.

3. Result and Discussions

The UV-Vis Spectrum with the methanol isolat E$_4$ absorbed a maximum at $\lambda_{max}$ (nm) 231 dan 262. This spectrum indicates a flavon with wavelength I (262 nm) and wavelength II (231 nm). The low intensity of wavelength I relative to wavelength II indicates that there is a prenil? substituent at position C-3. The infrared spectrum for isolate E$_4$ shows the primary functions of a cluster from the flavon compound where the hydroxy radicle with 3466,08 cm$^{-1}$, the carbonyl radicle was indicated by strong absorption at 1741,72 cm$^{-1}$, absorption at 2922,16 and 2852,72 cm$^{-1}$ are waves from a C-H aliphat link which usually would be an isoprenil compound. An aromatic ring is indicated by strong absorption at 1672,20 cm$^{-1}$ which is supported by absorption at 972,12 – 723,31 cm$^{-1}$ which indicates the refraction vibrations of C=C or the refractions of the aromatic CH attached to the outside.

Whilst the C-O-C radicle is indicated by absorption at 1170,79 cm$^{-1}$. From the analysis of the data above it appears that the compound formed as a result of isolation is a flavon compound witha C-3.structure. Based on the UV-Vis and infrared (IR) data
spectrum analysis it appears that the compound from the E₄ isolate is 3’-metoksi-3-prenilflavon-5-ol which has a structure as shown below:

4. Conclusion
1. This research resulted in 0.05 grams of a positive flavonoid isolate in the form of a yellow amorphous powder with a melting point of 106 -108°C
2. Based on spectro-chemical analysis with UV–Vis and Infrared, as well as phyto-chemical analysis the isolate is a flavonoid from the flavon group : 3’-metoksi-3-prenilflavon-5-ol.
3. This isolate has properties that can inhibit the action of the bacteria *Staphylococcus aureus* and *Pseudomonas aeruginosa*.

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INADEQUATE FUNDING MAY HAMPER THE SUSTAINABILITY OF ACEH HEALTH INSURANCE TOWARD UNIVERSAL HEALTH COVERAGE FOR ACEH POPULATION

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ABSTRACT

Social Health Insurance for universal health coverage can only be executed if supported by adequate budgets, especially in order to ensure the sustainability of the program in an effort to improve social welfare. Aceh health insurance that has been run by Aceh Government for entire Aceh population since 2010 facing uncertainty of financial resources due to the fund utilization increase significantly. This study aims to investigate the financial problem in JKA implementation by conducted the qualitative analysis and data collection from the health institution. From data analysis, this study founds that the JKA program are having inadequate financing since the decline of revenues from oil and gas and other sectors, and inadequate supports from the government in regional level and community participation. This means that the JKA program is in a weak for sustainability due to the financing of JKA program highly depend on annual budget of Aceh Government and tends to be influenced by the political dynamics in a particular period. Therefore, it is required the action to design the regulation script of JKA implementation on premium rate contribution of local government and community and other potential financial resources to ensure the JKA program in sufficient financing.

Keywords: Aceh Population, Social Health Insurance, Financing, Sustainability.

1. Introduction

Social health insurance schemes are generally understood as health insurance schemes provided by governments to its citizens, especially to low and middle income populations¹. Aceh's one of provinces in Indonesia established Aceh Health Insurance Program (JKA) which has been embarked since June 1, 2010. The Health program purpose is to ensure the entire population of Aceh in obtaining health justice, regardless of social status, economic, religious, gender and age in order to improve productivity and welfare of the community. The target of this program is the entire populations who have identity card of Aceh. Probabilistically, all health facilities in Indonesia have an opportunity to provide health services to participants in both the government and private health services.

In the first year starting from June, 2010 the Aceh Government issued a budget of IDR 241.9 billion sourced from the revenue expenditure budget of Aceh (APBA). In this year the local government has to experience the unpredicted deficit of budget by 50 billion rupiah. In the year 2011 as the second year of the JKA implementation program, the government of Aceh has allocated a budget of IDR 482 billion to finance the implementation of the program JKA. Before the budget is passed, the government faced
problems in finding the sources of budget that reach 35 billion per month since the decline of revenues from oil and gas and other sectors.

The transition of health systems to reach universal and equitable access to quality health care such as social insurance program requires a sustainable financial resource base in meeting the health needs of the population, without causing impoverishment, and contributing to the attainment of national development goals and economic growth through improved health status [5]. (WHO, 2006), Therefore, the sustainability of health insurance program is highly depending on the adequate financial resources to support the program. This study assesses the government’s commitment and investigates funding source to ensure the sustainability of Aceh Health Insurance toward universal health coverage of Aceh Population.

2. Methodology

Qualitative study was employed to obtain the information about the commitment of Government in implementing the JKA program. This method was also used to collect documents on rules and regulations with respects to the implementation of subsidised the program. The samples are; all stakeholders which involved in the JKA program such as, The Parliament Member (DPRA), Head of Aceh Health Department, and coordinator of the JKA program and the head of supervisor team of JKA program.

3. Results

3.1 The Government’s Commitment in JKA Financing Program

The government of Aceh had showed the great commitment to ensure the equity of health care services to entire Aceh population by implementing Aceh Health Insurance (JKA) since 2010. The health department of Aceh has also been appointed to prove the program in well implemented based on financing perspective. Thus, the government set out the regulation that gives the guarantee about the sustainability of program despite the changes in the governance structure. This information can be seen from excerpts of the interview with Health Department of Aceh and strengthened by the parliament statement follows:

“Since the beginning of the program launched, the Government has indeed determined to succeed it especially in term of budgeting program, nowadays there are many programs implemented, however, we see that the gaps of accessing health services, especially those are from lower class society who were not covered in National Health Insurance such as Jamkesmas Program. On the other hand, the Government has responsibility to assure that the whole Acehnese populations get health services as mandated in UUPA (the Aceh Government Legislation), so there is no choice for the Government unless running the program with all risks that might reduce the funding on other sectors” (IR. 1)

“To ensure the sustainability of the program, it has already been stated in the Qanun (Local Legislation) that it is mandatory for Governor of Aceh to implement this health services program. However, in term how much the budget needed to implement the program is not clearly stated.” (IR. 2)
Furthermore, in line with the statements above, the leaders of Health and Social Welfare Commission of Aceh Provincial Parliament confirmed about the government's commitment to implement the JKA program as stated below:

“The JKA program was carried out based on the mandate of UUPA that was mentioned clearly in Qanun of Aceh Health Population, so anyone governors will be obligatory to run the JKA program. But in its initial implementation on June 1, 2007 was carried by Pergub (Governor Regulation) and then at the end of the year, the Qanun No. 4 of 2010 was performed, which in one of the clauses mentioned that the Government of Aceh shall implement the Health Insurance Program for all the Aceh population, and there is no reason for us to don’t provide the budget, even though the program financing will adjust with the region's ability "(IR.3).

3.2 The Adequacy of Financing JKA Program

The total funds needed to run the JKA program based premium calculation per capita, but after the budget was submitted to the council. Then they approved the budget prescribed by the region ability in which the value was not sufficient as budgeted. This information can be seen in the interview excerpts below:

"... At first the JKA Budget calculated by the consultant in accordance with the real situation, so that the premium out of IDR. 17,000.00 per capita and in total was IDR. 650M" (IR.4)

"This figure was calculated by a consultant that we asked to help in the implementation of the JKA. Of course, from a variety of factors such as the estimated of diseases number and the number of population, as well as other factors could affect the cost. However, after we proposed to the parliament, they would examine the program and then they legalized according to the region capability. Finally, they gave us to run this program as much as IDR. 420 M "(IR.5)

Furthermore, the JKA financing was knowledgeable that the amount of the premium approved by the government was between IDR. 12,000.00 to IDR. 13,000.00 as shown below:

"Based on the consultant calculation, the premiums rate was about 17,000 per capita, but in practice depends on the budget which legalized by the provincial parliament. The actual count after being passed about IDR. 12,000.00 to IDR. 13,000.00 "(IR.2)

Although the funds approved by the Government was under the rate budgeted, the health department as the program manager believes that the budget was sufficient for all needs, but on the other hand the government also gave an opportunity to the hospitals to propose the additional fee as the government subsidies. It can be seen from the following description:

"Basically, the hospital was no reason to say that the budget was not enough. The budget has covered for all health services needed such as patient meal. On other hand, if the hospitals apply for additional funds to cover the lack of financing for the hospital needs, the government will support for all the need in term of health services delivery (IR.1)"
“…..In each JKA claim reimbursement was already including cost of facilities, medical devices needed and consumables. Moreover, the incentive for hospital staff such as clinician and other health worker in the hospital reached about 40% from claim. Currently, there are not the complaint about the hospital claim due to the hospital was still get the government subsidies (IR.2)”

On other hand, when there was an excess of the claims rate that are customized to the hospital needs, they were obliged to refund the remaining of rate. The following is the excerpt interview about the claim role:

“In the concept, the hospital financing was based on the hospital needs that can be predicted using the previous data as the historical budget. For instance, the cost of consumables for last year was around IDR. 1 Billion. However, the JKA claim proposed for Consumable cost as much as IDR. 750 Million. In this case, they were justified to submit the budget deficiency as the government subsidies for covering the gap. Otherwise, if in the current year the consumable costs only spend around IDR. 900 Million, they have to return the rate rest or IDR. 100 Million to the government. This is the role of our agreement, but we don’t know whether this role are implemented or not, we don’t know exactly” (IR. 2)

In addition, this role explained more detailed in MOA (Memorandum of Agreement) between Aceh Government and PT. ASKES as the manager of JKA program. If the budget was not sufficient for implementing program, then PT. ASKES was allowed to get the rest fund as the need. In contrast, they have to return the rest fund if there were the excess of fund to government. The following is the confirmation from both of PT. ASKES and Health Department of Aceh related to the utilization of JKA financing in 2010 – 2011 as indicated below:

“In 2010, we return the remaining fund around IDR. 30 billion and 2011 as much as IDR. 3 Billion. We do this as the impact of cost controlling as well as to certain the quality of health services” (IR.5)

“There were the exceed fund in 2010 and 2011 as well as. We controlled the medicine utilization strictly especially for specific drug. The hospital usually complains about the cost of services.

In 2010, the allocation of JKA fund was IDR 241,965,073,000.00 for a period of 7 months from 1 June to 31 December 2010. The Utilization JKA funds for financing direct health services IDR 205,670,312,050.00 or 85%, while for indirect Health Care Financing IDR 24,196,507,300.00 or 10%. Operating Costs PT Askes (Persero) amounting to IDR 12,098,253,650.00 or 5%. Of the allocated funds, the realization of JKA funds utilization for health care and indirect health services was IDR 209 338 447 562, or approximately 87%. With details for direct health care fund of IDR 191 620 295 790, While the Fund health care indirectly by IDR.5.619.928.122 .The remaining funds of IDR 32,626,595,488 JKA, or about 13%. The Remaining of funds was deposited into the the regional treasury. The realization Fund summary of JKA program in 2010 can be seen in the following table: 

The data of JKA program financing and its utilization in 2010 shown in Table 1:
Table 1. The Budget Realization of JKA in 2010

<table>
<thead>
<tr>
<th>No</th>
<th>Funds Utilization</th>
<th>Amount (IDR)</th>
<th>Amount (Population)</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>JKA Financing Allocations 2010</td>
<td>241,965,073,050</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Realization</td>
<td>209,338,477,562</td>
<td>87%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Operational for PT, Askes</td>
<td>12,098,253,650</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Remain</td>
<td>32,626,595,488</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Health Services Financing</td>
<td>85,537,382,000</td>
<td>316 PHC di 23 Region/ City</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Capitation for Primary Health Care</td>
<td>7,856</td>
<td>25 Hospitals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. ANC Services, Delivery and PNC</td>
<td>165,576</td>
<td>25 Pharmacies;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Advance Ambulatory Services (Aceh)</td>
<td>89,129</td>
<td>13 Opticals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Advance Inpatients Services (Aceh)</td>
<td>189,505</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e. Medicine and Medical Support</td>
<td>272</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>f. In and Outpatients in Medan Hospitals</td>
<td>142</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>g. In and Outpatients in Jakarta</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Indirect Services (Guideline, Socializations, Validation, Data Entry, Member Card, etc)</td>
<td>5,619,928,122</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In 2010, the realization of funds for JKA directs health care by 93 percent, reaching IDR. 191,109,582,847.00. While The budget of health promotion was unused. It is seen from the realization was 0 (zero).

Table 2. Allocation and Realization of JKA Funds Based on Type of Services 2010

<table>
<thead>
<tr>
<th>No</th>
<th>Type Of Services</th>
<th>Expense Allocation (IDR)</th>
<th>Realization (IDR)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary Level Outpatients</td>
<td>68,104,516,667</td>
<td>87,217,766,310</td>
<td>128</td>
</tr>
<tr>
<td>2</td>
<td>Primary Level Inpatients</td>
<td>1,611,632,153</td>
<td>7,370,377,800</td>
<td>457</td>
</tr>
<tr>
<td>3</td>
<td>Advanced Level Outpatients</td>
<td>69,059,894,282</td>
<td>21,342,269,148</td>
<td>31</td>
</tr>
<tr>
<td>4</td>
<td>Advanced Level Inpatients</td>
<td>65,775,768,948</td>
<td>75,179,169,589</td>
<td>114</td>
</tr>
<tr>
<td>5</td>
<td>Health Promotion</td>
<td>1,118,500,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>205,670,312,050</strong></td>
<td><strong>191,109,582,847</strong></td>
<td><strong>93</strong></td>
</tr>
</tbody>
</table>

Source: PT. Askes (Banda Aceh), 2011

The utilization of funds that tend more to curative measures mentioned above took place again in the next year as shown below
Overall, the JKA program funding increased significantly in each year until 2013. However in 2014, there was a decrease trend to IDR. 400 billion or decline 5%. This circumstances due to decrease of the JKA members that 30% of JKA members has been covered by the National Health Insurance.

<table>
<thead>
<tr>
<th>NO</th>
<th>Type Of Services</th>
<th>Expense Allocation (Rp)</th>
<th>Realization (Rp)</th>
<th>Percent (Rp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary Ambulatory</td>
<td>177,354,432,000</td>
<td>44,567,639,176</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>Primary Inpatients</td>
<td>4,680,848,770</td>
<td>6,951,654,350</td>
<td>149</td>
</tr>
<tr>
<td>3</td>
<td>Advance Ambulatory</td>
<td>21,659,838</td>
<td>31,162,174,973</td>
<td>144</td>
</tr>
<tr>
<td>4</td>
<td>Advance Inpatients</td>
<td>139,017,317,480</td>
<td>102,695,050,191</td>
<td>74</td>
</tr>
<tr>
<td>5</td>
<td>Health Promotion</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>342,712,437,149</td>
<td>185,565,515,690</td>
<td>54,15</td>
</tr>
</tbody>
</table>

Source: PT. ASKES (Banda Aceh), 2011

4. Discussion

4.1 The Government Commitment in JKA Financing Program.

In general, the legal basis for granting the government authority for health, including JKA program was in Article 18B of the 1945 Constitution and point 1.1.2. And 1.4.2 Memorandum of Understanding (MoU) between the Government of Indonesia and the Free Aceh Movement (GAM) signed in Helsinki, Finland, on August 15, 2005.

Operationally for the general legal basis has been provided in Article 224 and Article 225 of Law No. 11 Year 2006 on Governing Aceh (UUPA). UUPA is the subsequent provisions of existing laws, both the law of 1945 and the Helsinki MoU. Thus, UUP is the main legal basis in Aceh governance post-conflict as the outcome of a comprehensive peace effort, sustainable and dignified. UUPA is this main legal basis of Aceh's special autonomy in the health sector currently.

Furthermore, the Aceh government performed the more implementable provisions of the UUPA, then arranged in Aceh Qanun No. 4 of 2010 on Health (subsequent abbreviated QAK). In one of its consideration in QAK stated that "health is a gift of God and human
rights which aims to raise awareness, the willingness and the ability to healthy life in order to manifest the highest of public health status by joint efforts of Aceh government, community and private sector participation[6].

In the first article of QAK defines that the JKAprogram as "an individual health financing subsystems using the social health insurance principles that it applies to the entire population of Aceh". One characteristic of such insurance is the obligation of premiums payment (contributions) of the insured. Currently most participants are poor and they are not able to contribute, so that they will be borne by the Government of Aceh. In the early stages of the JKA implementation, all over financing as the premiums are paid by the Government of Aceh through the Aceh Budget Revenue and Expenditure (APBA).

However, in the sixth Article of the QAK stipulated that the Government of Aceh shall allocate at least 10% (ten percent) of the APBA excluding the health sector salaries. In addition to the government funds, in Article 12 of QAK determined that the district/ city government shall allocate at least 10% of their APBK (District budget revenue and expenditure) aside from the health sector salaries. The provisions of sixth and twelfth of the Article 12 is the important guideline to ensure the sustainability of financing health program, including the JKA.

In consequence, this clear that the JKAprogram financing is joint responsibility between the province and district / city government. In fact, until the fourth year of the program JKA, its financing was only supported by the provincial government while the local government was only support for others health program such as provision and improvement of health care centers.

In the fifth Article of QAK states that “every citizen of Aceh is entitled to health insurance ”. This is in line with the provisions of the 1945 Constitution and the Law on the National Social and Security System (Social Security Act). On the other hand, in the first Article and paragraph (2) of QAK determine “that each person has a responsibility to contribute the funding for the health insurance program”. This is consistent with the principles espoused in the administration of health insurance as described. However, in the Article 19, paragraph (3) excludes the poor from the contribution obligations. In the Article 19, paragraph (4) further confirms that the arrangement will be regulated by the Governor (The Governor Regulation).

Currently, the JKAprogram has been integrated with the National Health Insurance (NHI), in which for all Aceh population who are not assured in the national program became the responsibility of Aceh Province to include them in JKAprogram. Hence, since the 1st of January 2014. Aceh Government has signed a new contract to implement the JKA under the JKNprogram. Based on this agreement, the Aceh government provided a premium for 2 million inhabitants of Aceh who are not included in JKN with the same premium rate. As the result of this integration, the JKA implementation became easier because it has the similar rules and guidelines for the implementation by JKN, so that the hospitals are able to implement JKA and JKNprograms without distinction, as well as for the patients have the same rights, although with different funding sources (JKA and JKN).

The implementation of JKN based on casemix system namely INA CBGs has given the positive impacts for JKA that was integrated with the national program. However, in terms of the program financing, the Aceh Government is facing the challenges as
mentioned above, it is highly different from other regions that only performed the JKN program based on the central government budget. As the consequence, the Aceh government has to decrease the financial for others such as promotion and prevention health program to support the JKA program. So that it is are needed the solution to encourage the community participation in terms of JKA funding, in addition, the government should investigate the other sources such as endowments fund and local government contributions as by designing the regulation that ensure the sustainability of JKA program implementation.

4.2 The Evaluation of JKA Program Financing

The JKA program funds derived from the Budget Revenue and Expenditures of Aceh Government (APBA) sourced of Special Autonomy Funds. The JKA Funds was allocated into the List of Budget Spending (DPA) of Aceh Health Department. Then the funds was managed by the Executive Agency for Social Security (BPJS) pointed as the program manager, this Agency performed administration and management of the JKA program that include health services and operational support activities of JKA program. In term of health services, the government allocated as much 95% of total budget that divided into the financing of direct health services reached 85% and the remaining for indirect health services (10%). However, the budget for the operational of BPJS was 5% of total JKA budget.

The funds allocation for direct health services was utilized for spending the health services delivery and for the other support services such as cost for: referral transportation, drug consumption and health supporting device. However the allocation was spent for supervisor team, the validation process, card printing and distribution, compilation of program guideline, socialization, monitoring and evaluation, research, training and development of JKA program. However the allocation of BPJS operational was utilized for the activities in term of JKA implementation included: personnel costs, administrative, report, management development, education and training, and the cost of the JKA program Coordination.

The utilization of JKA financing was tending to increase gradually. For instance, the cost of advance inpatients spent the budget as much as IDR. 61 Billion for 7 months or IDR. 9 Billion in average per month. However in 2011 the budget raised IDR. 10 Billion per month or IDR. 123 Billion for a year of the period. In general, the funding allocation for 2011 also increased to IDR. 400 Billions or it was raised by 60.25% for a year period (January to December 2011). In this year the expenditure for primary inpatients level increased 49% and for inpatients in advance level increased to 44% from their fund allocation. As the result of increasing the utilization of the JKA financing, the budget for health promotion was not allocated during that period.

The JKA financing which exceeded IDR. 35 Billion per month has resulted in decreasing the budget allocation for other health programs. For instance, the budget allocation for the eradication of dengue program was reached IDR. 8.9 Billions for a year period of 2009. This allocation then decreased dramatically to only IDR. 1 Billion in 2010 or decline to 700% from the previous. This condition was closely related to the health budget for the JKA implementation. In fact, the payment of insurance premiums JKA for a
target of 1 million inhabitants reached IDR. 241 Billion. Consequently, the budget for the eradication of diseases and other program declined sharply. By the budget of it, the Disease Control and Environmental Health Department could not do much to reduce the number of dengue cases in Aceh.

This is consistent with the data submitted by the Public Expenditure Analysis and Capacity Strengthening Program stated that the health spending in Aceh continue to rise, the budget of curative program was still dominant compared to preventive which more than IDR. 2 trillion in 2012. In that year, The Province committed the financing was accounted for IDR. 904 billion, while the district of IDR 1.4 trillion, compared to 2005, the health financing in real terms increased by over three-fold in 2012. The largest portion of expenditure is located in the district / city recorded by 61 percent. The financing at the provincial level increased significantly since 2008, this in line with the additional sources of financing from special autonomy funds. The JKA program was accounted for IDR. 243 billion in 2010, and IDR. 400 billion in 2011 was as a main cause of increasing the portion of provincial health spending.

The expenditure for curative program will continue to increase along with the increasing of unit cost health services. The cost Accretion of outpatient and inpatient in hospital mainly in the middle of 2011 may be concluded that there was the trend of significantly increase of cost towards a period of time, the growth of cost was likely to be influenced by the change in drug unit cost more than the services expenditure. It should be concern that the increasing of patients treated in the hospital by JKA program will result in added cost. The concentration of government was too big to the curative sector in the long term will lead to higher expenditure burden [7].

The curative expenditure for 5 years as of IDR 1.4 trillion, or 57% of total health spending, that above the preventive expenditure was amounted only IDR. 99 billion over 5 years. The expenditure for preventive also lower than the supportive expenditure amounted to IDR. 752 billion. According to data from the National Health Accounts of Indonesia in 2009-2010, the utilization of national budget for preventive in average accounted for 28 percent. It was much higher than in Aceh which only accounted for 10 percent. This set will give a tremendous impact on the decrease of preventive program that should be a major concern by government.

In real conditions we believe that most of the diseases both infectious and degenerative disease is the disease that can be prevented. Therefore, the health policy should prioritize public health efforts of the individual health efforts. The implementation of health insurance programs such as the JKA should be followed by promotion and prevention program in order the health system can be implemented successfully. Despite a lot of budget provided for treatment effort only, but it’s still not enough. The prevention of diseases both communicable and non-communicable diseases should be a top priority by stakeholder in designing health policy [7]. Moreover, the main purpose of Aceh Health Insurance is to ensure the sustainability of universal coverage for all Aceh Population in accessing the comprehensive of health care. This purpose in line with the statement of WHO (2015) [8] that defined the universal coverage’s access to key promotion, preventive, curative and rehabilitative health interventions for all at an affordable cost, thereby achieving equity in access.
Although the budget for health programs in Aceh has already reached by 10% of APBA accordance with WHO recommendations, but most of budget was spent on \textit{JKA} programs as mentioned above. Nevertheless, the budget for \textit{JKA} program also considered insufficient. It was known from the funds proposed by the government for \textit{JKA} program was initially around IDR. 17,000.00 per capita per month. However, the parliament legalized the premium rate just around IDR. 13,000.00 for the target population of \textit{JKA} program. Thus the \textit{JKA} budget only covers 76.5% of the budget proposed by the government. This indicated that the limitations of the Aceh government in providing budgets for health financing and it will be a serious challenge in ensuring the sustainability of \textit{JKA} program \cite{8}.

Even though the \textit{JKA} program was inadequate financing, but during the program implementation based on fee for service since 2010 to 2013 before integrated with the \textit{JKN} program, there was the budget surplus of \textit{JKA} allocation annually although these surplus funds tend to decrease. Based on this, it was assumed that the \textit{JKA} program has been successfully implemented on a limited budget. But in fact, there are several circumstances that led to the emphasis on the \textit{JKA} utilization. Here some of these circumstances are as follows:

1. There was a discrepancy in number of beds compare to a population of Aceh. Based on the research survey of health facilities by the Ministry of Health, there was lack of quantity of beds at various hospitals throughout Indonesia, Aceh, for example, with a population in 2012 as many as 4,494,410 people. By the ratio of 1/1000 of the population, the number of beds which should be available in both of government and private health facilities was as 4,494 beds. However, this research revealed that of 45 government and private hospitals throughout Aceh, the number of beds available was only 4,665. This means that there was a shortage of 895 beds to be able in providing the optimum services in Aceh \cite{9}.

   It was more complex when most of the private hospitals were not involved in \textit{JKA} program implementation. Moreover the \textit{JKA} regulation only allowed the \textit{JKA} members to receive the health care facilities in the third level of class room services. As the consequence, most of them have no space enough in general hospital, so that they were forced to seek the private hospital even they had to pay by them self for all services received.

2. All claim submitted by the hospital must be verified by \textit{PT. ASKES} officers as the verification staffs placed in all the general hospital. Frequently, there are many of hospital complain toward several claim unpaid by \textit{PT. ASKES} due to incomplete administration. This circumstance has resulted in conflicts between officers \textit{PT. ASKES} and the hospital staff.

3. There was the policy of Aceh Health Department as the regulator of \textit{JKA} program to make the limitation of specific drug utilization that excluded from The List of Plafond Drug Price (DPHO). The doctors who prescribe the medications beyond the DPHO were required to obtain the approval of Province Health Department by the request of the director of the local hospital. This policy was proven to suppress the utilization of The List of Additional Drugs (DOT) medications which the price was more expensive.
4. The JKA tariff was extremely low and just cover a half of unit cost, so that the hospital were not able to maintain and improve their facilities without the subsidies of government.

However, based on the information of the health department officer revealed that there were a possibility of overlapping in health financing to hospital by the government, in which the JKA tariff given has been covering all cost of services, including patient meals and consumables cost. Therefore, the hospitals should not propose the cost of those. For instance, the need of consumable for previous year was around IDR. 1 billion; however, the budget of JKA claims for consumable need as much as IDR. 750 million. In this case, the hospitals were allowed to propose the remaining cost of it or around IDR. 250 million. Nevertheless, if in the current year the hospital just spends IDR. 900 million for the consumable, the hospital had to return the remaining fees or IDR. 100 million to the government.

But in fact, the hospital still proposed for the cost of consumable and patient’s meals; moreover they also propound the hospital operational cost which has already accounted in JKA tariff, as was the case in ZainalAbidin General Hospital, Women's and Children's Hospital, Psychiatric Hospital and Cut NyakDien Hospital (Serambi News, 2013). It was also common in some other hospitals. This circumstances has made the opinion that the hospital budgeting was in the absence integrated across the financial resources and it tends to the budgeting was not accordance with the hospital needs.

On other hand, the hospitals are forced to propose the additional budget due to inadequate the tariff of JKA. The hospital income of JKA claims was not enough to cover all hospital needs, so that they were facing the serious challenge to improve the hospital capacity especially for capacity building of medical and other hospital staff, this circumstance became an obstacle in improving health care services delivery without the qualified health workers supported. the qualified human resources are the asset in real strength factors in quality and product services improvement so that the customers are satisfied and always come in time of need and have a positive impact in improving hospital revenue [7].

In addition, the support and encourage providers to invest, innovate and take other action that lead to improvements in efficiency and patient outcome was the most potential goals of effective health care payments system, which may serve as a checklist for any country embarking on the payment system [9].

Beside the budget utilization, the financial resource of JKAprogram was another challenge that should be found the solution. This circumstance due to the financing of JKA program was depending on the budget capacity of Aceh Government. Therefore the sustainability of this program highly depends on the available budget in APBA. In 2014, the revenue of Aceh of oil and gas sector will run out, while the another resource from The Special Autonomy Funds (SAF) as much as 2 % of General Allocation Fund (GLF) only lasted for 15 since 2008. Moreover, in the sixteenth to the twentieth of this period, Aceh will only receive 1% equivalent GLF, it means that in 2023 to 2027 the Aceh Financial Budget is only remaining 1 % of the National Fund. This condition is feared to corrupt the
programs implemented by the government as the JKA program. It is the serious challenge to ensure the sustainability of JKA program implementation.

Table 5.1: PROJECTION OF GAS AND SPECIAL AUTONOMY FUNDS 2011-2027

<table>
<thead>
<tr>
<th>Years</th>
<th>Gas Funds (IDR)</th>
<th>Special Autonomy Funds (IDR)</th>
<th>Total (IDR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>509,288,118,380</td>
<td>4,400,000,000,000</td>
<td>4,909,288,118,380</td>
</tr>
<tr>
<td>2012</td>
<td>456,844,936,042</td>
<td>4,444,000,000,000</td>
<td>4,900,844,936,042</td>
</tr>
<tr>
<td>2013</td>
<td>389,263,702,071</td>
<td>4,488,440,000,000</td>
<td>4,877,703,702,071</td>
</tr>
<tr>
<td>2014</td>
<td>268,239,056,342</td>
<td>4,533,324,400,000</td>
<td>4,801,563,456,342</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
<td>4,578,657,644,000</td>
<td>4,578,657,644,000</td>
</tr>
<tr>
<td>2016</td>
<td>0</td>
<td>4,624,444,220,440</td>
<td>4,624,444,220,440</td>
</tr>
<tr>
<td>2017</td>
<td>0</td>
<td>4,670,688,662,644</td>
<td>4,670,688,662,644</td>
</tr>
<tr>
<td>2018</td>
<td>0</td>
<td>4,717,395,549,271</td>
<td>4,717,395,549,271</td>
</tr>
<tr>
<td>2019</td>
<td>0</td>
<td>4,764,569,504,764</td>
<td>4,764,569,504,764</td>
</tr>
<tr>
<td>2020</td>
<td>0</td>
<td>4,812,215,199,811</td>
<td>4,812,215,199,811</td>
</tr>
<tr>
<td>2021</td>
<td>0</td>
<td>4,860,337,351,809</td>
<td>4,860,337,351,809</td>
</tr>
<tr>
<td>2022</td>
<td>0</td>
<td>4,908,940,725,327</td>
<td>4,908,940,725,327</td>
</tr>
<tr>
<td>2023</td>
<td>0</td>
<td>2,479,015,066,290</td>
<td>2,479,015,066,290</td>
</tr>
<tr>
<td>2024</td>
<td>0</td>
<td>2,503,805,216,953</td>
<td>2,503,805,216,953</td>
</tr>
<tr>
<td>2025</td>
<td>0</td>
<td>2,528,843,269,123</td>
<td>2,528,843,269,123</td>
</tr>
<tr>
<td>2026</td>
<td>0</td>
<td>2,554,131,701,814</td>
<td>2,554,131,701,814</td>
</tr>
<tr>
<td>2027</td>
<td>0</td>
<td>2,579,673,018,832</td>
<td>2,579,673,018,832</td>
</tr>
</tbody>
</table>

Remarks:

Profit Sharing Funds Additional (PSFA) of Gas and Oil estimated based on projection oil and gas product, the estimation SAF for 2011 based on the President’s speech on the introduction of National Budget in 2011 and next years was assumed to grow by 1%. The SAF 2% of National Budget and will be decreased to 1% since 2023.

Source: Team of PSFA Gas Oil and Special Autonomy.

Basically health funding can be sourced from various parties and need to be integrated with each other under one system. For Instance, the Central Government funded the National Health Insurance (JKN), however the Aceh Government is organizing health financing for JKA Program. Now all sources of JKA funds derived from the province budget, there has been no direct contribution of the district/ city in it. In this case, it is required a specific study on the feasibility and the amount of the district/ city contribution in the JKA funding to ensure the sustainability program. There was a local health insurance implemented by Aceh Besar Government District before JKA implementation, so that it is needed to be investigated the ability of local government to contribute in funding of JKA program in term of facing the crisis of financial resources from the national budget.

In addition, the Aceh Government is required to do comparison with other province/ district government which implemented the local health insurance and their ability to fund the program, For instance, the government of Jembrana, Hulu Sungai Selatan, Sumatera
Selatan, Surakarta and Jogjakarta Province. This is important to be defined it in order to ensure the efficiency and sustainability of JKA program.

CONCLUSION

One of the weaknesses in the JKA implementation is in the certainty of JKA sustainability of funding due to the negotiation of the Government of Aceh and parliament in every year to get the budget approval. This means that the JKA program is in weak of sustainability due to the financing of JKA program highly depend on annual budget of Aceh Government and tends to be influenced by the political dynamics in a particular period. Therefore, it is required the action to design the regulation script of JKA implementation on premium rate contribution of local government and community and other potential financial resources to ensure the JKA program in sufficient financing.

AKNOWLEDGEMENT

We acknowledge the financial help rendered by the Institute of Aceh Human Resources Development (AHRD), Aceh Government. We are also grateful to Md. Yani, Saifullah Agani, Fuady, Abdul Fatah for their great contribution in this study.

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Qanun Aceh Nomor 10 Tahun 2010 tentang Kesehatan.

THE POTENTIAL OF EXTRACT ACEH ARABICA COFFEE AS ANTIAGING TO IMPROVE UTERUS QUALITY IN PREMENOPAUSAL CONDITIONS

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ABSTRACT

This study was designed to determine the potential of the extract Arabica coffee Aceh as antiaging through improvement of the quality of the uterus in premenopausal condition. Experimental design used was Completely Randomized Design (CRD) consisted of 4 treatments, each consisted of 5 rats. 1) KON = Rat premenopausal as a negative control, 2) PLS = Rat premenopausal force-distilled water as a placebo, 3) EST = Rat premenopausal given ethinylestradiol as 9x10^-3 mg / day / 200g BB, 4) KOP = Rat premenopausal coffee extract 300mg / day / 200g BB. The parameters observed are uterus weight, uterus collagen concentration, uterus water concentration, and uterus RNA concentration. Data were analyzed using Analysis of Variance (ANOVA) followed by Duncan test using SAS software program 9.1.3. The results showed that the concentrations of collagen uterus and uterus RNA concentrations in premenopausal rats given coffee extract and ethinylestradiol higher (P <0.05), compared with control rat. It was concluded that giving of Aceh Arabica coffee extract can improve the quality of the uterus is characterized by the increased concentrations of collagen and RNA concentrations of the uterus in premenopausal conditions.

Keywords: Extract of Aceh Arabica coffee, antiaging, uterus quality, rat premenopausal

1. Introduction

Aging is decline in physiological functions of the body (Rastogi 2007). In the aging process decrease the function of the endocrine glands, including the reproductive glands, the man called andropause and the woman called menopause (Ranakusuma 1992). Climacteric women experience covering the entire process of hormonal changes, from the moment when the concentrations of estrogen and progesterone produced by the ovaries begin to decline, usually before menopause until a few years after the last menstrual period occurred (Wirakusumah 2004).

Premenopausal was a time before the course of premenopause. This stage occurs since reproductive function begins to decline (Kasdu 2004; Gebbie and Glacier 2006). Premenopausal (approximately age 40 years in women) marked decline in ovarian function gradually, ovarian smaller and weighs less (Zulkarnaen 2003). Decline in ovarian function in rats may occur from age 6 to 18 months, depending on the strain (Felicio et al. 1984).

Decreasing concentrations of estrogen and progesterone in premenopausal condition causes a decrease in the function of several organs, including the uterus. Decreasing the concentration of estrogen in the blood causes the endometrial thickening does not occur so that the uterus shrink and decreasing the weight and increase the risk of uterus prolapsed (Binkley, 1999, Iwahashi and Muragaki 2011). To improve the quality of the organs of the
uterus in premenopausal condition can be made an effort to use natural materials. Today the use of natural ingredients that have been used traditionally by society increasingly popularized. One of the natural ingredients found in Aceh and become commodity is Arabica coffee. Today it is known that coffee contains compounds that have potential protective trigonelline on auditory neuropathy (Hong et al., 2009). Trigonelline is a new phytoestrogens that can bind to estrogen receptors that function as endogenous estrogen (Kimberly et al. 2009). Currently not been reported Arabica coffee extract has potential as an antiaging in Aceh, especially in improving the quality of uterus. This study was designed to determine the potential of the extract Arabica coffee Aceh as antiaging through improvement of the quality of the uterus in premenopausal condition.

2. Material and Method
2.1 Procedures of Aceh Coffee Arabica Extraction
Aceh Coffee Arabica roast done decafeinization, then be heated, and dried in an oven. Then, smoothed with coffee grinding tool to make powder. The powder is then extracted using maceration method. Furthermore coffee solution filtered using filter paper and purified macerate obtained (evaporation) using Rotary Vacuum evaporator to produce a coffee extract thick. Viscous extract is then dried using freeze drying method (freeze dryer). Strong coffee extract was put in the freezer until frozen, after it had dried with freeze dryer to a maximum moisture content of 10% in order to obtain a coffee extract in powder.

2.2 Model Animal Preparation and Testing Aceh Arabica Coffee Extract In Premenopausal
Experimental animals used rats, in this study is that female rats Sprague Dawley strain in premenopausal condition, consistedof4experimental, eachconsistedof5rats.rats were placed in plastic cages with lids made of wire ram and covered with chaff. The feed is a form of pellets and water are provided ad libitum. Environment enclosure is made so as not to damp, adequate ventilation and sufficient irradiation with light long long 14 hours and 10 hours dark. Each rat was placed in individual cages. Premenopausal female rats adapted to the conditions in the cage trial for 1 week, which then performed the treatment.

The rats were divided into four treatments, namely 1) KON = Rat premenopausal as a negative control, 2) PLS = Rat premenopausal force-distilled water as a placebo, 3) EST = Rat premenopausal given ethinylestradiol as 9x10-3 mg / day / 200g BB, 4) KOP = Rat premenopausal coffee extract 300mg / day / 200g BB. All groups of rats were given the treatment for 2 months. Coffee extract and ethinylestradiol is administered orally as much as once a day.

At the end of the trial phase diestrum status of all the rats were sacrificed. Before the surgery, the rats first anesthetized with ether. After the rats were sacrificed, the uterus is separated from the soft tissue using small scissors, and then weighed wet weight, then put in a solution of BNF (buffered formalin) 10% for the concentrations of collagen and RNA analysis. Parameter observed is uterus weight, uterus water concentrations, concentrations of collagen uterus, and uterus RNA concentrations in accordance with the method performed by Manalu and Sumaryadi (1998).
3. Results And Discussion

Mean uterus weight, uterus water concentrations, concentrations of collagen uterus, and uterus RNA concentrations in premenopausal rat are presented in Table 1. The results of the statistical analysis showed that giving of Aceh Arabica coffee extract affects the concentrations, of collagen and uterus RNA concentrations, but does not affect uterus weight and uterus water concentrations in the premenopausal rat.

Table 1. Mean uterus weight, concentrations of uterus water, concentrations of collagen uterus, and uterus RNA concentrations in premenopausal conditions

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Uterus Weight (g)</th>
<th>Collagen Uterus Concentrations (mg/g sample)</th>
<th>Uterus Water Concentrations (%)</th>
<th>Uterus RNA Concentrations (mg/g sample)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KON</td>
<td>0.47252 ± 0.15A</td>
<td>34.8658± 6.75B</td>
<td>81.742±1.29 A</td>
<td>19.3582±3.90A</td>
</tr>
<tr>
<td>PLS</td>
<td>0.47452± 0.13A</td>
<td>32.4786±4.39B</td>
<td>80.600±1.49A</td>
<td>19.0868±1.75B</td>
</tr>
<tr>
<td>EST</td>
<td>0.5885±0.20A</td>
<td>41.548±6.32AB</td>
<td>80.168±5.15A</td>
<td>23.9596±3.03A</td>
</tr>
<tr>
<td>KOP</td>
<td>0.55782±0.06A</td>
<td>44.600±8.31AB</td>
<td>80.242±2.99A</td>
<td>24.1824±2.47A</td>
</tr>
</tbody>
</table>

Description: The numbers are followed by different letters in the same column indicate significant differences (p <0.05). 1) KON = Rat premenopausal as a negative control, 2) PLS = Rat premenopausal force-distilled water as a placebo, 3) EST = Rat premenopausal given ethinylestradiol as 9x10-3 mg / day / 200g BB, 4) KOP = Rat premenopausal coffee extract 300mg / day / 200g BB.

Concentrations of collagen uterus and uterus RNA concentrations in premenopausal rats given Aceh Arabica coffee extract and ethinylestradiol higher (P <0.05), compared with control rat. In contrast, the average weight of the uterus and uterus water concentrations in the rat were given a coffee extract premenopausal and ethinylestradiol, the same as the control rats.

Aceh Arabica coffee extract can improve the quality of the uterus is characterized by the occurrence of increased concentrations of collagen and RNA concentrations of the uterus in premenopausal conditions. Coffee extract containing trigonelline compounds, bioactive compounds similar to estrogen that can function in improving the synthesis activity of rat uterus cells, which is described by RNA concentrations uterus. According to Kimberley et al. (2009) trigonelline a new phytoestrogens that can bind to estrogen receptors that function as endogenous estrogen. Changes in collagen structure of the uterus is affected by estrogen (Pastore et al. 1992). Iwahashi and Muragaki (2011) states in women suffering from uterus prolapse occurs as a result of a decrease in collagen uterus.

4. Conclusion

Giving of Aceh Arabica coffee extract can improve the quality of the uterus is characterized by the increased concentrations of collagen and RNA concentrations of the uterus in premenopausal conditions.
References


POLITICAL CULT (STUDIES ISSUES MOBILIZATION HERESY AND STATE FAILURE TO PREVENT CONFLICT IN THE NAME OF RELIGION IN PLIMBANG BIREUEN ACEH)

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ABSTRACT

Giving “misguided” label to a group whose different religious ideology from the mainstream ideology is not free from political interests, economic and cultural image of the competition. Based on the case in Gampoeng (village) Jambo Dalam Plimbang, Bireuen district, this study wanted to show the comprehensive reality behind the violence in the name of religion against the group that was labeled misled. This qualitative study found that mass anarchism reaction against Tengku Aiyub group that was labeled misguided in Jambo Dalam village, Bireuen district is not just motivated misguided issues alone. This reality is triggered by the conflict between Tengku Aiyub and some village apparatus leaders and the competition of building cultural image between Tengku Aiyub with local traditional martial arts. Critical attitudes of Tengku Aiyub toward financial management which is considered not transparent make some apparatus village leaders feel upset. Meanwhile, the image of Tengku Aiyub as a traditional martial arts master in Aceh had challenged other hero to increase number of students. The failure of local government in preventing and anticipating this case contributes to the birth of an unplanned collaboration between the parties whose their existence threatened because of Tengku Aiyub until finally the tragedy of mass anarchism happened which took the life of Tengku Aiyub and one of his followers.

Keywords: Misguided, Cult Politics, Aceh, Conflict

1. Introduction

Gampoeng (village) Jambo Dalam which locates in Plimbang, a sub-district in Bireuen district Aceh province is usually a calm and peaceful place in Bireuen. However, on 16 November 2012 the situation is changed become horrible. Shouts, cries and a massive anger broke the silence of the night. Apparently, it was a fateful night for a group of local residents who were accused of practicing and spreading misguided religious thought. They blindly attacked by groups of residents who feel disturbed by their ideology that is claimed different from the existing religious practices.

An attack that involves about 1500 citizens destroyed not only the infrastructure where the group usually conducted their religious studies but also claimed three lives and 10 others were injured. Even worse, what make people shock was that the two victims died because of being burnt alive. The victims were Tengku Aiyub Syakuban as the leader of that group and his loyal follower, Muntasir. Burning people alive is still new phenomenon in Aceh. Many Therefore, many argue that this tragedy is unbelievable.

In fact, the tolerance towards diversity inreligious beliefs was well practiced in Aceh in the past time accordingly to what Prophet says in the hadith that the diversity is a blessing. In Aceh, religious life is dynamics and dialectic in harmony (Nirzalin, 2012) until the accident happened. Moreover, the government such as military and police, as well as formal religious leader like MPU: Ulama (Islamic Scholars) Consultative Assembly in fact
could not anticipate such violation. Consequently, this tragedy has destroyed a harmonic and constructive norm of religious life in Aceh that cannot be restored in a short term period, yet need a long time to rebuild the unity of the people (Bowen, 1993). This paper explores the what, why and how the incident is taken place.

1.1 Theoretical Perspectives and Research Methods

One of the contributions of conflict sociology of Galtung (2003) showed various individuals, groups and organizations that bring their personal interests in social interaction. These interests, then, generate contradictions in social relationships that lead to conflict. Following chart shows the details:

**Chart 1. Galtung Conflict Triangle**

```
Contradiction

Attitudes  Behavior
```


This conflict triangle is an analysis of a causal relationship or interaction that allows the creation of social conflict. There are three dimensions in a triangular conflict of Galtung, are Attitude, Behavior and Contradiction. Attitude is perception of member of the ethnic about certain issues relating to the other groups. Behavior can be cooperation, competition or coercion; a hand and body movement that shows friendship or hostility. Contradiction is the emergence of a situation involving problems of attitudes and behaviors as a process, meaning that the contradictions is created by the elements of perception and action of ethnics who live in a social environment (Susan, 2010)

Dialectics of interest that generates tensions will, in turn, bring about violence. For Galtung, violence is everything that hinders people to actualize their potential naturally (Galtung in Mas’oed, 2000). Galtung said that the violence is initiated from the cultural violence such as cultural aspects; a symbolic area of human existence which is represented symbolically by religion, ideology, language, art and science that can be used to justify or legitimize direct or structural violence (Galtung, 2002). Direct violence is a violence action that is directly undertaken by a person or group of people against another group. While structural violence is a seesaw inherent process in a temporary structure of cultural violence. It is an invariant that is something permanent as a foundation of violence.

Thus, violence is not just a state of suffering or misery inflicted on a person. Violence can also be a barrier for a person to obtain goodness or happiness that the foundations exist in certain aspects of culture. Galtung classifies types of violence in based on the typology as shown in the chart below:
Tabel 1. Galtung Violence typology

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct Violence</strong></td>
<td>Murder</td>
<td>Siege, Blockade</td>
<td>Desocialization, Rationalization, Second Class Citizenship.</td>
</tr>
<tr>
<td><strong>Structural Violence</strong></td>
<td>Exploitation A, Hunger, Ailing</td>
<td>Exploitation B</td>
<td>Penetration Segmentation</td>
</tr>
</tbody>
</table>


Table 1. shows that both direct and structural violence occur in four types of basic human needs (survival needs the negation of death, welfare needs the negation of suffering, identity needs the negation of alienation and freedom needs the negation of repression) which then produces eight types of violence following their derivatives. Violence may be the result of actions taken by a state, businesses and communities (Mas’oed, et. al., 2000).

Religious violence may occur as a result of threat toward mass happiness because their cultural values as part of their identity are abused. While the state is acting as a referee in the social arena is seen too weak and less concern on such matter, even considered ignoring. The combination of cultural identity abuse and the absence of government encourage people become more violent. As a result, they react themselves as the effort to defend the purity of the identity.

This study employs qualitative approach which seeks to understand (verstehen) and find out the meaning of violence in the name of religion from abuser perspectives and appreciation. Therefore, phenomenological perspective is applied in this study in order to understand the detail phenomenon of the research. In this methodological perspective, objectivity is built on the formulation of specific situations as appreciated by an individual or a particular social group (Moleong, 2000). In this context, they are group of perpetrators of religious violence in Jambo Dalam Plimbang, Bireun District. Figuring out the process is important because what appears as human behavior represents what is in their mind (Faisal, 2003).

To obtain the data as the basis for interpretation in order to answer the research problem mentioned above, next presentation will discuss location of research, subjects of research, techniques of data collection and data analysis techniques respectively.

2. Material and Method

2.1 Research Location

Present study was conducted in Jambo Dalam, Plimbang Bireun District, Province of Aceh. The location was decided because of the fact that an extreme religious violence happened at the end of 2012. In fact the region is geographically categorized as central region of Islamic teaching: traditional Islamic boarding school (dayah) in Aceh. The existence of this religious atmosphere encourages people to build good relationship among
and inter-religion and appreciating each other, until the incident of mass violence happened against groups claimed as misguided on 16 November 2012.

2.2 Research Informant
The informants in this study is the people who commit involved in the religious violence including the main actors and all followers, the local Islamic leaders, formal Islamic scholars (MPU) and law enforcement (police).

2.3 Techniques of Data Collection
Several data collection techniques are used in this study, include:
a) In-depth Interviews
In addition to the observations, to obtain primary data, this study used in-depth interviews technique which was conducted to the perpetrators of violence, followers, local Islamic leader, formal Islamic scholars (MPU Aceh) and law enforcement (police). All the key interviewee was determined using purposive technique. In-depth interviews were conducted primarily to explore what is hidden in someone's deep hearts concerning about the past, present, and future (Faisal, 2003), as well as biographical background (Nugroho, 2001) and the living environment of the subject.
b) Focus Group Discussion (FGD)
Initial data obtained from observation and in-depth interviews were further confirmed through FGD (Focus Group Discussion). If the data from observation and in-depth interviews reflect personal data, the information obtained in the FGDs was obtained collectively. During FGD, crucial and sensitive data obtained from the interviews will be reconfirm through discussion forum participated by subjects whom previously interviewed.
c) Use of Documents.
As mentioned by Moleong (2000), this study also utilize both personal documents such as diaries, personal letters and autobiography, and official documents like memos, announcements, instructions, rules, minutes of meeting, the leader's decision, magazines, newspapers, newsletters and other relevant records incorporating to the research.

2.4 Technical Analysis and Data Interpretation
a. The interpretation of the data obtained from in-depth interviews and secondary data as well as the documents will be analyzed in three stages:
b. Firstly, data reduction stage that aims to do screening, sorting, sharpening, organizing the data into a certain formula, a certain category, or a specific theme. Second, the data display stage which is intended to present the data in the form of a sketch, synopsis and matrix which is necessary to facilitate the description and conclusion affirmation in the effort to verify the data as the third stage.
c. The process of data analysis was not completed at one time simultaneously in a linear form, but the process follows an interactive and back and forward cycle which needs to be done starting from the data collection (Miles & Haberman,
1992). Then, the data was analyzed through interpretation techniques as suggested by Patton (2000) to provide a significant meaning to the analysis, explain description pattern and find out the relationship between the dimensions of the description.

3. Result and Discussions

3.1 Demographics and Interior Construct of Socio-Religious of Jambo Dalam People

Jambo Dalam village is located in Plimbang Bireun district, province of Aceh. The village is adjacent with Cot Geulumpang village from the north, with Paloh Pupu village from the South, with Bugeng Krueng Peudada village from the east and bordering with Uteun Rungkom village from the west. Overall land settlement is 122 hectares, 88 hectares are rice farm and 389 hectares are plantation area. Jambo Dalam is domiciled by 121 heads of families. The number of men is 212 and number of women is 242 people. The total population number is 454 people, 98 of them had not completed primary school education. Only 6 person who finished undergraduate study and the rest completed junior high school (Monographic Data, 2009). Jambo Dalam people are rural communities. Their central earn for their live is from agricultural products. The main agricultural products of the village are Rice, Soybean, Corn, Chilies, Long Beans, Cucumbers, palm, cotton, rubber, coconut and palm oil. Rice farming area is 10.5 hectares, 20 hectares is for Corn, 100 hectares for Soybean, 5 hectares for Long Bean, 5 hectares of Cucumber, 10 hectares of chilly, 30 hectares of rubber, 40 hectares of coconutan 60 hectares is for oil palm (Monographic Data, 2009). Rice farming is more subsistence than the industry. Generally, rice farming is aimed to meet their own consumption needs, only when the harvest reaches maximum production, some of the products will be for sale. Agricultural orientation is derived from the concept of their ideology that “Pang Ule Ibadat Seumbahyang, Pang Uleu Hareukat Meugoe” (the central of worship is the prayer and the main earning job is farming) (Nek Chiek, 2014).

The slogan is the basic view of the people of Jambo Dalam to the world, so that farming is not interpreted only as a livelihood, but as an identity for life and survival. Thus, although one is a farmer, he/she will keep planting rice in his/her land. Agricultural business which shows potential economic activity is rubber plantations, nut and palm oil. However, most people become workers of the agricultural products. Farms are mostly owned by rich people outside of the village. Only a minority of people have their own garden. Livelihoods activities which focus on agriculture shape people in Jambo Dalam as farmer communities. Togetherness is created due to the similarities of geography, food, social interaction, livelihood and interaction intensity has created a social norm which is shared together. This situation, then, also create high reciprocity of problems faced in the community. As a result, the social interaction builds a warm emotional relationship. Cooperativeness becomes the main characteristic of the people. This reality binds emotional ties that unite the diversity. The unity of emotional relationship creates a principal belief that “one for all and all for one”. This behavior is reflected in their daily practical activities by which they always see one’s problems all’s problem. This fact encourages people in Jambo Dalam always participate in facing and solving problems together.
Characteristics of solidarity formed in the community in Jambo Dalam demonstrate what Emile Durkheim called *mechanical solidarity*. In mechanical solidarity, the main bond of the unity is mutual trust, shared dreams and moral commitment. Collective consciousness, thus, appears through the same norm where individuality is pressed and homogeneity is highlighted (Johnson, 1994). As an organic community, people in Jambo Dalam always respect group expectation in their personal behavior. Social pressure is highly emphasized on individual who behave threatening the existence of shared norms. Individuals who are "brave" to create different behavior and understanding will require extra caution in order that the individual able to coexist. Otherwise, a hard social sanction will be punished to individual who against the norm. The diversity is appreciated to the extent of not threaten the main norm (mainstream) of the community. The sanction of violators will be “isolation” or exclusion from the community. So the moral commitment to maintain norms and group solidarity is highly emphasized. Every people in Jambo Dalam are Muslims (Monographic Data, 2009). They are religious and fanatical people Muslims. Here, people practice Islam Ahlusunnah wal Jamaah. In Fiqh practice, they followe Imam Shafi’i and Al-Ash’ari theology. Strong engagement of people Jambo Dalam and Islam became the cornerstone for the people to place Islam (especially the teachings of Imam Shafi’i) not only as a religion but also as a system of life and worldview. Islam then becomes a source of reference in dealing with all the problems, attitudes and decision, as well as Islam is considered as part of the identity.

Islam as a system of ideology and way of view (worldview) is reflected in a traditional expression of the people of Aceh (*Hadih Maja*), namely, "Hukom ngon adat han jeeut cree, lagee zat ngon sifeut". (The law/Shari’a law and the social life should not be separated like substance and its nature (Zainuddin in Sunny, et.al, 1980). While as the identity, Islam is reflected in the fact that Jambo Dalam people will be harassed and angry if they are accused as non-Muslims, even though in they do not practice Islamic teaching well in their daily lives such as prayer and fasting. The close relationship between Islam and Jambo Dalam people is reflected in the philosophical phrase, *Ta Peutenteu Udep Lam Islam Sampo An matee*” (We make sure that our life in Islam until die) (Ismuha, 1983). Respecting Islam as a worldview and identity system results the community of Jambo Dalam in strongly respecting the Islamic teaching. However, lack of knowledge on Islam is considered as justification of the importance on the Islamic teacher. In Jambo Dalam, Islamic teacher is called *Teungku*. There are five categories of *Teungku* known, are *Teungku Dayah, Teungku Bale, Teungku Rangkang, Teungku Imeum Meunasah* and *Pak Teungku*. *Teungku Dayah* is a leader of a *dayah* (boarding school); *Tengku Bale* is who became the vice of *Teungku Dayah* in a *dayah*. Sometimes, they are called as the chairman of *dayah*. It refers to his position as the principal of a *dayah*. *Teungku Rangkang* is who serves as medium-grade teacher at the Islamic boarding school. *Teungku Imeum meunasah* is a leader in *meunasah* (praying house) in a village, and *Pak Teungku* is designated for one who graduated from State Islamic Institute College (IAIN) (Nirzalin, 2012).

*Teungku Dayah* is the main figure in the village. He is very influential *teungku* in Jambo Dalam society and generally in Aceh both in religious learning and teaching and social and political issue. Charismatic appeal of a *Teungku Dayah* is reflected in people belief that he is a "sacred" person as the successor of the prophet"; as a "Keuramat"
(miracles) person; he is "never wrong" (cannot do any mistakes) and as the "mother" who always struggle for the best interest of the society. The respect (takzim) of Jambo Dalam people toward teungku dayah make their religious characteristics are closely associated with the characteristics taught by the teungku and his followers. In general, teungku dayah's professing Shafi'i teaching very well, so Islamic character of Jambo Dalam community is not separable from the teachings of Imam Shafi'i. The central references of Islamic teaching of the people in Jambo Dalam are derived from three scholars from the East Coast of Aceh, which is geographically close to the village, they are Abu Tumien Blang Blahdeh, Bireun, Waled Mudi MESRA Samalanga, Bireuen, and Abu Kuta Krueng Ulee Glee, Pidie.

3.2 Tengku Aiyub and His Interaction with Gampoeng’s Elite

Tengku Aiyub was born in Jambo Dalam village on July 1, 1965. His father is Syahkubat, a carpenter and diligent farmer. Not having other jobs makes him unable to afford his own land for farming. This situation makes his family live economically unstable. Although living in poverty, Syahkubat tries hard to send his children to school. Syahkubat sends his kid, Aiyub, to dayah of Abu Isa M. Nalan. After completing his two years studying there, Aiyub is moved to dayah Tengku Arongan in Samalanga, Bireuen. In addition to learning Islamic teaching, he also learned Acehnese silat (martial art) in both dayah. His talent makes Aiyub could rapidly learn this skill, even faster than he learns Islamic knowledge itself. Nevertheless, Lung disease that Aiyub suffered prevents him to work normally as others. So his daily activity what he can do is to teach Quran to his children. The lessons taught by Tengku Aiyub to his son are Islamic teaching which is based on the book Masail al. This book is predominantly discusses about the basic laws in Islam such as Tauheed, Thaharah and so on. Once a time, his friend Bukhari, a Civil Servant at Pandrah District Office visited his house and found Aiyub was teaching the Quran to his son. The way Tengku Aiyub taught his son, using contextual teaching and reasoning to strengthen the argument based on Qur'an and Hadith, attracted Bukhari’s attention who graduated from Dayah Mudi Mesra Samalanga. As a results, what he saw and heard from Tengku Aiyub gave him extra understanding particularly on the correct procedures of praying and performing ablution.

Furthermore, as the news about the way Teungku Aiyub teach Islam spread out through Bukhari, many people from around the village came to his house to learn about the basics understanding of Islam. In addition to teaching religion, Tengku Aiyub is also respected as a physician. His house is visited by many people seeking medical treatment every day. Even, his patients came not only from surrounding but also from outside of the village (Nek Chiek, 2014). Through medical treatment activity, Tengku Aiyub spread the influence of Islamic teaching to his patients, especially to patients staying at his house. His medical treatment skills, even for some chronic disease speed up his popularity and name. People see that Teungku Aiyub has extraordinary abilities. Islamic scholarship, expertise in medicine (physician) and martial arts sileuk raised him become a great and charismatic leader among his group. In social concept, the term charisma was firstly used by Weber (1964). Weber defined charisma as a particular trait of a personality of an individual based on where the person was considered extraordinary and treated as a person who has
supernatural superior characteristics or at least by the forces of distinctive and exceptional. Therefore, a charismatic person is a person whom the people believe that he has an impressive strange ability which is considered invisible and sets him apart from the ordinary. "The term charisma will be applied to a quality of an individual personality by virtue of which he is set apart from ordinary men and treated as endowed with supernatural, superhuman, or at least specifically exceptional powers or qualities (Weber, 1964).

Whether someone "really" has any or all special characteristics which are considered as the perfection by his followers it does not matter, the important thing is remarkable properties that are considered by others as an attribute of the person. The validity statement on the authority of charisma, in any context, is always based upon trust from both the leader and the followers towards the authenticity of task of the leader. The charismatic character usually gives "evidence" of its authenticity by doing magical act or by stating the divinity revelations (Giddens.). The obvious evidence of charismatic leadership of Tengku Aiyub is demonstrated by the attitudes of his followers by being subservient, obedient and ready to do whatever he says. Even, his followers are ready to defend on any confrontation against Teungku Aiyub. One of his followers, Sulaiman Badai, said that: "Adak Neukoh Taku Han Yang Loen Loen Suroet Leu Jak Bak Tengku Aiyub" (Although you slaughter my head I will never stop coming to see Tengku Aiyub) (Badai, 2011). The attitudes of his students indicatethat Tengku Aiyub is a highly respected figure in the community. His action and suggestions on something always brings compliance and immediate response from his followers.

Another thing that raises the authority of Tengku Aiyub in his followers’ eyes lies in personality. Tengku Aiyub is a straightforward person and stick to the principles of Islam. Anything that is against his view will be complained. In addition, he is known as a critical person towards the problems in the village. For instance, in case of aid to the village, he is very critical on the use of the budget. If he senses any budget abuse, he will not feel hesitate to complain even using inappropriate words although it is directly confronted with village officers like Geuchiek, village secretary, and Tuha Peut (Council of Elders in a village). As a result, his attitude makes some village apparatus dislike him. Tengku Aiyub’s attitude inconvenience their existing peaceful way of governing. If this situation is not anticipated, their power is possible to be at stake. In the same manner, in the case of religious aspect, Tengku Aiyub will not hesitate to criticize something he sees inappropriate with Islamic view. For example: the case of mosque which is not closed. In his view, leaving the mosque opened is danger as many animals can go back and forth into and make hadath carelessly. His attack is also offending Teungku Imuem at the mosque. Tengku Aiyub’s attitude generates disharmonious relationship between him and village officials as well as Teungku Imuem at the mosque.

3.3 Spreading News of Misguided

Islamic teachings delivered by Tengku Aiyub, except writing phrase of tauheed in the body of death, is categorized as regular teaching taught by all Teungku in Aceh. The teachings that he interprets from the book he learned is seen as usual things and debatable. However, in the end of 2010, there was news reporting that Tengku Aiyub taught different
and misguided Islamic teaching to his followers. This news is unstopably spreading out because the source of information is not only from ordinary people but also from the people who is respected in Jamboe Dalam village, such as Tengku Imeum Chiek, Geuchiek (head of village), Sekdes (village secretary) and Tuha Peut. However, the first source of information about this issue was still vague. There was no one who earnestly tries to find out clarification. This issue is seen very sensitive because it relates to the matter of Aqidah Islamiyah so people are more focus on spreading the news rather than finding out the truth.

Table 2. Accusation of Misguided Issues against Teungku Aiyub

<table>
<thead>
<tr>
<th>No</th>
<th>Accusation of Misguided Issues</th>
<th>Informant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Verse of Kursi in the Qur'an is wrong. The right one is the verse that he has (Teungku Aiyub).</td>
<td>Tgk. H. Usman Pandrah</td>
</tr>
<tr>
<td>2</td>
<td>Teungku Aiyub argues that he can take some one’s life.</td>
<td>Tgk. Samsul Blang Kuta</td>
</tr>
<tr>
<td>3</td>
<td>Teungku Aiyub argues that his piety is as high as Imam Ghazali</td>
<td>Tgk. Samsul Kuta</td>
</tr>
<tr>
<td>4</td>
<td>The meaning of Alhamdulillahis that everything in this world is belong to Allah thus we can take other’s belongings.</td>
<td>Tgk. Samsul Kuta</td>
</tr>
<tr>
<td>5</td>
<td>When getting married, husband should declare by saying: “Ka Hamba Teurimoeng” (I (servant) have accepted).</td>
<td>Fadhli Ismail (Geuchiek Jambo Dalam) Tgk. Royani (Imeum Gampoeng Jambo Dalam) Syarifuddin Saleh (Keurani/Sekretaris Desa Jambo Dalam)</td>
</tr>
<tr>
<td>6</td>
<td>Teungku Aiyub believe that Quran has more than 6666 (six thousand six hundred and sixty six) verses.</td>
<td>M. Kasem (Tuha Peut Jambo Dalam) Tgk. Jailani Padang Kasab (Pimpinan dayah/Imeum syiek Mesjid Teungku Dikupula) Tgk. Abdul Manaf (Bilal Mesjid Tgk. Dikupula)</td>
</tr>
<tr>
<td>7</td>
<td>On the forehead of the death body, it should be written down syahadat sentence using water. Tauheed sentence should be written on the right side and syahadat rasul is written on the left side. If these sentences had been written down, he says “Adak Hanna Tameudoa Lee Pih Jeut” (if we do not pray for the death is fine) because syahadat sentences are the best prayer for the death.</td>
<td>M. Kasem (Tuha Peut Jambo Dalam) Tgk. Jailani Padang Kasab (Pimpinan dayah/Imeum syiek Mesjid Teungku Dikupula) Tgk. Abdul Manaf (Bilal Mesjid Tgk. Dikupula)</td>
</tr>
<tr>
<td>8</td>
<td>Revelation is directly revealed from Allah to Teungku Aiyub and the soul of Prophet Muhammad exists in his body.</td>
<td>M. Kasem (Tuha Peut Jambo Dalam)</td>
</tr>
<tr>
<td>9</td>
<td>He is able to see what happen (punishment) in the grave.</td>
<td>M. Kasem (Tuha Peut Jambo Dalam) Tgk. Abdul Manaf (Bilal Mesjid Tgk. Dikupula)</td>
</tr>
<tr>
<td>10</td>
<td>Teungku Aiyub knows when dooms day comes and he knows that the greatest disaster will come (more than tsunami in 2004).</td>
<td>M. Kasem (Tuha Peut Jambo Dalam) Tgk. Abdul Manaf (Bilal Mesjid Tgk. Dikupula)</td>
</tr>
<tr>
<td>11</td>
<td>Teungku Aiyub perform Jum’at prayer directly in</td>
<td>M. Kasem (Tuha Peut Jambo Dalam)</td>
</tr>
</tbody>
</table>
Accusation of Misguided Issues

<table>
<thead>
<tr>
<th>No</th>
<th>Accusation of Misguided Issues</th>
<th>Informant</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Nasrani can enter to paradise.</td>
<td>Tgk. M. Ali Ismail Blang Panyang</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ti Aisyah Lhok Manee</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rukaiyah Lhok Manee</td>
</tr>
<tr>
<td>13</td>
<td>Reciting surah Alfatihah “IYA KANAK BUDU WAIYA KANAS TAIN” and when doing ablution we have to</td>
<td>Nurmalawati Kuta Rusep</td>
</tr>
<tr>
<td></td>
<td>intend saying in our heart that “this is Allah’s hand”.</td>
<td>Nuraskiyah Kuta Rusep</td>
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<td></td>
<td></td>
<td>Erlinawati Pandrah Janeng</td>
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<td></td>
<td></td>
<td>Badriah Pandrah Janeng</td>
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<tr>
<td></td>
<td></td>
<td>Abdul Gani Geuchiek Pandrah Janeng</td>
</tr>
<tr>
<td>14</td>
<td>There is a hole in his house where he keeps rice, clothing and books. He considers that after</td>
<td>M. Jafar Calok</td>
</tr>
<tr>
<td></td>
<td>the doom day we will reborn and will use that cloth, eat the rice and reads those books.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Coming to the mosque is not an obligation because we can do it by saying in our heart silently.</td>
<td>Maksal Bin Bukhari (Murid Dayah Abon Hafana)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fadlina Binti Amiruddin (Murid Dayah Abon Hafana)</td>
</tr>
<tr>
<td>16</td>
<td>Dajjal is already in this earth but still unknown where about.</td>
<td>Maksal Bin Bukhari (Murid Dayah Abon Hafana)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fadlina Binti Amiruddin (Murid Dayah Abon Hafana)</td>
</tr>
<tr>
<td>17</td>
<td>Imam Mahdi has born but still a kid.</td>
<td>Maksal Bin Bukhari (Murid Dayah Abon Hafana)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fadlina Binti Amiruddin (Murid Dayah Abon Hafana)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(MPU, 2011)</td>
</tr>
</tbody>
</table>

Such misguided issues are quickly spread out within the community. On the other hand, Tengku Aiyub and his followers were not aware yet, so they still maintain performing their usual ritual activities as usual. It is sensitive because it relates to the issue Aqidah that makes people of Jambo Dalam disturbed. The people are worry about the widespread of this misguided concept of Islam day by day which in turn could increase the number of the followers even it could also happen to anyone’s family member. This situation and concern from parents and youths in the village remains an endless topic among the community.

3.4 Statement of MPU

People concern of misguided issues of Tengku Aiyub finally attracts the attention of Scholars Consultative Assembly (MPU) in Bireun. Evidence of misguided practiced by Teungku Aiyub is presented by community to MPU in an appropriate moment because such issue is considered as serious concern by MPU Aceh. At the same time, in fact, missionary activities and effort of misguiding the aqidah Islamiyah is found widely spread in Aceh. In West Aceh, it is found that a large number of bibles are delivered under the guise of NGO donation. Another case, Gayo residents are taken to Medan and forced to convert to Christianity. Also, the same thing happens with some residents in Ujong Batee Aceh Besar. Then, based on the reports submitted by people from Jambo Dalam village and
surrounding communities, MPU call Tengku Aiyub and his followers to meet MPU for clarification. In the early stages, Tengku Aiyub is reluctant to answer the invitation because he argues that no clarification needed. However, based on some considerations and his wife finally he came to meet MPU (Wardiyah, 2014). On April 5th, 2011 his followers came to see MPU, while Tengku Aiyub came a day later on 6 of April 2011 (MPU, 2011).

Interestingly, after two days plenary session held by MPU, it results a sharp disagreement between the testimony given by the community and the clarification from Tengku Aiyub and his followers. Tengku Aiyub and his followers are able to refute all the accusations addressed to them. Instead, the accusers consisting of several leaders of the village, religious leaders and community members are unable to prove each of their allegations. Tengku Aiyub repeatedly argued that all accusations are slanderous. All Islamic religious thought that he taught to his children and followers were written in the books that he learned from the Islamic boarding school where he was studying, except the idea of writing syahadat sentences on the death body which is initiated by Tengku Aiyub (MPU, 2011). He argued that if he practices misguided concept, his wife will be the first individual who fight against him (Wardiyah, 2014) because, in fact, his wife is a graduate of the famous Islamic boarding school in Aceh, it is dayah Abu Seulimeum, Great Aceh.

Surprisingly for Tengku Aiyub and his followers that the results of the session which is in the form of the Decree/statement of MPU Kab. Bireuen precisely won the complainants allegations. After conducting a series of plenary session on Tengku Aiyub Syakubat and his followers, Scholars Consultative Council in Bireuen finally issued a decision (fatwa). The fatwa is based on the results of the plenary session which says:

First, the group of Tengku Aiyub Syahkubat is an exclusive group / taqiyah or group of people who tend to hide their teachings from public access which, then, causing anxiety, suspicion, slander and other negative impacts within the society. Secondly, Scholars Consultative Assembly (MPU) in Bireun stated that all activities performed by Tengku Aiyub Syahkubat and his followers should be stopped throughout Bireun district because:

First, Tengku Aiyub Syahkubat does not have scientific capacity to give lectures and teaching. Secondly, activities practiced so far lead to misguided teachings as it is not in line with regular teachings and with what are practiced by other scholars currently in Aceh, particularly practiced by local communities. Thirdly, the activities practiced cause anxiety and slander of the community which may lead to mass anarchism (MPU, 2011).

The decree (fatwa) stipulated by Scholars Consultative Assembly (MPU) in Bireuen was issued on April 7, 2011. The fatwa was accepted as a strange decision by some followers of Tengku Aiyub Syahkubat. According to Ummi Wardiyah, Tengku Aiyub’s wife, during the meeting session between Tengku Aiyub and MPU chairman, TGK. Hanafiah Hamzah, it is said that Tengku Aiyub teachings is not misguided. He adds, the main problem lies on power and economical problem (Wardiyah, 2014). So, this decision confirms his followers that the MPU is not fair in making decision on this issue. Subjectivity due to the massive pressure from community who dislike Teungku Aiyub sensed more dominant than running Islamic laws.
3.5 State Intervention Failure and Massive Reaction

Position of MPU, as representative of the government and other related apparatus are considered weak in dealing with Tengku Aiyub which, then, make people pessimistic and trustless that they could resolve this issue. This fact makes people feel that the problem of Tengku Aiyub is not government’s problem any longer, but it is their problem now. As it is their problem, then they have to solve it. People think that MPU and police can no longer be expected to solve this issue, and failed addressing this problem. As a result, people do not comply with any announcement from MPU and police that warn the people to not act anarchically against Tengku Aiyub and his followers. When some apparatus of Jambo Dalam village and communities desperate with the failure of MPU and the police solving this problem, the people feel increasingly disturbed by the another issue saying that Tengku Aiyub insulting against village leaders and some Teungkudayah that they respect. Even though the source of the issue is still unclear, but people believe that the information is true. Tengku Aiyub and his followers intentionally convey those insulting statement. However, there is no single person who admits that he/she hears the words directly from Tengku Aiyub and his followers.

Wild issues that rapidly spread out among the people and offend them are:

Table 3. Insulting issues from Teungku Aiyub and his followers to the communities

<table>
<thead>
<tr>
<th>No</th>
<th>Deliverer of the Issues</th>
<th>Issues</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tgk. Mawardi Imeum Gampoeng Lhok Manee</td>
<td>Meuyoe Tapakek Ridak Adak Bak Asei Pih Teungku (if it is worn the scarf, even the dog can be considered as a Teungku)</td>
<td>It is said that the words come directly from Teungku Aiyub</td>
</tr>
<tr>
<td>2</td>
<td>Syarifuddin Sekretaris Desa Gampoeng Jambo Dalam M. Kasem Tuha Peut Gampoeng Jamboe Dalam</td>
<td>The people of Jambo Dalam are “Kafe Seumah Tika” (disbelievers who worship to praying mat)</td>
<td>Directly from Teungku Aiyub</td>
</tr>
<tr>
<td>3</td>
<td>Syaifuddin Masyarakat Jeunib</td>
<td>Abi Nas from Jeunib dan Abi Hafana from Padang Kasab are Leumo Meuserban (cows wearing turban)</td>
<td>Directly from Teungku Aiyub</td>
</tr>
<tr>
<td>4</td>
<td>Tgk. Husaini Sekretaris Desa Gampoeng Seuneubok Seumawae</td>
<td>In his point of view, students from dayah are dog.</td>
<td>Directly from Teungku Aiyub</td>
</tr>
<tr>
<td>5</td>
<td>Tgk. Sulaiman Pimpinan Dayah Manarul Huda</td>
<td>In his view, all community members are pig</td>
<td>It is said from his follower, Nabhani</td>
</tr>
<tr>
<td>6</td>
<td>Abon Sudirman Pimpinan Dayah Cot Geuleungku</td>
<td>Teungku Aiyub believe that he is more pious than Abu Mudi and MPU officers are dog</td>
<td>It is said from his follower, Bukhari</td>
</tr>
<tr>
<td>7</td>
<td>Muhammad Is Warga Masyarakat Nasee Mee</td>
<td>Abu Pulo Iboh is called a goat by Teungku Aiyub (MPU, 2011).</td>
<td>From Bukhari</td>
</tr>
</tbody>
</table>

Those various issues are quickly spread out make people have mix feeling: upset, disappointed, offended and angry. People begin to losing their patience. Moreover, the confirmation letter from head of sub district to the Regent of North Aceh stating that the
teaching activities of Tengku Aiyub are normally run again and requested the district government to intervene and to stop those activities within Bireuen district. This situation provokes the people to confront and solve the problem on their own. The problem is that the issue of misguided of Tengku Aiyub has existed for years and remained unsolved by the government.

Misguiding \textit{Aqidah} and insulting the existing religious norms are seen as intolerable phenomenon. They think that the people have to perform re-purification movement. Thus, on November 17, 2012, people massively move to Jambo Dalam meet Teungku Aiyub for clarification about the activities and teachings he develops so far (Tribun News, 2012). Apparently, the police have been informed about the mass protest at that bad lucky night of Tengku Aiyub. It was indicated from the communication between the head of police officer with Syarifuddin, the secretary of Jambo Dalam village. Syarifuddin said:

"The incident took place in a sudden time, the situation is still normal until before sunset/Magrib. During the sunset, I was called by Kapospol (police) asking about the situation in Jambo Dalam village. I said that everything is normal. Kapospol ensure whether or not the situation is under fire, then, I said yes because I was setting fire for my goats" (Syarifuddin, 2014).

However, there were no police attempting to block the arrival of mass or any other preventive action, neither the government nor MPU from Bireuen. According to Tengku Aiyub’s wife, Wardiyah Ummi, the public come to teungku Aiyub’s house at around 20:30 pm after \textit{Isho} prayer. “I heard that there was someone throwing the stone onto my house, calling for Tengku Aiyub to step out by saying inappropriate and cursing words. Then, I saw the front part of my house which is wooden made was burnt. There were some policemen trying to calm down the people. At the time, only me, children, Tengku Aiyub and his nephew, Muntasir, were at home. There was no one from Tengku Aiyub’s followers. Because of fire, the electricity was off at home. Also, because we had new baby and other little kids, Tengku Aiyub asked me to go to my parents’ house which is near to our house (Wardiyah, 2014). In the black out, suddenly at 23:00 pm an issue came up saying that Mansuri, a man from Lancok Bungon, Plimbang killed died by Tengku Aiyub and his followers using machete weapon. This news made the people ran away for survival. Few minutes later, thousands of people came back and massively attacked house of Teungku Aiyub angrily. People used anything to attack and destroy Teungku Aiyub. They used rocks, machetes and swords attacking Tengku Aiyub’s house. Among the people, there were police and army who keep trying to stop actions of the people. Warning shot repeatedly released by the army to warn the people. However, the people became more barbarous and none of security forces were able to control that massive incident.

This sadistic incident is out of humanity. House and study hall of Teungku Aiyub were burned. While the body of Tengku Aiyub was dragged away, both of his thighs were shot, and then put over a few strands of wood, then his body and his nephew’s body, Muntasir were splashed with gasoline and \textit{subhanallah} they are burnt out alive. Being still alive, someone in the crowded said "He’s not dead yet, because he is a big syaitan". Then, a man came with his sword, \emph{Mashallah} he cut Aiyub’s head off his body (see video on Plimbang Tragedy). This incident, where the victims were burnt alive and slaughtered is the first case happened in Aceh. This inhumanity incident was irrational and difficult to
believe. Series of well systematic and structured events indicate this mass action is based on plan. Actors who mobilized the movement remain unknown. External actors utilized disadvantages situation between Tengku Aiyub and village apparatus. The triangular relationship between Tengku Aiyub, village apparatus and local Islamic leaders which are less harmonious seemed to be the beginning of this incident. Tengku Aiyub was critical towards Sekdes and Tuha Peut of the village whom he considered lack of transparency in managing the funding for village development became the basic reason make them dislike Teungku Aiyub (Wardiyah, 2014).

Village apparatus see Tengku Aiyub as a thorn in the flesh. He is not cooperative and difficult for compromise. He also like to say bad words which attack and hurt them. Dayah leaders who also an Imeum of the mosque feel offended by Tengku Aiyub because he less appreciate the mosque as he said that the mosque is less sacred. Moreover, the public is also less respect to Tengku Aiyub because he had bad interaction with them. Tengku Aiyub almost never attended community events. His exclusivity makes people feel that he is not part of them. Therefore, this incident can be described as an influence competition event on economic and religious influence between Tengku Aiyub, village apparatus and local Islamic religious leaders rather than “misguided” issue. The people of Jambo Dalam itself were manipulated by misguided provocation raised by the opponents of Tengku Aiyub. Thus, when large number of public from outside of the village came attacking Tengku Aiyub at Jambo Dalam they gave no defend or prevention. The “ignorance” of Jambo Dalam community onwards this incident is reflecting their execration to Tengku Aiyub whom they claimed out of their group. It also indicates the application of social sanction in an organic society system.

4. Conclusion
Mass anarchism which resulted in the death of Tengku Aiyub Syahkubat and some of his followers by group of people starts from the widespread of “misguided” news against them. The issue of misguided teaching from Tengku Aiyub stems from a series of critical attitude of Tengku Aiyub towards the village leaders. On the village management level, Tengku Aiyub questioned the transparency of budget usage. While, on the local Imeum, Teungku Aiyub criticized his less attention to the piety of worship (mosque) palace during the process of construction. For Tengku Aiyub, in order that the mosques to keep piety and clean, the mosque should be closed during the construction works. Leaving the mosque opened while construction work is not good. This fact makes Teungku Aiyub being hesitate to perform the prayer in the Mosque which then raises a question from the society and Teungku Imeum.

At the same time, Teungku Aiyub who is well known as an expert in playing sword challenges the local martial arts champ to prove his capabilities. The phenomenon provides cultural barriers and minimalist image to the process of the development of martial art followers. Therefore, Tengku Aiyub became the enemy of three dimensions in the same time, they are village government apparatus, religion leaders and martial arts masters. Then, the issue of misguided against him is rapidly spread out from mouth to mouth. The attitude of the government in handling this case was not seriously resolved. Even, particular parties seem to “ignore” this problem. Reaching the peak, thousands of provoked
mass from surrounding area came and deadly attack Tengku Aiyub. It is tragic that the cases resulting from the disruption of political and cultural capital issue should be ended with a mass anarchism.

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EFFECT OF TEMPERATURE AND HEATING PERIODE ON CHARACTERISTIC OF FRESH RICE –BASED SPRING ROLLS WRAPPERS

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ABSTRACT

The purpose of this research to determine the optimum temperature and duration of heating which produces the optimal characteristics of fresh rice –based spring rolls wrappers which has sufficient cohesive properties and elastic for easy to roll and not easily torn. Temperature and heating period could be expected to affect the intensity of the interaction between the components of materials that could affect the characteristics of the final product. This research uses a completely randomized design (CRD) factorial consisted of two factors studied were temperature (S) which consists of three level (100°C, 150°C and 125°C) and the heating period (P) is composed of three levels (3 minutes, 4 minutes and 7 minutes). Analysis was conducted on the water content, water absorption, bulk density. The results obtained are fresh rice –based spring rolls wrappers water content ranged from 20.00% to 30.45% with the average 25.90%. Water absorption of fresh rice –based spring rolls wrappers ranged from 44.79% to 68.15% with the average 52.85%. And range result for bulk density is around 0.41 g / mL - 0.58 g / mL. The best treatment of fresh rice –based spring rolls wrappers with temperature of 100°C and 3 minutes long heating period produces water content 30.45%, 47.24% water absorption, and bulk density of 0.58 g / ml.

Keywords: rice-based, spring roll wrappers, temperature

INTRODUCTION

Fresh rice –based spring rolls wrappers is wrapping materials of various types of food. In Indonesia only known two kinds of spring rolls are dry spring rolls and fresh spring rolls. Fresh spring rolls are not fried spring rolls while the dry-spring roll is fried spring rolls. In Indonesia rice paper made from wheat flour. However, wheat flour nowadays still imported. Therefore it is necessary to look for other alternatives. Food processing development strategy needs to be directed at potential of alternative sources of local food. One alternative local food that can be used as raw material for rice paper is rice flour due to their local availability and contain high protein (8-7%) (Liang and King, 2003). The use of rice flour is recognized likely to produce a product with different characteristics than the rice starch-based products. However, Bean (1986) states that the functional properties of rice starch can be directly applied as the naive of rice flour. Up to now there are many work that has been done regarding fresh-spring roll in a ratio of flour and water (Wijayasaputra et al., 2011) and use of arrow root flour with plasticizer (2014) but not many research are conducting in term of tempertaure and heating perioede on the characteristic of fresh spring rolls. According Mukprasirt et al, (2000) on a hot plate heating temperature 125°C for 4 minutes will give batter temperature around 72°C. So that ongoing partial gelatinization and albumin solid gel systems that are could be induced by heat. Temperature and heating perioede could be expected to affect the intensity of the
interaction between the components of materials that could affect the characteristics of the final product (Wijayasaputra et al. 2011).

This research aims to study the process of making fresh rice-based spring rolls wrappers by taking into account the temperature and duration of heating and the interaction among these factors on the characteristics of fresh spring roll produced.

MATERIAL AND METHODS

Materials used in this study is rice flour, Tapioca, water, eggs, and salt. The tool used in this study is teflon frying-pan, magnetic stirrer, glass tools, and digital scales.

Design Experimental

This research uses a completely randomized design (CRD) factorial consisted of two factors studied were temperature (S) which consists of three level (100°C, 150°C and 125°C) and the heating period (P) is composed of three levels (3 minutes, 4 minutes and 7 minutes). Analysis was conducted on the water content, water absorption, bulk density with 2 replication.

Fresh-Spring rolls procedure

Fresh-spring roll is made by weighing the materials that have been determined (3 grams of rice flour, tapioca 0.5 grams, 6 grams of water and 3.5 grams of egg whites). The next stage is rice flour, egg, and tapioca, mixed with water for 2 minutes to form a homogeneous dough. The next batter is inserted in the teflon frying-pan (diameter 10 cm). Heated to a temperature (100, 125, 150) °C for (3, 4, 7) minutes. Fresh-spring roll will be analyzed on water content, water absorption, and bulk density. Moisture content using the oven method (Sudarmadji, 1997), determination of absorbency is determined by boiling 5 g of sample in 100 ml of water. After reaching the optimum time (± 5 minutes), sampel was drained and drenched with water and then drained again after 5 minutes, then sample was weighed (A) and dried at a temperature of 150 °C until it reaches a constant weight, reweighed (B). As for the bulk density done by measuring the weight of the specimen fresh-spring roll by volume (Sathe and Salunke, 1981).

RESULTS AND DISCUSSION

Water Content

The present study shows that the water content of fresh-spring roll ranged from 20.00% to 30.45% with the average value of 25.90%. Based on analysis of variance, temperature and heating time were highly significant (p ≤ 0.01) on water content of fresh-spring roll (see Figure 1). These results are in accordance to Widjajaseputra et al., (2011) that water content of spring roll range from 30.48% to 52.96%. The highest value of water content achieved at 100°C with heating time for 3 minutes (Table 1).
The ability of water binding equal to the amount of water supplied and hydrophilic groups are not in a state of saturation could be the reasons. At a temperature of 100 °C, the amount of moisture content in the material start to vaporize, and starch granules increasingly open. This can lead to a decrease in cohesiveness due the distance among molecules become wider.

Figure 1. Different letters in the same column indicate significant differences between the means (LSD_{0.05} = 3.04 test, p<0.01)

Higher temperature and longer heating time will decrease both elasticity and cohesiveness as it may cut polymers binding (Cheng et al, 2006 in Widjajaseputra et al., (2011). The reduced water content of fresh-spring roll products with higher temperature and the longer heating period causes the characteristics of the fresh-spring roll turned hard, difficult to be rolled up and easily torn.

**WATER ABSORPTION**

The water absorption of fresh-spring roll ranged from 44.79% to 68.15% with average value of 52.85%. The highest value obtained at 150 °C with heating period of 7 minutes (68.15%). While the lowest result obtained at 100 °C with heating time 4 minutes (Table 2). Based on analysis of variance, temperature was highly significant (p ≤ 0.01)
although it does not enough significant, while heating periode on water absorption of fresh-spring roll show not significant different ((p ≥ 0.05) (see Figure 2).

Table 2. The average results of fresh-spring roll of water absorption

<table>
<thead>
<tr>
<th>Temperature (S)</th>
<th>Heating periode (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1 (3 m)</td>
</tr>
<tr>
<td>S1 (100°C)</td>
<td>47.24</td>
</tr>
<tr>
<td>S2 (125°C)</td>
<td>50.16</td>
</tr>
<tr>
<td>S3 (150°C)</td>
<td>59.40</td>
</tr>
</tbody>
</table>

LSD 0.05 = 31.95

The higher temperature adjusted, the higher water absorption produced. This result in accordance with Makmoer (2006), stated that the ability of a material to absorb water is getting higher at low water content. Desrosier (1988) described that high temperature at longer heating time will produce high evaporation, then the water that evaporates from material will decrease its weight.

Water absorption capacity is very closely linked to the composition and physical properties of the starch granules after being added with some water. According to Eliason (2004), starch granules can wet and dispersed spontaneously in water. Water is absorbed due to the granule that is physically bound and/or intermolecular on amorphous part. Fresh-spring roll which has already cooked will be able to reabsorb water but have a limited absorption capability. Hifrofilik groups contained in the fresh-spring roll matrix has demonstrated the saturation to bind water although this matrix is still able to withstand the strain. These properties are essential if the fresh-spring roll is wrapping materials of high
water content so that the optimal amount of water needed when mixing the dough so that
the gelatinization and hydration process at the time of cooking will perfectly produce.

**BULK DENSITY**

Bulk density shows a comparison between the weight of a material to its volume. Bulk density of fresh-spring roll ranged from 0.41 g mL\(^{-1}\) to 0.58 g mL\(^{-1}\). The highest value obtained at 100°C with heating period of 3 minutes (0.58 g mL\(^{-1}\)). The results of bulk density analysis of fresh-spring roll can be seen in Table 3.

Table 3. The average results of fresh-spring roll of bulk density

<table>
<thead>
<tr>
<th>Temperature (S)</th>
<th>Heating period (T)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1 (3 m)</td>
<td>T2 (4 m)</td>
</tr>
<tr>
<td>S1 (100 °C)</td>
<td>0.58</td>
<td>0.55</td>
</tr>
<tr>
<td>S2 (125 °C)</td>
<td>0.52</td>
<td>0.50</td>
</tr>
<tr>
<td>S3 (150 °C)</td>
<td>0.47</td>
<td>0.42</td>
</tr>
</tbody>
</table>

LSD 0.05 = 0.12

Based on analysis of variance, temperature was highly significant (p ≤ 0.01) (see Figure 3), while heating period on water absorption of fresh-spring roll show significant different (p ≤0.05) (Figure 4).

Figure 3. The effect of temperature (S) of bulk density of fresh-spring roll (LSD\(_{0.05} = 0.12\)) (Different letters in the same column indicate insignificant differences between the means).

Based on Figure 3. treatment at a temperature of 100 °C shows significant difference with the other treatments. The higher temperatures are used, the lower the bulk density
produced. It means low bulk density lead to thinner skin texture of fresh-spring roll and has rigid characteristic. According Cuq et al., (200) stating that the thickness of the spring roll skins will be strongly influenced by the formation of a gel system which determines the water-holding capacity of the material during the heating process. If the product has increased water retention, the thickness of the product will increase also in the same wide area. The greater bulk density will lead to have fresh-spring roll with lower flexibility.

![Graph](image)

Figure 4. The effect of heating period (T) of bulk density of fresh-spring roll (LSD$_{0.05}$ = 0.12) (Different letters in the same column indicate insignificant differences between the means).

Based on the picture above shows that the longer the heating produced bulk density decreases although no significant differences among the treatments. The higher the temperature and the longer the heating is used, the water that evaporates from the material will be more and lower weight of the material (Desrosier 1988). The decreasing of bulk density with the duration of heating can also be caused by the amount of water which reacts with the starch granule will cause the water distribution among starch granules that are heterogeneity because of the content of amylase and amylopectin which has a crystalline and amorphous phase. With the thermal process can cause the water contained in the amorphous part evaporated.

CONCLUSION

The data presented in this paper clearly demonstrated that treatment with 100°C for 3 minutes effectively increase the texture of wet lumpia. Thus, we suggest to do the further investigation focusing in granule structure of fresh rice –based spring rolls in lack of gluten in order to enhance the elasticity and not easily torn.
REFERENCES


CSR ENVIRONMENTAL CONSERVATION: 
AN ALTERNATIVE FUTURE FOR INDONESIA DEVELOPMENT

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ABSTRACT

CSR issues of environmental conservation have become an important discussion all over the world today. Environmental damage caused by the construction activity factor is a major factor in Indonesia, besides natural factors today. A good and healthy environment is the right of every citizen guaranteed by the state, so that everyone, both individuals and business institutions are responsible for preserving the environment. The responsibility has been set in the legislation in Indonesia, but its application is not easy because of various constraints.

The focus of this paper emphasize CSR setting environmental preservation and the main obstacle in the implementation of legislation, especially environmental damage caused by the business activity in Indonesia. Each country in the ASEAN region has different circumstances and challenges, but many of them have nearly similar conditions to the situation in Indonesia. In the spirit of running the ASEAN economies, the authors believe that sharing knowledge and experience of environmental protection will allow comparative references between ASEAN countries in order to address the issue of environmental degradation through comprehensive regulations and well practice.

It was found that the constraints are the external company; meanwhile a major barrier to the implementation of responsibility of environmental protection in Indonesia is uncertainty. Writers suggest that businesses have to understand the benefits of social investment and CSR incorporate into their business strategies. Correcting legislation is absolutely necessary. The rule of responsive and anticipative law is the answer to the challenge of human rights guarantees of every citizen to earn a good and healthy living environment.

Keywords: CSR, Conservation, Environment, Legislation, Indonesia.

Introduction

Preservation of the environment is a major challenge faced by the world today. CSR concept which is based on triple bottom line is a concept that offers a solution for sustainable development. This concept grew significantly over the last few decades[1]. The introduction of the obligation for businesses to implement the business goals should be aligned with the goals and values of society, which is begun by a definition according to Howard R.Bowen (1953) that "it Refers to the obligations of businessmen to pursue Reviews those policies, to make-Reviews those decisions, or to follow Reviews those lines of action roommates are desirable in terms of the objectives and values of our society "[2].

Nowadays, the obligations of business man not only looking for profit but also paying attention to the community, and the environment (3P: Profit, Planet, People) if they want their business to be sustainable. Because businesses can not only pursue profits itself, but they also must be involved in the fulfillment of social welfare and actively maintain the world's attention to the larger CSR after the World Summit in Johannesburg in 2002 which emphasized the importance of social responsibility.[3] A business of governance obligations refers to pursuance of laws and regulations, for the businesses need to follow
the rules, act responsibly, and give more attention to business ethics and integrity (Rees, 2006).[4]

CSR basically has various definitions; this depends on the vision and the company, which is agreed to the needs, wants and interests of the community [5]. In addition, the concept of CSR is also an underlying principle for sustainable development for business institutions, as well as for stakeholders comprehensively. This case is reflected in the various CSR formulas, one of them is The World Business Council for Sustainable Development (WBCSD) which states that: CSR is "continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society large."

The meaning of juridical environmental preservation is a systematic and integrated effort which is being made to preserve the environment and prevent pollution and / or damage to the environment that includes the planning, utilization, control, maintenance, supervision, and enforcement of law [6]. From the above description, the CSR environment is an underlying concept of sustainable development for the company and stakeholders as a whole, as well as an integrated systematic efforts that are being made to preserve the function of the environment in order to guarantee human rights to earn a good and healthy living environment. In Indonesia, a good living environment is the rights and the Constitution for every citizen guaranteed by the state as stated in section 28 of the letter H UUD 1945, and a general explanation of number 1 UUPLH. Thus, the government and all stakeholders have to implement the protection and management of the environment, so that the various natural resources contained is maintained [7].

**CSR Environmental Conservation: The Importance for Being Sustainable Environment**

In the last two decades, the destruction of natural resources and environmental pollution in Indonesia is increasing. Two decades ago the rate of the damage forests in Indonesia in Tengarai is about 1 to 1.2 million per year, now it has reached 2 million hectares per year. The decay chain spread and extends to the rivers, lakes, lowland forests, beaches and sea shore [8]. While the ecological crisis is no longer a future possibility, but the contemporary reality that exceeds the limits of tolerance and environmental adaptability[9].

The pattern of development policy only aims to meet short-term demands, without considering the significant environmental impact caused. It has the potential long-term threat which is not favorable for human life, and living beings in general. Such as environmental damage which is caused by the negative impact of human action, in other words, the negative impact of development activities [10]. In order to address these issues, the role of the state in ensuring the right of every citizen to earn a good living environment and healthy is very important. The role is embodied in the Law of the Republic of Indonesia No. 32 of 2009 on Protection and Environmental Management, which includes planning, utilization, control, maintenance, supervision, and enforcement of law. The Government (Ministry of Environment, the Governor, or the Regent/Mayor) is responsible to supervise the observance of businesses on environmental protection and its management.
Environmental issues nowadays become more complex; its solution does not only involve one or two aspects and disciplines of knowledge. Therefore, saving the environment requires cooperation among the components of society, and the rule of law which has certainty. And environmental management is not possible without legal arrangements [11]. The main purpose of this paper is to provide a brief overview of the barriers faced by businesses in implementing CSR. In this paper the uncertainty of the legislation is a major obstacle, particularly in relation to CSR environmental preservation.

**CSR Legislation of Environmental Conservation in Indonesia.**

Indonesia is a state of law. The law is placed as the basis of state power, and then the power in all its forms is run under the rule of law [12,13]. So any activity related to the enforcement of laws of environmental protection, should be implemented based on law. Similarly, if the environmental damage is caused by the negative impact of the business activities of the company, the protection of environmental life and other efforts shall be undertaken to follow the rules of applicable law.

Because a good and healthy environment is the right of every citizen guaranteed by the state, so in order to keep the preservation of a good and healthy environment, every people should maintain the preservation of the environment as stipulated in Law no. 32 of 2009 about the Protection and Preservation of the Environment (UUPPLH), in section 67 states that Everyone is obliged to preserve the function of the environment and control pollution and/or damage to the environment. Besides the rules for individuals, in UU, It also stipulates responsibility for the businesses that are required to preserve the environment. It has been stipulated in section 68 of the numbers b that: Every people doing business and/or activity is obliged to maintain the sustainability of the environment.

Obligations for businesses related to the environment, have also been regulated in UU no. 40 of 2007 regarding Limited Liability Company (UUPT). In section 74 paragraph (1) that: the Company conducting its business activities in its field and/or related to the natural resources is required to implement the Social and Environmental Responsibility. In this paper, it is called "CSR". Explanation of the provisions of section 74 paragraph (1) states that the reference to "the Company that runs its business activities in the field of natural resources" is a company whose business is to manage and exploit natural resources. Whereas in section 1 number 3 UUPT states that : Social and Environmental Responsibility is the commitment of the Company to participate in the sustainable economic development to improve the quality of life and the benefit of environment for the Company's itself, local community, and society. Based on the rule of law above, it shows a view of the duality of CSR practice, these differences lead to conflict of norm (geschijld van normen), while the issue of such legislation is based on the discrepancies in the vertical conflict regulations, where there is a conflict between lower rules and higher regulations.

Thus, it impacts on uncertainty of law in responsibility of the protection and preservation of the environment. Soedikno Mertokusumo [14,15] states that principality; one of the requirements that must be met in law enforcement in the community is the existence of legal certainty. Legal certainty which is intended in this case is the assurance of legal rules contained in it and are not contained the norm obscurity, emptiness norm,
and the conflict of norm, in order to provide certainty for the community in implementing the rule of law prevail [15, 16].

Legal certainty is expected so that the legal rules made are able to bring change in society. However, under conditions that, it has a form of the legal uncertainty which has been described above, this situation surely will not work to guide, provide guidelines for sanctions, guidelines, and tools to manipulate social and economic life, and will not make a difference to society itself. Related to this, Jay A. Singler said that most laws only carry very little influence on societal changes caused by the vagueness of the law itself [17]. The occurrence of dualism related to the implementation of CSR concepts set forth in UUPT, will result in the difficulty of implementation of CSR programs stipulated in the UUPT.

In order to make CSR dualism problems that cause uncertainty of the law in UUPT doesn’t continue, the authors recommend a change to the number 3 in section 1 of UUPT to be: section 1 paragraph 3 states that: Social and Environmental Responsibility Company is obliged to participate in the sustainable economic development to improve the quality of life and the benefit of environment for the Company's itself, local community, and society.

Furthermore, the regulatory issue is not over, even though in 2012 the government has approved to implement CSR legislation, namely Government Regulation (PP) No.74 Year 2012 about Social Responsibility and environment of Company Limited (TSL / CSR). The rule of law on CSR in the PP according to the author is not sufficiently binding on businesses as an instrument driving the implementation of CSR in the company's work program. This is due to CSR undertaken by the directors after obtaining the approval of the board of commissioners. As it is stated in section 4 (1) social and environmental responsibility implemented by the Directors based on the annual work plans of the Company after it’s approved by the Board of Commissioners or RUPS in accordance with the basic calculation of the Company, unless it’s provided the other thing in the legislation. Thus, that rule of law gives a chance to open a gap for the parties to avoid running the CSR, if they are not sufficiently understand the importance of CSR programs for them, so that they regard CSR as a burden rather than an investment for the future of their businesses.

In addition, the implementation of CSR then was published in the annual report of the company and accounted to the RUPS. As defined in section 6, the Implementation of social and environmental responsibility is contained in the Company's annual report and accounted to the RUPS. It is also a form of attenuation of a mandatory responsibility, as an obligation for businesses implementing CSR. In fact, the accountability of the CSR to the RUPS means as a form to a highly subjective assessment. Thus, the consistency of the rule of law would be a major element of an important consideration. In addition, mutual support among laws also would be important factor in the preparation of a legislation, so that legal certainty in Indonesia could be seen, especially the legal certainty regarding CSR environmental protection. The obligation is an important part for businesses in running its business activities.

Obligation of businesses is must and able to complement, but not to replace the obligation of the country [16], and the function of the State in the implementation and monitoring will be reflected through the presence of various rules and regulations [17],
rules and regulations serve to guide, protect, provide guidelines for sanctions, and give tools for manipulate social and economic life. It is as a means to achieve economic development goals, namely prosperous society. According to Satjipto Rahardjo, the law serves as protection for the benefit of human beings, and then the law should be implemented [18]. Thus, in order to make the law to work, the rule of law must be based on justice, equity and sustainability.

CLOSING

CSR environment is an underlying concept of sustainable development for the company and stakeholders as a whole, as well as an integrated systematic effort that is being made to preserve the function of the environment in order to guarantee human rights to earn a good and healthy living environment. However, the attitude of distinctive support between UULH and UUPT become an obstacle for the company to conduct environmental preservation. The existence of dualism patterns of CSR in UUPT that creates the legal uncertainty is a major constraint in implementing CSR protection of life in Indonesia. The presence of the rule of responsive law today in society is expected immediately. Writers Suggests that the legislation need to be fixed, so that these laws can respond the existing problems in society. It is also important to have anticipatory legal rules.

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THE EFFECT OF THE IMPLEMENTATION OF PROGRAMS IN INCREASING LOCAL REVENUES AND SEEING THE EXTENT OF ITS INFLUENCES ON THE PERFORMANCE OF SERVICE REVENUES DEPARTMENT IN NORTH SUMATRA PROVINCE

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ABSTRACT

This study examines the various dimensions of the implementation of programs increase local revenues and see the extent of its influence on the performance of service revenues in North Sumatra Province. The purpose of this study was to analyze the relationship between the activity of the organization, interpretation and application of the program to improve the performance of local revenue with service revenue in North Sumatra province in the aspect of sensitivity, sense of responsibility and public trust and to analyze the effect of the implementation of the program of local revenue to the performance of official North Sumatra Provincial government revenues. The data used are primary data and secondary data. The data analysis techniques in using the importance performance analyze, correlation, analytical determination, and regression analysis, samples were taken from the revenue department employees in North Sumatra province as many as 166 people. The results showed that the organization has implemented activities, interpretation, and application program to improve revenue. No coaching service revenue performance in North Sumatra Province in dimension sensitivity, responsibility and the level of public trust. The program implementation in increasing local revenues in organizing dimension, interpretation, interpretation and application of partial and significant effect on the performance of service revenues in North Sumatra Province. The next of regression analysis research program implementation increase local revenues in organizing the activity dimension, interpretation, and the simultaneous application of an effect on the performance of service revenues in North Sumatra Province. The conclusions of this research is in the development of the region should be increased service revenue performance in North Sumatra province through improved implementation of the program to improve revenue.

Keywords: program implementation, local revenue, performance

1. Introduction

Having been criticized by various parties, the Department of Revenue in North Sumatra Province in the management of proportional enhancing needs of local revenues to institutional aspects in terms of implementation program to improve revenue in North Sumatra Province. Having defined the policy program in its implementation is not as expected that the Revenue Service Department of North Sumatra Province is able to create clean administration. Many find obstacles and problems that requires improvement especially in the performance of the Department of Revenue in North Sumatra Province.

The research chose the Revenue Service of North Sumatra Provincial Government as the research object with various considerations such as the Department of Revenue in North Sumatra Province has been working very hard to plan the improvement in local revenues programs, which includes the implementation plan in obtaining positive results per year. The achievement of performance targets and actual revenue aspects managed by
the Department of Revenue in North Sumatra Province showed a trend of increasing revenues from local taxes and levies which grew over 10 percent at 2010, 2011, and 2012. Acquisition of revenue realization of some types of local revenue (PAD) annual income can be seen as follows:

Table 1. Percentage of realization acquired by type local revenue (PAD) in North Sumatra Province in 2010-2012

<table>
<thead>
<tr>
<th>No.</th>
<th>Types of Income</th>
<th>2010</th>
<th></th>
<th>2011</th>
<th></th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rp Billion</td>
<td>%</td>
<td>Rp Billion</td>
<td>%</td>
<td>Rp Billion</td>
</tr>
<tr>
<td>1</td>
<td>PKB</td>
<td>799.444</td>
<td>96</td>
<td>1.046.727</td>
<td>104</td>
<td>1.211.376</td>
</tr>
<tr>
<td>2</td>
<td>BBNKB</td>
<td>963.572</td>
<td>117</td>
<td>1.533.366</td>
<td>110</td>
<td>1.808.944</td>
</tr>
<tr>
<td>3</td>
<td>PBBKB</td>
<td>480.348</td>
<td>91</td>
<td>539.657</td>
<td>77</td>
<td>587.582</td>
</tr>
</tbody>
</table>

Source: Local Revenue Offices in North Sumatera

From the above data of in-depth study of the types of local revenue income whereas the largest contributors are motor vehicle tax, transfer tax taxation of motor vehicles and motor vehicle fuel tax, while the tax amount of surface water at least reasonably satisfactory although the percentage of placement realization reach above 100% in 2008 to 2011, and the declining in 2012 in the amount of 56% below target.

These data also demonstrated the potential revenues can still be intensified and expanded, through programs and activities to increase local revenues resulting in giving benefits to tax payers and society. PAD contribution viewed from their importances including motor vehicle and the utilization of surface water, should be protected by the local government.

1.1 Problem Formulation
1. Is the organizing activity, interpretation, and applications, and programming revenue increase and significant partial effect on the performance of the Department of Revenue in North Sumatra Province?
2. Is the organizing activity, interpretation and application, affect the performance of the Department of Revenue of North Sumatra Province?

1.2 Hypothesis
1. The dimensions of the organization, interpretation and application programs increase local revenues and significant partial effect on the performance of the Department of Revenue in North Sumatra Province.
2. Implementation of program improvement original opinion in the area of organizing, interpretation and simultaneous application contribute effects to the performance of the Department of Revenue in North Sumatra Province.

2. Material and Method
This research is applied to measure the relationship between variables and to analyze how a variable affects another. According to research problems that have been set, the
relationships and influences between variables to be measured and analyzed in this study include:

1) The effect of the partial approach of the organizing activity, interpretation and application programs in increasing local revenue of the Revenue Department of North Sumatra Province
2) The effect of comprehensively or simultaneously utilization of the results obtained from the partial approach.

Performance.

The type of data to be collected in the research are secondary and primary data. Referred to as secondary data is data that is collected or published by a person or an institution. While the primary data is data that is collected by a specific person or institution from the first source through scientific research. Primary data were obtained or collected directly in the field by people who do the research or are concerned that require it. So the primary data obtained from sample and informants and also defined according the problem and research objectives. While secondary data obtained from two sources, namely from the textbook or the results of empirical research and also from institutions/agencies. Questionnaire to be prepared is closed questionnaire. In a closed question category of respondents is based on a Likert scale with five response categories. Likert scale measurement is intended to measure the respondents' attitudes regarding indicators of research. A positive answer is reflected in the statement of agree and strongly disagree, while the neutral answer, which is reflected in the statement does not agree.

2.1 Population

In accordance with the formulation of the problem that has been set so that the population in this research are the employees of the Department of Revenue in North Sumatra Province in the amount of 865 peoples.

2.2 Samples

To determine the sample size is by using Cochran formula. From the calculation above formula than it is obtained the overall sample number as many as 166 peoples. The technique used to determine the sample of the population is simple random sampling. The instrument validity of the research is intended to measure the precision and the bias anticipation of the instrument research, which is important as the initial information related to the questionnaire that will be distributed to the respondents so that a better understanding as one of the indicators using Alpha Cronbach as one of the coefficients is finally accomplished.

3. Results and Discussion

Based on the purpose of the research, I’d come up to the attribute several ideas of conceptual frameworks regarding to the Public service performance is influenced by various factors both internal and external environments of public organizations. The focus of performance analysis in this study will explore the factors in the internal environment of public organization of the Department of Revenue Service of North Sumatra Province.
3.1 The Relationship Between the Performance Implementation and the Improvement of local PAD in Revenue Service Department of North Sumatra Province

To determine the relationship between the independent variable (the implementation program to improve local revenue) with the dependent variable (performance Revenue Service North Sumatra Province), can be done through statistical analysis using SPSS. Data processing using SPSS, conducted through the normality test of ordinal scale measurement, namely by using the Kolmogorov-Shapiro-Wilk Smirnov and.

Hypothesis is:
H0 : The data samples are normally distributed
H1 : The sample data is not normally distributed
Decision rule : The null hypothesis is accepted if the sig < 0.05

<table>
<thead>
<tr>
<th>Variable</th>
<th>Kolmogorov-Smirnov</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of increase’s program PAD</td>
<td>.108 (.000)</td>
<td>.978 (.010)</td>
</tr>
<tr>
<td>Performance of office of local revenue</td>
<td>.112 (.000)</td>
<td>.959 (.000)</td>
</tr>
</tbody>
</table>

Lilliefors Significance Correction

From the table above, the normality test result shows that the value of the second variable Sig < 0.005 (significant level) for both normality test data either Kolmogorov-Smirnov or Shapiro-Wilk, so the null hypothesis is distributed whereas the data is normal and not rejected. It can be concluded that the data is normally distributed. In this study the correlation test used is the Spearman Rank Spearman rank correlation (Spearman’s coefficient of Rank Correlation).

Hypothesis is:
- H0 : ρ ≤ 0
- H1 : ρ > 0

Verbal or written as follows:
Ho : ρxy ≤ 0 means no correlation between the implementation of the performance improvement program PAD North Sumatra Provincial Revenue Service (no relationship between the variables X and Y).
Ho : ρxy > 0 means that there is a positive relationship between the implementation of the performance improvement program PAD Revenue Service Department of North Sumatra Province (there is a relationship between variables X and Y).

Spearman's coefficient calculation results through SPSS data processing are as follows:
The table shows the results of the calculation of Spearman Rank correlation coefficient through SPSS seen a correlation between the implementation of the performance improvement program PAD Revenue Service Department which is the largest in North Sumatra Province, in the amount of 0.83 (rounded) Correlation is significant at the 0.01 level. In the present study the significance level used was 0.005. So it can be concluded that there is a strong positive and significant correlation between valued at 19:06 whilst the t test was found to be in the region of rejection of Ho, the critical point at (α = 0.05 df = 164) while using the t distribution Table. The value of of the t - test of the fall in the rejection of Ho, therefore Ho rejected and H1 accepted. Thus the test is significant, meaning that the correlation coefficient of 0.83 through research applies to the population sample.

Under the rules Guilford then the correlation coefficient of 0.83 is in a very closed category. It can be interpreted that there is a very close relationship between variables of revenue generating in implementation program with the performance of Revenue Service Department in North Sumatra. Furthermore it can be argued that the dimensions of the organization, interpretation and application of enhancements to the PAD revenue program is closely related to the performance of the Department of Revenue in North Sumatra Province in the aspect of sensitivity, sense of responsibility and the level of public confidence in this study is empirically proved.

### 3.2 Effect of Implementation of the Performance Improvement of PAD program in Revenue Service Department of North Sumatra Province

To meet the objective of further research that correlates the coefficient value of 0.83 as in the interpretation of Guilford, and to assist the interpretation of high lace top level of correlation relationship variables revenue generating program implementation with performance of Revenue Service Department of North Sumatra Province. **Coefficient of determination** is the square of coefficient correlation, therefore the coefficient correlation is 0.83, Hence, the coefficient of determination is 0.688 or valued at 19:06 whilst the t test was found to be in the region of rejection of Ho, the critical point at (α = 0.05 df = 164) while using the t distribution Table. The value of of the t - test of the fall in the rejection of Ho, therefore Ho rejected and H1 accepted. Thus the test is significant, meaning that the correlation coefficient of 0.83 through research applies to the population sample. This means r2 of 0.69 shows that the implementation of revenue enhancement program is
capable of affecting the performance of the Department of Revenue in North Sumatra Province by 69%. Therefore, if the implementation of the programs reaches its maximum, the output given will also increase to its maximum yield.

3.3 Effect of Partial Activities in Organizing, Interpretation and Application of Local Revenue Enhancement Program towards the Performance of Service Revenue Department of North Sumatra Province

To check how much the changes improved the performance in Service Revenue Department of North Sumatra if the implementation of revenue enhancement program is improved can be applied by using following regression analysis with SPSS. The first step of regression measurements shows that the performance of the Department of Revenue in North towards the implementation of revenue enhancement programs follow a straight line seen from Figure as follows:

Based on the picture, the data scattered around a straight diagonal line that indicates the normal distribution. The study finds the influences of the partial implementation of improvement programs PAD in organizing dimensions, interpretation and the application of the performance of the Department of Revenue in North Sumatra Province, the regression model is used to analyze the data of this study were multiple linear regression equation is:

\[ Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + e \]

Y is the dependent variable (the dependent variable) is the performance of the North Sumatera Provinicial Revenue Department, X1 is organizing, X2 is interpretation, X3 is the application as a Predictor variables (independent variables) dimension in the implementation of improvement programs PAD, bo is the intercept coefficient, and b, b2, b3, e is the regression coefficient. The results of the analysis with SPSS regression analysis as follows:
From Table of the calculation of regression coefficients, regression equations formed is \( Y = 11.837 + 1.039 X_1 + 0.336 X_2 + 0.263 X_3 + e \). This equation applies to the population. Therefore in order to be generalized to all employees of the Department of Revenue in North Sumatra Province, first h = advance testing of regression coefficients. T-test is applied to test whether each regression coefficients is significant.

### 3.4 Effect on the Performance of Service Revenue Department of North Sumatra Province

Based on the theory, the research examined the positive effect of partially-dimensional organization, interpretation and application of the performance improvement program of local PAD in Revenue Service North Sumatra Province. Thus the t-test of Ho and H1 forms of influence organizing the performance of the Department of Revenue in North Sumatra Province are as follows:

- **Ho**: \( \beta_0 = 0 \)
- **H1**: \( \beta_1 > \)

It can be explained as follows:

- **Ho**: \( \beta_0 = 0 \) means no influence of organizing activities in the progressive increase in the PAD program on the performance of the Department of Revenue in North Sumatra Province (no effect of \( X_1 \) on \( Y \)).

The value of the test \( (t) \) count is greater than \( (t) \) Table at the level of significant level, \( \alpha = 0.05 \) df = 164. So that the falling value of \( t \) - test rejection region Ho, Therefore Ho is rejected and H1 is accepted. Thus the test is significant, means that there are significant positive linear organizing activities in the performance improvement program PAD Revenue Service of North Sumatra Province.

### 3.5 Effect of the Interpretation of the Performance in Revenue Service Department of North Sumatra Province

Ho and H1 shaped the interpretation dimension in influencing the performance of the Department of Revenue in North Sumatra Province which can be explained as follows:

The value of the test \( (t) \) count is greater than \( (t) \) Table at the level of significant level, \( \alpha = 0.05 \) df = 164. Therefore, the value of \( t \) - test rejection in region Ho, resulted to the
rejection of Ho and H1 is accepted. Thus the test is significant, meaning that there are significant positive linear partial in interpretation activity in the performance improvement program of PAD in Revenue Service Department of North Sumatra Province.

H1 : β1 > 0 means that there are significant enhancements to the program activities of the organization in the PAD on the Revenue and Service Department of North Sumatra Province.

Level of significance, \( \alpha = 0.05 \) df = n - 2. Decision rule reject Ho if \( (t) \) count > \( (t) \) Table regression coefficients were tested by the test statistic: Value of 10.71 \( t \) test was found to be in the region of rejection of Ho, the critical point at \( (\alpha = 0.05 \text{ df} = 164) \) using the \( t \) distribution table, which can be explained as follows.

Ho : \( \beta_0 = 0 \) means no influence occurred in the interpretation activities in the improvement of PAD program on the performance of the Department of Revenue in North Sumatra Province (X2 has no effect on Y)

H1 : \( \beta_1 > 0 \) means that there are significant enhancements towards the interpretation activities of PAD on the performance of the North Sumatra Provincial Revenue Service Department (no significant effect of X2 on Y)

Level of significance, \( \alpha = 0.05 \) df = n - 2. Decision rule reject Ho if \( (t) \) count > \( (t) \) Table of regression coefficients were tested using: \( t \) test value of 2.66 was found to be in the region of rejection Ho the c

3.6 Effect of the application of the performance in Revenue Service Department of North Sumatra Province

Ho and H1 shapes are as follows:

- Ho : \( \beta_0 = 0 \)
- H1 : \( \beta_1 > 0 \)

It can be explained as follows:

Critical point at \( (\alpha = 0.05 \text{ df} = 164) \) in table \( t \) distribution is 1 Ho : \( \beta_0 = 0 \) means no influence activity in the application of the improvement in the local revenue program towards the performance of the Department of Revenue in North Sumatra Province (there is no effect of X3 on Y).

H1 : \( \beta_1 > 0 \) means that there is a significant activity in the application of the local revenue program towards the performance enhancements to the North Sumatra Provincial Revenue Service Department (there is no significant effect variable of X3 on Y).

The value of the test \( (t) \) count > of \( (t) \) Table at the level of significant level, \( \alpha = 0.05 \text{ df} = 164 \). Moreover, the falling value of \( t \) - test rejection region Ho, therefore Ho is rejected and H1 is accepted. Thus the test is significant, meaning that there is a positive linear effect of the application activity in the performance improvement program of Local Revenue Service Department of North Sumatra Province.

Thus, since the second hypothesis in this study includes the organizing dimension, and application programs of local revenues contributes the significant partial effect on the performance of the Department of Revenue in North Sumatra Province. The value of the test \( (t) \) count > of \( (t) \) Table at the level of significant level, \( \alpha = 0.05 \text{ df} = 164 \). So the value of the \( t \) - test rejection region fell to Ho, Therefore Ho is rejected and H1 is
accepted. Thus the test is significant, meaning that there is a linear relationship: \( Y = 11.837 + 1.039 X_1 + 0.366 X_2 + 0.263 X_3 \), which can be obtained by the increasing of every respondents in the amount of 1 (one) unit of activity organizing programs to increase revenue performance of Revenue Service Department of North Sumatra Province.

The next step is the regression coefficient test intercept coefficient test. Essentially, North Sumatra Province Revenue Service has been working to improve its performance in accordance to the capacity of individuals, so that each individuals can certainly have contributed in bringing about the improvement of Revenue Service Department of North Sumatra Province. Thus Ho and H1 forms are as follows:

- Ho : \( \beta_0 = 0 \)
- H1 : \( \beta_1 > 0 \)

It can be explained as follows:

Ho : \( \beta_0 = 0 \) means that not all of the individual apparatus has influenced the performance achievements Revenue Service North Sumatra Province.

H1 : \( \beta_1 > 0 \) Each individual apparatus has influenced the performance achievements Revenue Service North Sumatra Province.

Level of significance, \( \alpha = 0.05 \) \( df = n - 2 \). Decision rule reject Ho if \( t \) count > \( t \) Table of statistic in intercepting the coefficient test \( (\beta_0) \) value of 3.91 \( t \) test was found to be in the region of rejection Ho, the critical point at \( (\alpha = 0.05 \) \( df = 164 \) ) in table \( t \) distribution is 1.

Furthermore, it can be interpreted that the value of the contribution of this

3.7 Effect of the simultaneous Organizing, interpretation and application dimensions of Program Improvement Revenue Service Performance towards North Sumatra Province

The research contributes in finding the influences of simultaneous implementation of enhancements to the Local revenue program in organizing dimensions, interpretation and application on the performance of the Department of Revenue in North Sumatra Province, the regression models were used to analyze the data of this study is simple linear regression equation: \( Y = \beta_0 + \beta_1 X_1 + e \)

\( Y \) is the dependent variable (the dependent variable) is the performance of the Department of Revenue in North Sumatra Province, \( X \) is a Predictor variables (independent variables) implemented by the local revenue enhancement program, \( \beta_0 \) is coefficient intercept and \( \beta_1 \) is the regression coefficient. Results of regression analyzes with SPSS can be displayed in table 5. 43 as follows:
From the figure it can be seen that the value of the test \( t \) count > of \( t \) Table at the level of significant level, \( \alpha = 0.05 \) df = 164. So that the falling value of \( t \) - test rejection region Ho whilst H1 is accepted.

Proving that there is a close correlation between the performance of the North Sumatra Provincial Department of Service Revenue and the realization program enhancing local revenue in North Sumatra.

From the table found that the simple linear regression equation of \( Y = 12.55 + 0.62X \). Based on the theory on the effect of implementation program in increasing local revenues and performance, then the intercept coefficient test was conducted to test H0 and H1 as follows:

- \( Ho : \beta_0 = 0 \)
- \( H_1 : \beta_1 > 0 \)

It can be explained as follows:

\( Ho : \beta_0 = 0 \) means no influence of simultaneous implementation of local revenue increase in the dimensions of the organization, interpretation and application of the performance of the Department of Revenue in North Sumatra Province.

\( H_1 : \beta_0 > 0 \) means there is a simultaneous effect of the implementation of programs increase local revenues in organizing dimensions, interpretation and application of the performance of the Department of Revenue in North Sumatra Province.

\( Level \ of \ significance, \ \alpha = 0.05 \) df = \( n - 2 \). Decision rule reject \( Ho \) if \( ( t ) \) count > \( ( t ) \) Table. Intercept coefficient test statistic \( ( \beta_0 ) \) value of 18.88 t test was found to be in the region of rejection Ho, the critical point at \( ( \alpha = 0.05 \) df = 164) in table t distribution is 1.

We could identify the additional results of the *Effect of Partial Implementation of the Organizing, Interpretation and Application Activities of local PAD enhancement in Revenue Service Department of North Sumatra Province* which shows the level of success or performance of the Department of Revenue in North Sumatra Province in the dimensions of sensitivity, sense of responsibility, and the level of public confidence are influenced by various dimensions of Organization, Interpretation and Application.

In order to improve responsiveness, barriers in institutional need to be eliminated. Data and information by the whole range of appropriate capacity needs to be provided. This will encourage the whole participation to strengthen the bonds within various

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig</th>
<th>Collinearity statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>12.549</td>
<td>3.208</td>
<td>3.912</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Organizing Interpretation Application</td>
<td>.623</td>
<td>.033</td>
<td>.824</td>
<td>18.653</td>
<td>.000</td>
</tr>
</tbody>
</table>

The table presents the regression coefficients for the model, including unstandardized and standardized coefficients, t-values, significance levels, and collinearity statistics. The t-values and significance levels help determine the statistical significance of the coefficients, with values greater than the critical t-value and less than the significance level indicating a significant effect. The collinearity statistics, including tolerance and variance inflation factor (VIF), help assess multicollinearity among predictors.
dimensions of Organization, Interpretation and Application in enhancement program of local PAD in Revenue Service Department of North Sumatra Province.

The analysis showed improvement of the implementation of aspects of the organization needs to be pursued continuously through the revitalization and reform of the organization in order to enhance the performance of Department of Revenue in North Sumatra Province. Nevertheless, aspect of Interpretation needs to be prioritized because it involves the data and information needed related to taxes and levies, and concerning the activities of attention to the needs and interests and the actual availability of resources already available and support in implementation. Interpretation activity is also important to anticipate the dynamics of the future through modernization and utilization of technology.

Based on the results of the Effects towards the three variables studied, We could come up to the Influences obtained from the Partial Implementation of the Organizing, Interpretation and Application Activities of local PAD enhancement in Revenue Service Department of North Sumatra Province as follows:

- Organization aspect becomes the dominant factor for the elementary and character integration towards the improvement of local PAD in Revenue Service Department of North Sumatra Province. Organization aspect marks a strong hierarchy amongst the public bureaucracy and its officials in increasing responsibility.
- Teamwork that have been grown in North Sumatra Provincial Revenue Service must be guaranteed to be sustained through revitalization, repositioning and reorganization in order to continue the dynamics corresponds with the development and needs of the community.
- The responsibility to improve the performance of the Revenue Service Department of North Sumatra Province through the internalization of the principles of proper administration and capacity building of personnel in its ranks as well as guidance and supervision.
- The appropriate use of technology in improving the local PAD of the Revenue Service Department of North Sumatra Province
- The strengthening of SOP (Standard Operating Procedures) implementation contributes significantly to the purpose of controlling and evaluation phases.
- Assets and public service facilities improvement
- Time management and good service procedures

Based on the results and the influences of the research, we finally come up to the recommendation suggested from the research, which are clearly identified that the Organization, Interpretation and Application dimensions in its purpose to enhance the local revenue of Revenue Service Department of North Sumatra Province contribute significantly positive and simultaneously towards the performance of Revenue Service Department of North Sumatra Province. Whilst, the Organization dimension aspect in local PAD enhancement program has a significant positive effect towards the performance of Revenue Service Department of North Sumatra Province. In addition, the Organization dimension is the primary and significant element, whilst interpretation and application dimensions tend to be complementary element yield to the performance indicator improvement in the Revenue Service Department of North Sumatra Province. Moreover,
Organization, Interpretation and Application dimensions in holistic and simultaneous implementation contribute to the optimal enhancement of performance in Revenue Service Department of North Sumatra Province.

The focus of the Performance improvement in Revenue Service Department of North Sumatra Province rely on the Awareness, Responsibility and Public Trust, which is prioritized in 2 (two) aspects as follows:

- To increase the awareness of public bureaucrats and officials
  - To develop the performance of public service in accordance to the needs and public’s aspiration
- Nevertheless, the most prioritized aspect in this research is the Performance Improvement Focus which is categorized in these aspects as follows:
  - To arrange agenda and public service priorities
  - To establish activities in accordance to SOP (Standard Operating Procedures) Administration
  - To establish public service in accordance to the effective and efficient organization in the form of implicit and explicit integrated coordination
  - To refer the contributions of concepts, ideas, well thoughts of people’s representative, parliaments and community
  - To enhance the legitimacy of community towards public service provided.

4. Conclusions
From the analysis of hypothesis it can be concluded as follows:

1. The results of statistical analysis showed that there is a very close correlation between the implementation of the program with the enhancement of local revenue in North Sumatra Provincial Service Revenue Department. This relationship indicates that aspects of organization, interpretation and application of the program to improve the performance of North Sumatra Provincial Service Revenue Department. Furthermore the regression analysis proved that the organizing activity has a greater influence in comparison to interpretation and application activities.

2. The implementation of programs in increasing local revenue and the performance of the North Sumatra Provincial Service Revenue Department has a positive linear relationship. This indicates that the better improvement in implementation of programs will further increase the performance of the North Sumatra Provincial Service Revenue Department. The regression analysis showed the simultaneous implementation of local revenue enhancement effect on the performance of Department of Revenue in North Sumatra Province.

Further suggestions in further research is to strengthening aspect of organization in order to make the organization into fully developed, assuming the organizing activity has a stronger effect than the interpretation and application activities.
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EFFECT OF CONCENTRATION EXTRACT (ETHANOL) LEAF KALANCHOE PINNATA PERS (DUCK BILL LEAVES) AS ANTISEPTIC STREPTOCOCCUS ALPHA

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ABSTRACT

Duck bill leaf extract contains flavonoids which have anti-bacterial power. Alpha streptococcus bacteria are members of the normal flora of the mouth, throat, intestines, and upper respiratory tract, but may be pathogenic when it enter the bloodstream, for example after a tooth extraction or tonsillectomy, alpha streptococcus bacteria will enter the bloodstream and settle on the heart valve damaged causing subacute bacterial endocarditis. Before testing the antibacterial activity of the extracts from duck bill against bacteria streptococcus alpha, carried Concentration Minimal Barriers KMH on ektraksh duck bill leaves 10% of 47.17%, a concentration of 20% amounting to 95.58% and 40% concentration of 98.83%. Based on these results the duck bill leaf extract concentration of 10%, 20%, 40%, is bacteriostatic against the growth of Streptococcus alpha testing and ANOVA one lane and t-test. ANOVA calculation results with one lane indicates that there are very significant differences from the extracts from duck bill in concentrations that were on the growth of streptococcus bacteria alpha (P <0.01) and t-test results showed there were significant differences between groups concentration (P <0, 01). Conclusion Extract duck bill leaves have antibacterial activity against the growth of bacteria streptococcus alpha. Comparing, duck bill Leaf Extract 40% has the highest antibacterial activity against alpha streptococcus bacteria growth and the leaves Extract duck bill 10%, 20% and 40% have bacteriostatic properties.

Keywords: leaf extract contains flavonoids, Alpha streptococcus bacteria, pathogenic, alpha streptococcus bacteria


1. Introduction

Caries is still the most types of dental disease affects many people in developing countries including Indonesia (Sundoro, 1998). There are 4 main factors are the cause caries teriadinya, the first is the microflora, the second is the tooth as host, the third is the environment (carbohydrates) and the fourth is the time (Brotosoetarno, 1997). Certain microorganisms can fennelation carbohydrates produce acid. Production of ongoing acid will cause a decrease in pH in the oral cavity. A decrease in pH will directly affect the degree of plaque pH (Amerongen, 1996) thereby affecting the process of demineralization of the tooth surface is the beginning of a process of occurrence of dental caries, followed by destruction of organic materials (Brotosoetarno, 1997; Kidd et al,1992).

Caries process can be prevented by means of the following: 1. Set kaibohdrat diet, 2. Throw away plaque from all parts of the tooth, 3. Pengeridalian on the activity of microorganisms. Caries prevention can be done by mechanical means, for example brushing, whereas chemically by using antibacterial agents, antibiotics, enzymes crusher or prevention of dental plaque formation (Bfotosoetatno, 1997). If not immediately ditawat dental caries, the bacteria will spread to soft tissue called the pulp and teeth can tenadi
pulpitis, eventually becoming necrosis (Baumgartner, 2002). Pulpitis teeth and some cases can still be treated necrosis tintuk to keeping function in the oral cavity with endodontic treatment on the tooth root canal that has the infection. According Sluder (1995), caring for and maintaining the teeth is very important because gigimempunyai four main functions, namely: mastication, esthetics, talk towards support networks.

According Bumet and Schuster (1980), there are about 30 species of bacteria that can be isolated and oral cavity, but bacteria are the most prominent and most frequently encountered is streptococcus both aerobic and anaerobic, whereas the majority of these types encountered are alpha streptococcus called also streptococcus viridans. Sabiston et al. (1976) and Oriand (1982) found that many speshnen associated with infections of the oral cavity such as dental caries, pulpitis, abscesses periodonferf, and swollen gums that is, the presence of anaerobic bacteria fakuhatif round, in this case the alpha streptococcw that dominates the infection.

Alpha streptococcus bacteria contained in the plaque on the tooth surfaces and gingiva, is expected to have a role in the onset of periodontal disease. Periodontal disease is caused by local and systemic factors, local factors consists of a plaque, calculus and others, whereas systemic factors include substances that may pose a systemic disorder (Caranza, 1990). A decrease in periodontal tissue resistance will lead to further periodontal tissue vulnerable to irritation bacteria (Willet, 1991) and further result in periodontal abscess may occur (Former, 1966). Morphological features alpha streptococcus species can be seen well when plaques were incubated for 24 hours at 37 °C (Michalec and McGhee, 1982).

All the usual microorganisms live in balance, but the balance can be disrupted due to external factors or systemic. Alpha streptococcus bacteria are members of the normal flora of the mouth, throat, intestines, and upper respiratory tract, but may be pathogenic when it enter the bloodstream, for example after a tooth extraction or tonsillectomy, alpha streptococcus bacteria will enter the bloodstream and settle on the heart valve damaged causing subacute bacterial endocarditis (Levinson and Jawetz, 2003).

One way of overcoming diseases caused by bacteria is by administering an antiseptic (Be Kien Nio, 1982). Antiseptic is an antimicrobial agent that is usually used topically or locally on the human body (Pradban, 1986). Adisusanto (1995) alpha streptococcus bacteria growth can be inhibited by using drugs or substances which are antiseptic. Antiseptic many in the market, but can also be obtained by utilizing the existing plants around us, are processed in a traditional or modern and better known as traditional medicine Seuing with the rapid progress of science and technology, has introduced the traditional medicine scientist as a remedy alternate, so that it can be processed into a potent drug and spread to all corners of the country, even to foreign countries (Wijayakusuma, 2001).

2. Research Methodologi
Design research is an experimental research laboratory.
Place And Time Research
This research will be conducted at the Laboratory of the Faculty of Dentistry Unsyiah Banda Aceh In June 2015

Subject Research
Research subjects used in this study is an alpha streptococcus bacteria pure culture results were cultured by the microbiology laboratory of the Faculty of Veterinary Medicine Unsyiah.

Variables and Operations Devinisition
1. Identification Variables
Variable influence duck bill leaf extract with a concentration of 40%, 20%, and 10%. The growth of the bacteria Streptococcus affected variable alpha Controlled variable Incubation temperature of 37 ° C 24-hour long incubation Bacterial contact time for 2-3 minutes Lamtan germ 107 CFU / ml

2. Operational Definitions
a) Streptococcus bacterial alpha is the result of a pure culture lab, the bacteria are easily grown on MHA medium (Mueller Hinton ) which at 37 ° C for 18-24 hours to form small colonies are round, grayish on the surface of the media looks like a drop of liquid with a diameter of less than 0.2 pm.

b) Antibacterial is inhibiting the growth of microorganisms by antimicrobial substances, particularly microorganisms that are detrimental to humans. Alpha streptococcus bacteria can be killed or inhibited growth by using medications or certain chemicals such as phenol compounds without harmful or toxic for humans.

c) The duck bill leaf extract is a liquid preparation in getting through the search process and young foliage plants duck bill, which is in the process by maceration with 80% ethanol.

d) Figures bacteria represent the number of bacteria that experienced the death or stunted can be determined by looking at the number of colonies of bacteria that live on concentration duck bill concentrate leaf extract 40%, 20%, and 10%.

3. Equipment / Materials and Methods Research
1) Research Tool
a) Scales for weighing the duck bill leaves
b) Blender to smooth leaf duck bill
c) Rotary evaporator to evaporate the leaf extract of duck bill
d) Filter paper to filter extracts
e) Autoclave for sterilization
f) Measuring pipette to take a leaf extract solution duck bill
g) A distilled water extract dilution duck bill.
h) Spiritus lamp to sterilize L ose ose to take germs
i) Micropipette to take the bacterial suspension
j) Incubator to hatch the culture medium
k) Soxhtlet tool used to extract leaf duck bill with 80% ethanol.
4. **Materials Research**
   a) Duck bill leaves with a concentration of 40%, 20%, and 10% as a test solution
   b) Streptococcus bacteria alpha culture mummies.
   c) Ethanol 80%
   d) Mueller Hinton Agar (MHA) for the identification of Streptococcus alpha
   e) Brain Heart infusion (13HS) as fertilising media.
   f) Physiological saline solution for dilution of the bacterial suspension.
   g) The course of study

Making the leaf extract duck bill done in the faculty of medicine Unsyaiah, while the antibacterial activity of the extract testing inspection duck bill done in the laboratory of the Faculty of Dentistry Unsyiah.

1. **Pruning leaf extract duck bill**

   How to make extracts from herbs are efficacious as pharmaceuticals, among others, the following: duck bill leaves washed, cut into small pieces, pieces of duck bill leaves weighed 50 grams, plus a further 80% ethanol 250 ml and blended for 5 minutes, porridge duck bill leaves filtered using filter paper until all filtered. Distillate evaporated by using a Rotary evaporator temperature of 45 °C to obtain a dried leaf extract duck bill, then placed in a sterile bottle, 50 mg extract tabling included in the reaction plus distilled water little by little and shaken until homogeneous up to 50 ml volume concentration of the extract obtained bill 100% duck (mother liquor).

2. **Preparation of alpha streptococcus bacteria suspension**

   Some colonies of alpha streptococcus bacteria taken from the mummy culture laboratory of Microbiology, Faculty of Veterinary Medicine, the bacterial suspension is available with turbidity in accordance with the standards of bacterial density Brown III is 108 CFU / ml. To reduce bacterial density bacterial solution made 107 CFU / ml in a way I ml of standard bacterial solution put in 9 ml of NaCl solution in order to obtain a solution of bacteria 1/10 standard solution that is 107 CFU / ml.

3. **Determine the concentration of minimal barriers**

   50 ml of leaf extract prepared duck bill 100% (mother liquor) and 6 tabling sterile reaction numbered 1-6, the manufacture of leaf extracts duck bill 40% ie 4 ml of mother liquor is diluted with sterile distilled water up to 10 ml (tube 1), while the duck bill manufacture leaf extract 20% ie 2 ml of mother liquor is diluted with sterile distilled water up to 10 ml (tube 2). And so on until the tube 6 containing a duck bill leaf extract with a concentration of 1.25%, as the control solution used a tube containing 10 ml of distilled water. In each tube 1-6, including a tube to control plus 1 ml bacterial suspension. All the tubes were incubated at 37 °C , 24 hours. Furthermore, can be seen whether there is turbidity indicates bacterial growth in each tube. Then determined the concentration of some that start inhibit bacterial growth, the tube that looks no longer turbidity indicates bacterial growth inhibition.

4. **Test of antibacterial power**

   Once known concentration minimal barriers continued with antibacterial power test by means of:
a) 1 ml bacterial taken 10^7 CFU / ml was mixed with 9 ml of extract duck bill 40%, was contacted for 3 minutes, then performed by means of dilution series: 1 ml bacterial suspension plus 9ml distilled water solution, the concentration of the solution obtained 10-1. 1 ml solution of 10-1 plus 9ml distilled water solution obtained by the concentration of the solution 10-2. 1 ml solution 10-2 plus 9ml distilled water solution obtained by concentration of the solution 10-3.
b) Taken as much as 0.01 ml of solution dripped 10-3 on MHA medium and incubated similar to 24 hours at 37 ° C.
c) The same thing the duck bill leaf extract concentration of 20%, and 10% as well as for the control solution.
d) Each concentration using ten media MHA and MHA for control of the media.
e) After incubation at 37 ° C for 24 hours, then do numbers of bacteria.
f) Calculation of total number of bacteria. calculated by the formula:

\[
\text{Total numbers of bacteria} = \frac{\text{The number of bacteria dilution calculation} \times \text{Factor}}{\text{Volume is calculated}}
\]

To determine the inhibition of data transferred in the form presentation expressed in Minimum Inhibitory concentration (Washington, 1985)

\[
\text{MIC} = 100\% - \frac{\text{ABT}}{\text{ABK}} \times 100\%
\]

Description:
ABT: Figures bacteria in CFU / ml at certain concentrations ABK: Figures bacteria in CFU / ml in controls.

Data Analysis
The data obtained were analyzed using ANOVA followed by a one-lane t-test.

The Net Scheme Research

Making the leaf extract duck bill

Preparation of pure cultures of bacteria

Duck bill leaves

Disari with ethanol 80%

Filtrate

Residu

Evaporasi

Leaf Extract duck bill 100%

Some of the results of the bacterial colonies pure

Available with a standard brown III

1 ml bakteri 10^9 CFU/ml + 9 ml NaCl

bacterium 10^7 CFU/ml
3. Results

Research on the antibacterial activity of the leaf extract of duck bill against alpha streptococcus bacterial growth in vitro. alpha streptococcus bacteria used are bacterial results of laboratory pure culture with the turbidity level of 107 CFU / ml. The method to use to determine antibacterial activity of the leaf extract of duck bill against alpha streptococcus bacteria in this study is the method of dilution due to exactly measure the concentration of an antibacterial agent to kill bacteria.

Before the test antibacterial extracts from duck bill against the bacteria Streptococcus alpha, were observed Barriers Minimum Concentration (MIC) to determine the lowest concentration of a duck bill leaves that can inhibit the growth of bacteria streptococcus alpha.
Table 1. The concentration of the extracts minimal barrier against bacteria streptococcus duck bill with a turbidity level alpha 107 cfu / ml.

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Seri I</th>
<th>Seri II</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>20%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5%</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>2.5%</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>1.25%</td>
<td>+++</td>
<td>+++</td>
</tr>
</tbody>
</table>

Concentration:
- : No complaints
+ : Bit Complaints
++ : Cloudy
+++ : Very Murky

In table 1 shows that the concentration of extract minimal duck bill that can inhibit the growth of Streptococcus alpha is at a concentration of 10%. This shows with crystal clear reaction tubes at a concentration of 10% when compared with a control tube containing only distilled water and the suspension of bacteria.

Results of average calculation lift bacteria on the duck bill leaf extract with 10% concentration of 20% and 40% can be seen in the table below:

Table 1 Results of the mean and standard deviation of the numbers of bacteria on the leaves with a duck bill available concentration (CFU / ml)

<table>
<thead>
<tr>
<th></th>
<th>A₁</th>
<th>A₂</th>
<th>A₃</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>122 x10⁴± 14,4837 x 10⁴</td>
<td>10,6 x10⁴± 2,1187 x 10⁴</td>
<td>2,8x10⁴± 1,0328 x 10⁴</td>
</tr>
</tbody>
</table>

Description:
A₁ : Number of bacteria on the duck bill leaf extract concentration of 10%
A₂ : Number bacteria on the duck bill leaf extract concentration of 20%
A₃ : Number bacteria on the duck bill leaf extract concentration of 40%

Table 1 shows the results of the average numbers of bacteria on the duck bill leaf extract concentration of 10%, has the highest value that is equal to 122 x10⁴ CFU / ml and the mean numbers of bacteria on the duck bill leaf extract concentration of 40% has the lowest value that is 2,8x10⁴ CFU / ml.

Once known bacterial numbers do analysis variation of the track to determine the effect of the leaf extract of duck bill 10%, 20% and 40% are figures alpha streptococcus bacteria, the results are shown in Table 2 do.
Table 2. Summary of results of calculations Anova 1 track numbers of bacteria on the leaf extract of duck bill with a different concentration

<table>
<thead>
<tr>
<th>Source Variance</th>
<th>JK</th>
<th>Db</th>
<th>RK</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter-group</td>
<td>88931.467</td>
<td>2</td>
<td>44720.492</td>
<td>619.492</td>
<td>0.000*</td>
</tr>
<tr>
<td>In Group</td>
<td>1938,000</td>
<td>27</td>
<td>71,778</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>90869,467</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description:
JK : The sum of squares
Db : Degrees free
RK : Mean Squares
F : F
p : Opportunities error
* : Very meaningful

Table 2 above shows that there are very significant differences from the extracts from duck bill with different concentrations on the growth of streptococcus bacteria alpha (P <0.01). To know the difference between groups t-test was then performed on the show in Table 3.

Table 3. Results of t-test between groups of numbers of bacteria on the leaf extract of duck bill with a different concentration.

<table>
<thead>
<tr>
<th>Sumber</th>
<th>Uji-t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1, A2</td>
<td>-24</td>
<td>0,000*</td>
</tr>
<tr>
<td>A2, A3</td>
<td>-26,0</td>
<td>0,000*</td>
</tr>
<tr>
<td>A3, A4</td>
<td>-10,5</td>
<td>0,000*</td>
</tr>
</tbody>
</table>

Description:
* : Significantly different
A1 : Concentration 10%
A2 : Concentration 20%
A3 : Concentration 40%

Table 3. There is a very significant difference in bacterial numbers duck bill leaf extract concentration of 10% with the number of bacteria on the duck bill leaf extract at a concentration of 20% (P <0.01). b) There are very significant differences in the numbers of bacterial leaf extract concentration of 10% duck bill with the number of bacteria on the duck bill leaf extract concentration of 40% (P <0.001). c). There are very significant differences in the numbers of duck bill leaves extra bacteria concentration of 20% with the number of bacteria on the duck bill leaves extract concentration of 40% (P <0.01).

4. Conclusions
Based on the results of research on the effect of the leaf extract of duck bill against alpha streptococcus bacterial growth, it can be concluded: Extract duck bill leaves have
antibacterial activity against the growth of bacteria streptococcus alpha. Must Add Comparing the leaves Extract Only 40% duck bill has the highest antibacterial activity against the growth of bacteria streptococcus alpha. Extracts from duck bill 10%, 20% and 40% have bacteriostatic properties.

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ABSTRACT

A set of rules about gratification is a novelty within society and is perceived to collide with the cultural of giving in the Islamic society in Indonesia. This study is aimed to explore the meaning of gratification from the positive perspective of law in Indonesia, and the boundaries of gratification, which is interdicted by the laws. This study used the normative method which analyzes the positive law in Indonesia regulating the gratification. The result of this study shows that gratification in the positive law perspective has a wide meaning including each tribute for civil employee or governance. According to Indonesia laws, gratification could be either positive or negative. Gratification which is allowed by the laws is a gift with a pure tension of the giver to the civil employee or governance without expecting to achieve anything. In contrary, gratification which is not allowed by the laws is a gift for the civil employee or governance because of the position in that employment and unrelated with the duty or order.

Keywords: Gratification, Positive Laws Perspective

1. Introduction

Gratification started to become a popular term among the general public after the legislation of Law No. 20 of 2001 on the amendment of Law No. 31 of 1999 on Corruption Eradication. Although it has been legislated since about 14 years ago, the concept of gratification is still considered something new, and frequently considered as something that is against the culture of exchanging gifts among the general public. There is an assumption that the laws regarding gratification are damaging to the culture of exchanging gifts among the Muslim society, especially those in Indonesia.

In addition to contrasting the cultural norms of exchanging gifts among the Muslim society in Indonesia, the gratification laws are also deemed unsuitable with the teachings of Islam, which encourages the act of exchanging gifts. Based on this issue, there is a need for a deeper research regarding the laws of gratification in Indonesia to determine whether it prohibits every form of gratification that has become a custom among the Muslim society in Indonesia. The author therefore will elaborate on gratification from the perspective of Indonesian positive law. It consists of explanation regarding the definition, court cases, legal basis, elements, and illustration of gratification in Indonesia.

2. Gratification in the Positive Law

Corruption is one of the most popular words in the society and has become an everyday conversation theme. Even so, many of its members are not aware of its meaning. Generally, society only sees corruption as something that is financially harming to the
“Bribing a civil servant is corruption; giving gifts to a civil servant because of his position is corruption; a civil servant who received a bribe; a civil servant who received a gift because of his position; bribing a judge; bribing a lawyer; a judge and a lawyer who received bribes; a judge who received a bribe; a lawyer who received a bribe; a civil servant who embezzled money or intentionally let others embezzle; a civil servant who falsified books specifically for administrative audit; a civil servant who destroyed an evidence; a civil servant who assisted others to destroy an evidence; a civil servant who intentionally let others destroy an evidence; a civil servant who extorted another person; a civil servant who extorted another civil servant; a contractor who swindled; a project supervisor who intentionally let others swindle; a partner of TNI/Polri who swindled; a supervisor of the partner of TNI/Polri who intentionally neglected the swindling; the recipient of TNI/Polri goods who intentionally neglected the swindling; a civil servant who used state land for which the right to use the land has been issued, thus inflicting loss to others; the involvement of a civil servant in a procurement in which he was assigned to arrange it; a civil servant who received a gratification and failed to report to the Corruption Eradication Commission (KPK) is corruption; the hindering of a corruption case investigation; the failure of a suspect to report his wealth; a bank which withheld a suspect’s account information; a witness or expert who withheld information or gave false information; a person who holds professional confidentiality who withheld information or gave false information; and a witness who uncovered the identity of the whistleblower.”

The thirty forms of corruption could be simplified and grouped into seven categories, namely state financial loss, bribery, embezzlement, extortion, swindling, conflict of interests in procurement (tender), and gratification. Regarding gratification, Law No. 20 of 2001 on Corruption Eradication, the amendment to Law No. 31 of 1999, was the first to use the term gratification in the Indonesian laws and regulations, stipulated in Article 12 B. In Article 12 B, the act of receiving gratification by a Civil Servant or State Apparatus is considered corruption if the gift was given because of his position in violation of his obligations. This law was legislated to anticipate the misuse and abuse of gratification as a loophole to legalize corruption, especially in public services, hence this element was stipulated in the corruption law. There was an expectation that if the cultural norm of giving and receiving gratification by/to Civil Servants and State Apparatuses were stopped, corruption would subside or even stop altogether.

1 According to Law No. 31 of 1999 jo. Law No. 20 of 2001 on Corruption Eradication, corruption is an illegal act of enriching oneself or another person or corporation, thereby creating loss to the state finance or state economy.
2 Articles 2, 3, 13, and 14 of Law No. 31 of 1999 on Corruption Eradication. Articles 5, 6, 7, 8, 9, 10, 11, and 12 of Law No. 20 of 2001 on Corruption Eradication. Anti-Corruption Clearing House (ACCH), http://acch.kpk.go.id/tentang-acch, 6 April 2015
3 Article 2 of Law No. 28 of 1999 on State Administration and Free of Corruption, Collusion, and Nepotism. See: Doni Muhardiansyah et. al., BukuSakuMemahamiGratifikasi(Jakarta: KomisiPemberantasan KorupsiRepublikIndonesia, 2010), 11.
The definitions of a Civil Servant and State Apparatus in the law are:

Based on Article 1 verse 2 of Law No. 31 of 1999 as amended by Law No. 20 of 2001, Civil Servants include:

1) A personnel of Supreme Court (MK), Constitutional Court (MK)
2) A personnel of a Ministry/Department and a Non-Department State Agency
3) A personnel of the Attorney General Office
4) A personnel of Bank Indonesia
5) Head and personnel of Provincial-Level Two Region of MPR/DPR/DPD/Provincial DPRD offices
6) A personnel of a state university
7) A personnel of a commission or agency formed by a legislation, Presidential Decree, or Presidential Regulation
8) Head or personnel of Presidential Secretariat, Vice Presidential Secretariat, Cabinet Secretariat, and Military Secretariat
9) A personnel of State-Owned and
10) A personnel of a State-Owned Corporations (BUMN) and Regional-Owned Corporations (BUMD)
11) A personnel of a Judicial Body
12) A personnel of the National Army (TNI) and Police (POLRI), as well as a civil servant in TNI and POLRI
13) Head and personnel in Levels One and Two Region of the Regional Government.

Based on Article 2 of Law No. 28 of 1999 on State Administration and Free of Corruption, Collusion, and Nepotism, State Apparatuses include:

1) A State Official of the Highest Governmental Institution
2) A State Official of a High Governmental Institution
3) A minister
4) A governor
5) A judge
6) Other state officials in accordance to the prevailing laws and regulations;
   a. An ambassador
   b. A vice governor
   c. A mayor
7) Other officials with a strategic function in relation to the State Administration in accordance to the prevailing laws and regulations;
   a. A Commissioner, Director, Structural Officer of a BUMN and BUMD
   b. A Head of BI and National Bank Restructuring Agency
   c. A Head of a State University
   d. First Echelon Officer and other equivalent officers in civilian, military, and national police circles.
   e. An attorney
   f. An investigator
   g. A clerk of the court
h. A project head and treasury.\(^4\)

In reality, the enforcing of the gratification regulation faces many obstacles as most of the Indonesian society generally sees gratification as something normal. Sociologically, a gift is not merely a normal and common object; it also has quite a big role in strengthening the relationships among the members of a society, societies, and even among nations.

3. Gratification in the Perspective of the Law in Indonesia

3.1 The Definition of Gratification

In the Indonesian Dictionary, *gratifikasi* (gratification) is defined as the giving of a money gift to an employee outside of the determined salary.\(^5\) The Law dictionary explains that the word gratification comes from Dutch word *gratificatie*, while the English word is *gratification*, meaning a money gift. Based on the given definitions, it could be concluded that both Indonesia and Law dictionaries define gratification as the act of giving money as a gift. The definitions in both dictionaries are neutral. It could be understood that the act of gratification itself is not necessarily a misconduct or negative action. In the Indonesian dictionary, the object of gratification is clearly addressed to employees, while the Law dictionary does not address it to any object.\(^6\)

The definition of gratification according to the law could be found in Article 12 B verse 1 of Law No. 31 of 1999 jo. Law No. 20 of 2001, where it states “referred to as "gratification” is reward in the broad sense, including money, goods, discounts, fees, interest-free loans, travel tickets, lodging, tours, free medicine, and other facilities, whether it was received at home or abroad, done through the use of electronic device or not.”\(^7\)

After observing the explanation given by Article 12 B verse 1 above, it could be understood that the definition given for gratification is only limited to the sentence “reward in the broad sense”, whereas the sentence after describes the types of gratification. From this explanation, it could be concluded that gratification has a neutral meaning, without any negative connotations. When this explanation is then combined with the stipulations of Article 12 B, one could deduce that not all gratifications are against the law, so long as it does not fulfill the criteria mentioned in Article 12 B.

It is necessary to look at the conditions defined in Article 12 B Verse 1 of Law No. 20 of 2001 to determine whether a gratification is considered as a criminal act or not. As stated therein, every gratification given to a Civil Servant or State Apparatus is considered corruption, if it was given because of his position in violation of his obligations.\(^8\)

It can be concluded from the citation above, that gratification or gift giving will be considered an act of criminal if a Civil Servant or State Apparatus received said gift in

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\(^{5}\) Tanti Yuniar, Kamus Lengkap Bahasa Indonesia (Jakarta: Agung Media Mulia, tt.) 224.

\(^{6}\) Eddy OS Hiareij, *Memahami Gratifikasi*, 13 Juni 2011, Kompas.com

\(^{7}\) Article 12 B verse 1 of Law No. 20 of 2001 on Corruption Eradication.

\(^{8}\) *Ibid.*
regard and because of his position or job. However, if the gift has nothing to do with his position or job and not violating against his obligations, it is considered lawful.

One of the customs commonly occurs in society is the giving of a gift, whether goods or money, as a token of gratitude to the services provided by a “staff”. This could become a negative custom and could potentially lead to corruption in the future. This potential is what the laws and regulations are trying to prevent. Therefore, the law does not prohibit the act of gratification among the general public; only that which is given to and or received by Civil Servants and State Apparatuses, because of the underlying potential of it becoming a loophole for corruption.

The author observes that there are at least three differences between the act of gratification and other acts of corruption. Firstly, the strictness or certainty of the law. The acts of corruption, such as inflicting loss to the state finance, bribery, embezzlement and position abuse, swindling, conflict of interests in procurement, are definitely illegal if they were proven to have happened. However in gratification, even after it was proven to have happened, it still needs to be put under consideration to determine whether or not it is illegal. This consideration, as mentioned above, is to determine whether the gift was given because of a Civil Servant’s or State Apparatus’ position in violation of their obligations. Basically, gratification is an act which could become a medium or means to other acts of corruption. Secondly, the scope of the act. All acts of corruption apart from gratification are limited to a certain amount of acts determined by the law, while the act of gratification is unlimited, because it is a reward in the broad sense. Therefore, other acts not included in the law could be included in the regulation concerning gratification. Thirdly, valuation emphasis. Other acts of corruption aside from gratification are judged based on the agency or authorized official. It means that the valuation is limited to the opportunity of a position or authorization to do such acts. However, in the act of gratification, besides judging the agency or authorized official sides, it is also judged from the society side, because of their support towards gratification that leads to the commitment of a criminal act.

Based on the analysis above, it could be concluded that the gratification permissible by the positive law in Indonesia is a gift to another with pure intentions without any attached self-interest, i.e. a token of gratitude without expecting anything in return. Whereas the gratification prohibited by the law is the act of receiving gratification by a Civil Servant or State Apparatus because of his position in violation of his obligations. This is considered an act of corruption.

3.2 Court Cases regarding Gratification

Before the author presents several gratification act cases with its final and binding court decisions (inkracht), the author would first give a general illustration of the latest data on the progress of gratification eradication, including those that are proven to be corruption. As of 27 February 2015, there are four inkracht cases in 2015. From 2005-2015, there are 126 inkracht cases in the District Court, 28 in the High Court, and 133 in
the Supreme Court, totaling to 287 *inkracht* cases.\(^9\) The following table will help the illustration of the data:

<table>
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<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pengadilan Negeri</td>
<td>3</td>
<td>5</td>
<td>9</td>
<td>9</td>
<td>20</td>
<td>20</td>
<td>21</td>
<td>8</td>
<td>10</td>
<td>20</td>
<td>1</td>
<td>126</td>
</tr>
<tr>
<td>Pengadilan Tinggi</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>10</td>
<td>7</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>Mahkamah Agung</td>
<td>2</td>
<td>9</td>
<td>14</td>
<td>14</td>
<td>17</td>
<td>11</td>
<td>13</td>
<td>17</td>
<td>20</td>
<td>13</td>
<td>3</td>
<td>133</td>
</tr>
<tr>
<td><strong>Jumlah</strong></td>
<td>5</td>
<td>17</td>
<td>23</td>
<td>23</td>
<td>39</td>
<td>34</td>
<td>34</td>
<td>28</td>
<td>40</td>
<td>40</td>
<td>4</td>
<td>287</td>
</tr>
</tbody>
</table>

Source: acch.kpk.go.id.

The latest 2015 data on gratification and gratification type corruption will be elaborated by the author as follows:

1) Gratification based on ownership status.
   As of the 27 February 2015, there are a total of 278 reported gratuities to the Corruption Eradication Commission (KPK) in 2015 alone, 17 reports of which are state-owned, 6 recipient-owned, 5 partly state-owned, 191 in process, and 59 non-decree reports.

2) Gratification based on agency
   As of 27 February 2015, there are 278 reports in 2015, 120 of which are from the executive branch, 148 from BUMN/BUMD, 6 from the judicative branch, 0 from the legislative branch, and 4 from independent institutions.

There are a total of 278 reports on gratification in 2015 alone based on the data above. It needs to be underlined that not all report would become illegal gratification acts (corruption). To determine whether the gratification is illegal or not there needs to be evidence that the reported gratification is because of the Civil Servant’s or State Apparatus’ position and in violation of their obligations.

The author will bring forward an example of a court case concerning a non-gratification corruption act, as a comparative data for a court case concerning illegal gratification (corruption). The case is a corruption case on the procurement of goods and services which caused a great loss to the state finance, and the embezzlement as well as positional abuse done by Abdullah Puteh, who at the time was the Governor of the Province of Nanggroe Aceh Darussalam (now Aceh Province) from 2000-2004. The corruption that he did was the purchase of a 2000-2001 type MI-2, VIP Cabin civilian version helicopter from the Mil Moscow Helicopter Plant Russia factory.\(^10\)

Based on the Supreme Court decision No. 1344 K/Pid/2005, dated September 14, 2005, Abdullah Puteh was sentenced to 10 years imprisonment and a fine of Rp 500,000,000.\(^11\) The sentence was given to the corruption convict in the procurement of

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goods and services because the accusations were backed with strong evidence that suggested the convict did actually commit the criminal act of corruption. The evidence suggested that the convict intentionally transferred Rp 4 billion of state funds to his private account with the purpose of purchasing a Rp 9.1 billion helicopter, even if there was no helicopter purchase contract yet. In addition to the embezzlement of state funds, the convict also abused his position.

In this case, the criminal act done by Abdullah Puteh is clear in the eyes of the Indonesian law, because he intentionally took the state funds for his own personal use by abusing his position and responsibilities, as well as causing loss to the state finances. There are clearly no elements of gratification in this case, because the criminal act done by the convict was not based on the desire of others to give him money. Hence this case is categorized as a corruption case rather than a gratification case.

Next, the author will bring forward several examples of gratification cases that already have the final court decision, meaning that the gratifications mentioned below are proven to be corruptions. The author will give several case examples of both recipient and provider of gratification:

1) The Case of Angelina Sondakh (Gratification Recipient)

Angelina Sondakh was a member of the 2009-2014 Period of the Republic of Indonesia House of Representatives (DPR-RI) who was incriminated as a recipient of gratification in 2009-2010. Based on the court decision No. 1616 K/Pid.Sus/2013, dated November 20, 2013, the Supreme Court sentenced her to 12 years imprisonment, a fine of Rp 500,000,000, and substitute money as additional punishment of Rp 12,580,000,000 and US$ 2,350,000.12

The amount of money that Angie received was Rp 12,58 billion and US$ 2,35 Million, as a gratification or kickback for securing the budgets for higher education activity/program projects in the Ministry of National Education and the procurement of facilities and infrastructures procurement program in the Ministry of Youth and Sports Affairs to be adjusted according to the demand of Permai Group.13

2) The Case of Miranda Swaray Goeltom (Gratification Provider)

Miranda Swaray Goeltom worked as a Senior Deputy Governor of Bank Indonesia (DGSBI) in 2004-2009. She provided gratification in order to be elected as a DGSBI before her election. There were three DGSBI candidates participating in the fit and proper test conducted by DPR-RI at that time, they were Miranda Goeltom, Hartadi A Sarwono and Budi Rochadi.14

Before the election, Miranda, who failed to get elected as a Governor of Bank Indonesia in 2003, conducted a meeting with Nunun Nurbaitie. In the meeting, she asked Nunun’s assistance to help her pass the fit and proper test for the position as the 2004 Senior Deputy Governor of Bank Indonesia. Miranda asked Nunun to introduce her to Nunun’s friends in the Commission IX DPR-RI to seek support for

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13 Ibid.
her candidacy, Nunun accepted Miranda’s request, and a meeting was conducted to introduce her.\textsuperscript{15}

As reward for the support, Miranda, through her assistant, distributed the International Bank of Indonesia’s (BII) traveler’s checks during the fit and proper test to members of the Commission IX conducting the test. They are Duhie Makmun Murod, who received BII traveler’s checks worth Rp 9,8 billion, Endin AJ Soefihara received Rp 1,25 billion worth, and Hamka Yandhu received Rp 7,8 billion worth. The checks are accepted by the three recipients, who then proceeded to distributed to their colleagues of the same party in the same commission.\textsuperscript{16}

Miranda Goeltom, with the help of Nunun Nurbaetie, has given gratuities in the form of BII traveler’s checks worth Rp 20,85 billion, which is a part of the total amount of 480 traveler’s checks worth Rp 24 billion given to the members of DPR-RI. Because of this, she was sentenced to 3 years imprisonment and a fine of Rp 100,000,000, based on the Supreme Court decision No. 545 K/Pid.Sus/2013, dated April 25, 2013.

It is clear from both court cases above that the criminal act is based on the desire from the society to give money to State Apparatuses. After an investigation, it was clear that Angleina Sondakh did an act that was in violation of her obligations as a member of the RI House of Representatives (DPR-RI), and she received gratuities which are in fact given because of her position as a member of the parliament. The gratification given by Miranda Swaray was also because of the positions of the recipients as members of the parliament. As a result of her gift, they did an act that was in violation of their obligations and responsibilities of conducting an impartial DGSBI candidacy test. They should have conducted a fair and neutral test with the purpose of selecting candidates based on their integrity, instead of gratification.

The single example of corruption by positional abuse, swindling, conflict of interests in the procurement of the purchase of a helicopter is clearly different that the three gratification examples mentioned after. The difference is the taking of state funds for personal use is an evidence of corruption.

Whereas in the gratification cases, even if one is proven to have received a gratification, an evidence supporting the accusation is required to prove that the gratification was given because of one’s position and in violation of one’s obligations, as could be seen in the first example. In the second example, an investigation must first be conducted to determine if the gratification was given because of the recipients’ position and responsibility as a judge in the DGSBI fit and proper test.

3.3 The Legal Basis of Gratification and its Elements

The regulations concerning gratification are required to prevent the emergence of corruption committed by a Civil Servant or State Apparatus. It is hoped that this regulation will encourage Civil Servants, State Apparatuses, and the general public to choose the correct steps and refuse or immediately report any gratification that they received. Gratification is specifically regulated in Law No. 20 of 2001 on Corruption Eradication:

\textsuperscript{15} Ibid.
\textsuperscript{16} Ibid.
Article 12 B

a. Any gratification given to a civil servant or state apparatus shall be considered as a bribe when it has something to do with his/her position and is against his/her obligation or task, with the provision that:
   i. When the gratification amounts to Rp 10,000,000 (ten million rupiahs) or more, it is the recipient of the gratification who shall prove that the gratification is not a bribe;
   ii. When the gratification amounts to less than Rp 10,000,000 (ten million rupiahs), it is the public prosecutor who shall prove that the gratification is a bribe.

b. A civil servant or state apparatus who is found guilty of the criminal offense as referred to in paragraph (1) shall be sentenced to life imprisonment or a minimum of 4 (four) years imprisonment and a maximum of 20 (twenty) years imprisonment and be fined a minimum of Rp 200,000,000 (two hundred million rupiahs) and a maximum of Rp 1,000,000,000 (one billion rupiahs).

Article 12 C

a. The provisions as referred to in Article 12B paragraph (1) shall not be valid if the recipient reports the gratification to the Commission for Corruption Eradication.

b. The recipient of gratification shall convey the report as referred to in paragraph (1) no later than 30 (thirty) working days after the gratification has been received.

c. The Commission for Corruption Eradication within a period of 30 (thirty) working days at the latest after the receipt date of the report shall decide whether the gratification belongs to the recipient or the state.

d. The procedures for conveying the report as referred to in paragraph (2) and for determining the status of the gratification as referred to in paragraph (3) shall be laid down in Law on the Commission for Corruption Eradication.17

It could be understood from the legal basis above that if a gratification fulfills every aforementioned element it will be considered as a criminal offense. The punishment for gratification offenders could be found in Article 12 B, where the guilty party will be sentenced to life imprisonment, or a minimum of 4 years imprisonment and a maximum of twenty years imprisonment, and be fined a minimum of Rp 200,000,000 and a maximum of Rp 1,000,000,000. Any gratification received by a Civil Servant or State Apparatus is considered as a bribe, except if it was reported to the Corruption Eradication Commission (KPK) no later than thirty days after it has been received.

The receiving parties referred to in this legal basis are: firstly, Civil Servant or State Apparatus who received a gift or promise believed to have been given to encourage him/her to do something or not to do anything because of his/her position in violation of his/her obligation. Secondly, a Civil Servant or State Apparatus who intentionally benefits him/herself or other people in violation of the law, or by abusing his/her power, forces a

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17 Articles 12 B and C of Law No. 20 of 2001 on Corruption Eradication.
person to give something, pay, or receive discounted payment, or to do something for him/herself.\(^{18}\)

Based on Article 12 B verse 1 of Law No. 20 of 2001, there are four elements to be fulfilled to consider a gratification illegal, namely:

1.) A Civil Servant or State Apparatus;
2.) Giving and receiving of gratification;
3.) Because of or in regard to one’s position;
4.) In violation of one’s obligation or task.

To conclude, these are the elements used to determine whether a gratification is illegal or not. These four elements must be fulfilled if the gratification were to be considered unlawful. If one or more elements are absent, a gratification would not be considered illegal.

3.4 Illustrations of Gratification Acts

To understand gratification better, the author has listed the following examples to illustrate which are considered lawful and which are not according to Article 12 B of Law No. 20 of 2001. Of course, these are only a small part of commonly practiced gratuities. The following are the most common forms of gratifications:

1.) Giving gifts or parcels to state officers during religious holidays by colleagues or subordinates.
2.) Bringing gifts during an officer’s son/daughter marriage ceremony by colleagues.
3.) Giving free tickets to an officer or his family.
4.) Giving a special discounted price to an officer when buying from a colleague.
5.) Giving pilgrimage fare to an officer by colleagues.
6.) Birthday gifts or other personal events
7.) Giving gifts or souvenirs to officers during work visits.
8.) Giving gifts or money as a token of gratitude.\(^{19}\)

The illustrations above still have two possibilities, legal and illegal. If it contains the elements mentioned in the previous section, then it is considered illegal. If it does not, then it is considered legal. A more detailed investigation is needed to determine the permissibility of a gratification.

To easily determine whether a gratification is legal or not, one could ask several reflective questions (self-interrogating questions) as could be seen in the table below:

<table>
<thead>
<tr>
<th>No.</th>
<th>Reflective Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What is the motive of the gift given by the giver?</td>
<td>If the motive is to influence his/her decision as a civil servant, then the gift is more inclined to be</td>
</tr>
</tbody>
</table>

\(^{18}\) A Civil Servant is a Civil Servant (PNS), both regional and central. State Apparatus is a person who is in charge of state administrations, directly or indirectly, and whose duties are financed by state budgets or BUMN. It could be concluded that the subjects that could receive gratuities are very broad.

\(^{19}\) Doni Muhardianysah et. al. *Buku Saku*, 19.
<table>
<thead>
<tr>
<th>No.</th>
<th>Reflective Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>a. Was the gift given to by someone who is equal in position/authority? For example, if the gift was given by a subordinate, superordinate, or other parties that are not equal in position/authority, whether in working circles or work related social context</td>
<td>If the answer is yes (equal position), then it is likely that the gift was given on the basis of friendship or brotherhood (social). Even then, just to be careful, try to answer question 2b. If the answer is no, then you need to increase your alertness regarding the motive of the gift and answer question 2b to get further understanding.</td>
</tr>
<tr>
<td></td>
<td>b. Is there any strategic authoritative relationship? i.e., there is something to do with the access to assets and control of economic, politic, social, and cultural strategic sources assets as a result of his position at that time, for example as a committee on goods and services procurement or others.</td>
<td>If yes, then one should be wary of the gift as it is more than likely to be an illegal gratification.</td>
</tr>
<tr>
<td>3</td>
<td>Does the gift have a potential to create a conflict of interests now or in the future?</td>
<td>If the answer is yes, then it is better to refuse the gift with a polite way so as to not offend the giver. If the gift could not be refused because of certain circumstances then it should be reported and consulted with the authorities to avoid any slander or to give certain answers regarding the status of the gift.</td>
</tr>
<tr>
<td>4</td>
<td>How was it given? Publicly or secretly?</td>
<td>Be wary of gratuities that are not given directly and with secrecy. The secretive manner of the gift shows that it tends to be illegal.</td>
</tr>
<tr>
<td>5</td>
<td>How frequent is the gift and how standard is the value compared to other social gifts?</td>
<td>If the value is above standard values of the society norm or too frequent, making a person with common sense to expect an ulterior motive behind the gifts, then it should be reported to the authorities or refused.</td>
</tr>
</tbody>
</table>

Source: acch.kpk.go.id

These questions can be used in every forms of gratification, including those that are socially acceptable, such as giving gifts during a marriage, engagement, birthday, and other events, as the author has mentioned above.

### 4. Conclusion

From the explanation of gratification in the perspective of the positive law in Indonesia it could be concluded that gratification has been regulated in Law No. 31 of 1999 jo. Law No. 20 of 2001 on Corruption Eradication. Gratification has a broad meaning according to the positive law, which is every type of gift or reward given to a Civil Servant or State Apparatus.

Gratification has a positive as well as negative meaning, depending on the intention and motive of the gift. The gratification considered lawful by the law is a gift given by someone to a Civil Servant or State Apparatus with a pure intention and without expecting anything in return. It is considered illegal if it was given because of his/her position in
violation of his obligations and tasks. As conclusion, the positive law in Indonesia does not prohibit every form of gift (gratification) in the society.

References


Tanti Yuniar, Kamus Lengkap Bahasa Indonesia, Jakarta: Agung Media Mulia, t.t..

Undang-undang Nomor 31 Tahun 1999 jounto Undang-undang Nomor 20 Tahun 2001 tentang Pemberantasan Tindak Pidana Korupsi.
ANALYSIS OF ECONOMIC ASPECT SOFFARMING VEGETABLES IN PLATEAU REGION AGROPOLITAN IN SIMALUNGUN NORTH SUMATRA

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ABSTRACT

The economic aspect is very important in the development of agriculture in order to produce a commodity, so the need for the role of government and stakeholders and experts based on the capacity of human resources in the field of agribusiness. Tujuan: (1) To determine the effect on the economic aspects of highland vegetable farm income High on agropolitan in Simalungun. (2) To analyze the magnitude of the difference between production and revenues from commodities (potato and red peppers) from highland vegetable farming in agropolitan in Simalungun. (3) To analyze the feasibility of commodities of vegetable farming plateau at agropolitan in Simalungun. Based on test results obtained value $F_{10.480 F count > F table 2:18}$, then the economic aspects significant effect on the potato farm income agropolitan in Simalungun. $275 178 F test results count > F table 2:17$, then the economic aspects significant effect on farm income cayenne on agropolitan in District Simalungun. To potato crop production results obtained for 1,524 tons per one harvest with an income of 1,283,181.180 billion rupiah and obtained R / C ratio of 1.48 so it is still feasible to be implemented in the study area. Red pepper plants obtained yield of 147 tons per one harvest with an income of 804 833 000 million rupiah and the obtained R / C ratio of 1.84, so it is still feasible to be implemented in the study area.

Keywords: Rent of Land, Seeds, Fertilizers, Pesticides, Labor, Farmers’ Income

1. Introduction

1.1 Introduce the Problem

Simalungun District have vegetable commodities with a very large crop productivity and production based on land area. But in the conduct of field development concept Agropolitan deficiencies still found mainly issues of economic aspects. Thus still need to increase the productivity of human resources, especially the farmers who manage the vegetables in the highlands. Highland vegetable farming should also strive to increase revenue and improve production.

Ability is an individual's capacity to perform various tasks in a job assigned to him on the basis of skills, experience, and determination as well as the time (Robbins, 2003). The ability of farmers in the research areas is still very limited due to lack of information and guidance from the agricultural extension.

1.2 Explore Importance of the Problem

Act No. 16 of 2006 on the System of Agricultural Extension, Fisheries and Forestry said that the extension is part of an effort to educate the nation and promote the general
welfare and the government is obliged to organize it (Single, 2000). Extension officer is one element that plays an important role in efforts to realize the ideals in the Act. Counseling as a formal educational process, we aim to change the direction of the planned changes. To achieve this required adequate resources including extension workers, not only in sufficient quantities but also have a powerful ability. Extension activities research area is still not very active due to farmers was also less active in participating in the meeting of agricultural extension office.

Economic dimension in assessing how sustainable farming conditions consist of six (6) attributes or parameters are: stability of product prices, the contribution of the product are farmers' income, the contribution of the product to the local revenue the transfer of profits, the availability of marketing agencies and the availability of financial institutions (Mamat et al., 2006).

Sustainability farming farm productivity is the amount obtained by farmers. In terms of farm productivity, the main thing is kesetabilannya, as well as its growth despite internal and external environmental conditions change (Husaini et al., 2011). Which leads to high price fluctuations and the acceptance of business profits obtained by farmers from the farming activity fluctuates widely. Such conditions are not conducive to the development of horticulture agribusiness profits because they are not stable, with a stable profit level is generally a major attraction for businesses to invest and expand their business. Fluctuations in commodity prices is basically caused by an imbalance between the supply and the quantity of the required quantity of consumer demand. If there is excess supply of the commodity prices going down (Irwan, 2007). Price vegetable research area very low and unstable due to the absence of price provisions or the highest retail price from the local government.

Featured Product Area is featured area that has its own characteristics and uniqueness that no other area as well as a reliable, competitive and can provide employment opportunities to the local communities. Superior product is also environmentally friendly oriented and market-oriented local as well as national and regional (Cahyana, 2001).

1.3 State Hypotheses and Their Correspondence to Research Design
1 The economic aspects influence the highland vegetable farm in come in agropolitan in Simalungun.
2 The difference between production and revenues from commodities (potato and red peppers) from high land vegetable farming in agropolitan in Simalungun.
3 The existence of eligibility obtained from there spective commodities (potato and red peppers) from high land vegetable farming in agropolitan in Simalungun.

2. Material and Method
2.1. Material, location and time research
The location of research is on Agropolitan Region highland vegetable farming in Simalungun. The area is selected by “purposive sampling” for several reasons, namely:
1. The area is a prime location Simelungun District Agricultural Office program on agricultural development sub-sector highland vegetable crops.
2. Agropolitan Region District of Purba and the District DolokSilou, generally people have a livelihood in the field of vegetable farming highlands.
3. Agropolitan area close to the Station of Agribusiness (STA) and vegetable crops are in the plateau region.
4. Regions Agropolitan Northern Territory town is located on a plateau at an altitude of 700 m above sea level with a high level of cultivation.

The timing of the study is 12 months since the research done in August 2014 until the completion of the drafting of a dissertation in May 2015.

2.2. The method of data analysis

According Sugiyono (2010), "The method of data analysis that is how the preparation to the presentation of response categories in the table, the image or the tendency of respondents with a preliminary analysis of the findings of data in the field as early in the process of data processing". In accordance with the problems and the continuum hypothesis, the analytical methods used to prove the truth of the question is as follows:

2.2.1. Test T (Partial)

T test that is partial test to prove the initial hypothesis on the effect of land lease (X1), the cost of seed (X2), the cost of fertilizer (X3), the cost of pesticides (X4), and labor (X5) as the independent variable on the vegetable farm income (Y) as the dependent variable.

Decision-making criteria:
Ho accepted if t count < t table at α = 5%
Ha accepted if t count > t table at α = 5%
(Sugiyono, 2010)

2.2.2. Test F (Simultan)

F test statistic used to test the significance of the effect of all independent variables are (X1, X2, X3, X4, X5,) in the form of variable lease of land, the cost of seed, fertilizer costs, the cost of pesticides, and labor on the dependent variable (y) is vegetable farm income.

Decision-making criteria, namely:
Ho accepted if F count < F table at α = 5%
Ha is rejected if F count > F table at α = 5%

2.2.3. Test The coefficient of determination (R2)

For the purposes of analysis and hypothesis testing, the data statistically processed using the program tools Statistical Product and Service Solutions (SPSS) version 20.0

\[ D = r^2 \times 100\% \]

Description:
\( D \) = coefficient of determination
\( r^2 \) = squared correlation coefficient
(Sugiyono, 2010)

2.2.4. Feasibility Test of R / C ratio

Feasibility test to analyze the results of the acceptance of costs eligible to be passed or not passed.

Description:
R = Revenue / Revenue
C = Cost / Cost

Decision-making criteria, namely:
If the R / C > 1, then the hypothesis is accepted, said viable.
If the R / C < 1, then the hypothesis is rejected, not worth trying to do.

(Hernanto, F, 1999)

2.2.5. Descriptive Analysis

Descriptive analysis is the most fundamental analysis to describe the general state of the data such as frequency and ratio analysis.

3. Results and Discussions

3.1 Research Result

3.1.1 Analysis of Data

1. Test F (Simultan)

Table 1. Anova Potato Farming Plant Farm Income

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4090941277027494.000</td>
<td>5</td>
<td>818188255405498.900</td>
<td>10.480</td>
<td>.000*</td>
</tr>
<tr>
<td>Residual</td>
<td>835326483652338.000</td>
<td>107</td>
<td>7806789688339.610</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>12444206115679832.000</td>
<td>112</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Income of Farm Potatoes
b. Predictors: (Constant), Labor Cost, Lease Land, Fertilizers Costs, Pesticides Costs, Seedlings Costs

Table 2. Anova Red Chili Plant Farm Income

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>21164216079039736.000</td>
<td>5</td>
<td>4232843215807947.500</td>
<td>275.178</td>
<td>.000*</td>
</tr>
<tr>
<td>Residual</td>
<td>1922778406259578.500</td>
<td>125</td>
<td>15382227250076.629</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23086994485299316.000</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: PendapatanUsahataniKentang
b. Predictors: (Constant), Labor Cost, Lease Land, Fertilizers Costs, Pesticides Costs, Seedlings Costs
2. Test T (Partial)

Table 3. Regression Coefficients Potato Farming Income

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Constant</td>
<td>24758383.910</td>
<td>2382645.669</td>
<td>10.391</td>
</tr>
<tr>
<td></td>
<td>Land Rental</td>
<td>28.101</td>
<td>10.201</td>
<td>.472</td>
</tr>
<tr>
<td></td>
<td>Seed costs</td>
<td>.337</td>
<td>.419</td>
<td>.185</td>
</tr>
<tr>
<td></td>
<td>Fertilizer costs</td>
<td>.716</td>
<td>.353</td>
<td>.231</td>
</tr>
<tr>
<td></td>
<td>Pesticide costs</td>
<td>.147</td>
<td>.075</td>
<td>.305</td>
</tr>
<tr>
<td></td>
<td>Labor costs</td>
<td>.273</td>
<td>.228</td>
<td>.183</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Farm PotatoesIncome

Table 4. Regression Coefficients Red Chili Plant Farm Income

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Constant</td>
<td>3174764.562</td>
<td>679232.228</td>
<td>-4.674</td>
</tr>
<tr>
<td></td>
<td>Land Rental</td>
<td>5.171</td>
<td>1.868</td>
<td>.153</td>
</tr>
<tr>
<td></td>
<td>Seed costs</td>
<td>.048</td>
<td>1.283</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>Fertilizer costs</td>
<td>1.595</td>
<td>.273</td>
<td>.533</td>
</tr>
<tr>
<td></td>
<td>Pesticide costs</td>
<td>1.939</td>
<td>4.289</td>
<td>.020</td>
</tr>
<tr>
<td></td>
<td>Labor costs</td>
<td>.789</td>
<td>.151</td>
<td>.351</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Red Chili Farm Income

3. Test The Coefficient of Determination (R2)

Tabel 5. Koefisien Determinasi Pendapatan Usahatani Tanaman Kentang

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.873</td>
<td>.629</td>
<td>.497</td>
<td>8835603.86665</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Labor Cost, Lease Land, Fertilizers Costs, Pesticides Costs, Seedlings Costs

Tabel 6. Koefisien Determinasi Pendapatan Usahatani Tanaman Cabai Merah

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.957</td>
<td>.917</td>
<td>.913</td>
<td>3922018.26233</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Labor Cost, Lease Land, Fertilizers Costs, Pesticides Costs, Seedlings Costs
4. Descriptive Analysis

Table 7. Production and Income Difference of Commodity Potato and Red Chili

<table>
<thead>
<tr>
<th>No</th>
<th>Type Plant</th>
<th>Production (Ton)</th>
<th>Income (Rupiah)</th>
<th>R/C Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Potato</td>
<td>1,524</td>
<td>1,283,181,180</td>
<td>1.48</td>
</tr>
<tr>
<td>2</td>
<td>Red Chili</td>
<td>147</td>
<td>804,833,000</td>
<td>1.84</td>
</tr>
</tbody>
</table>

Source: Primary Data processed in 2015

3.2 Discussion

1. Test F (Simultan)
   a. For Commodity Potato
      Based on the results of primary data processing with SPSS 20.0 in table 1 above test results were obtained \( F_{10,480} > F_{2,18} \) then Ha received since \( F_{count} > F_{table} \). thus it can be concluded that simultaneous economic aspects (independent variables) significant effect on potato farming income (the dependent variable) in Simalungun.

   b. For Commodity Plant Red Chili
      Based on the results of primary data processing with SPSS 20.0 in table 2 above test results were obtained \( F_{275,178} > F_{2,17} \) then Ha received since \( F_{count} > F_{table} \). thus it can be concluded that simultaneous economic aspects (independent variables) significant effect on farm income cayenne (dependent variable) in Simalungun.

2. Test T (Partial)
   a. For Commodity Potato
      Based on the results of primary data processing with SPSS 20.0 at table 3 above, the multiple linear regression equation as follows:

      1. From the calculations in the table above, the constant values obtained by \( 24,758,383.910 \) and value \( b_1 = 28.101, b_2 = 0.337, b_3 = 0.716 b_5 = 0.147 = 0.273 \) so that the multiple linear regression equation obtained was \( Y = 24,758,383.910 \times 28.101 X_1 + 0.716X_3 + 0.337X_2 + 0.147X_4 + 0.273X_5 \)

      2. Based on the results of the t test obtained by value t arithmetic land rental \( 2.755 > 1.962 \) then Ha accepted because \( t_{count} > t_{table} \). thus it can be concluded that the partial lease of land (independent variables) significant effect on potato farming income (the dependent variable) in Simalungun.

      3. Based on the results of the t test obtained by value t count the cost of seeds \( 0.804 < 1.962 \) then Ha is accepted as \( t_{count} < t_{table} \). thus it can be concluded that the partial cost of seedlings (independent variable) no significant effect on potato farming income (the dependent variable) in Simalungun.
4. Based on the results of the t test obtained t value fertilizer costs 2,026 > 1,962 so Ha is received for tcount > t table. thus it can be concluded that the partial cost of fertilizer (independent variable) significant effect on potato farming income (the dependent variable) on agropolitan in Simalungun.

5. Based on the results of the t test obtained by value t count the cost of pesticides 2,952 > 1,962 so Ha is received for tcount > t table. thus it can be concluded that the partial cost of pesticides (independent variable) significant effect on potato farming income (the dependent variable) on agropolitan in Simalungun.

6. Based on the results of the t test obtained by value t count labor costs 2,197 > 1,962 so Ha is received for tcount > t table. thus it can be concluded that the partial labor costs (independent variables) significant effect on potato farming income (the dependent variable) on agropolitan in Simalungun.

b. For Commodity Plant Red Chili

Based on the results of primary data processing with SPSS 20.0 at 4:15 table above, the multiple linear regression equation as follows:

1. From the calculations in the table above, obtained by the constant value of 3,174,764.562 and value b1 = 5.171, = 0.048 b2, b3 = 1,595 b5 b4 = 1.939 = 0.789 so that the multiple linear regression equation obtained was Y = 3174764.562 + 5.171X1 1,595X3 0.048X2 + 1,939X4 0.789X5

2. Based on the results of the t test obtained by value t arithmetic land rental 2.768 > 1962 then Ha accepted because t count > t table. thus it can be concluded that the partial lease of land (independent variables) significant effect on potato farming income (the dependent variable) on agropolitan in Simalungun.

3. Based on the results of the t test obtained by value t count the cost of seeds 0.038 < 1962 then Ha is accepted as tcount < t table. thus it can be concluded that the partial cost of seedlings (independent variable) no significant effect on potato farming income (the dependent variable) on agropolitan in Simalungun.

4. Based on the results of the t test obtained t value fertilizer costs 2,026 > 1,962 so Ha is received for t > t table. thus it can be concluded that the partial cost of fertilizer (independent variable) significant effect on potato farming income (the dependent variable) on agropolitan in Simalungun.

5. Based on the results of the t test obtained by value t count the cost of pesticides 2,952 > 1,962 so Ha is received for tcount > t table. thus it can be concluded that the partial cost of pesticides (independent variable) significant effect on potato farming income (the dependent variable) on agropolitan in Simalungun.

6. Based on the results of the t test obtained by value t count labor costs 2,197 > 1,962 so Ha is received for tcount > t table. thus it can be concluded that the partial labor costs (independent variables) significant effect on potato farming income (the dependent variable) on agropolitan in Simalungun.
3. Test The Coefficient of Determination (R2)
   a. For Commodity Potato
   Coefficient determination test is used to see how big the contribution of independent variables on the dependent variable. In other words determinant coefficient value is used to measure the contribution of the independent variable (X), which investigated the dependent variable (Y). Where determinant (R2) of 0.629 obtained a significant effect. So the effect on the economic aspects of the potato farm income plateau at agropolitan in Simalungun by 62.9% and the remaining 27.1% is influenced by other factors not included in the study.

   b. For Commodity Plant Red Chili
   Coefficient determination test is used to see how big the contribution of independent variables on the dependent variable. In other words determinant coefficient value is used to measure the contribution of the independent variable (X), which investigated the dependent variable (Y). Where determinant (R2) of 0.917 obtained a significant effect. So the effect on the economic aspects of farm income plateau red chili on agropolitan in Simalungun by 91.7% and the remaining 8.3% is influenced by other factors not included in the study.

4. Differences Production, Income and R / C Ratio
   From the production of potato plants obtained yield amounted to 1,524 tons per one harvest with an income of 1,283,181.180 billion rupiah and obtained R / C ratio of 1.48 so it is still feasible to be implemented in the study area.
   From the production of red pepper plants obtained yield of 147 tons per one harvest with an income of 804 833 000 million rupiah and the obtained R / C ratio of 1.84, so it is still feasible to be implemented in the study area.

4. Conclusions
   1. For potato crop commodities based on the results of primary data processing with SPSS 20.0 in Table 1 above test results were obtained F 10 480 F count> F table 2:18 then Ha received since F count> F table. thus it can be concluded that simultaneous economic aspects (independent variables) significant effect on potato farming income (the dependent variable) on agropolitan in Simalungun.
   2. For the red chili crop commodities based on the results of primary data processing with SPSS 20.0 in table2 above test results were obtained F 275 178 F count> F table 2:17 then Ha received since F count> F table. thus it can be concluded that simultaneous economic aspects (independent variables) significant effect on farm income cayenne (dependent variable) on agropolitan in Simalungun.
   3. It can be concluded the difference between production and income as well as the R / C ratio of the two commodities in agropolitan in Simalungun namely red chilli crop commodities still superior to the potato crop due to the climate and weather and soil conditions that support to increase production.
References


DOMESTIC TOURISTS’ RESPONSE TO TOURIST ATTRACTIONS IN SABANG

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ABSTRACT

This descriptive qualitative research aimed to determine the response or complaints of domestic tourists about the tourism in Sabang. The types of data used were primary and secondary data. The primary data was obtained using Non Probability Sampling method. In-depth interview was conducted with 50 domestic tourists. The triangulation method was applied to reach a research conclusion. The secondary data was obtained from Statistics Indonesia, Sabang Tourism Office, as well as from relevant literature review.

The research resulted in the response of the domestic tourists to tourist attractions in Sabang which was related to waste management (76%), transportation (14.11%), i.e. the management of ferry to Sabang, and the availability of restaurants or eateries and clean water (9.89%).

One way to encourage domestic tourists to visit Sabang is to address tourists’ complaints about the waste and transportation management and the availability of facilities and infrastructure.

Keywords: response, domestic tourists, Sabang tourist attractions

1. Introduction
1.1. Background

Sabang Tourism Office recommends a number of tourist attractions to be visited in Sabang, (figure 1).

Figure 1. Tourist Attractions in Sabang

<table>
<thead>
<tr>
<th>No</th>
<th>Sukakarya Sub-District</th>
<th>Sukajaya Sub-District</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hutan wisata Iboih</td>
<td>Pantai Pasir Putih</td>
</tr>
<tr>
<td>2</td>
<td>Pulau Rubiah</td>
<td>Pantai Panas Keunekai</td>
</tr>
<tr>
<td>3</td>
<td>Pantai Gapang</td>
<td>Pantai Tapak Gajah</td>
</tr>
<tr>
<td>4</td>
<td>Pantai Teupin Layeu</td>
<td>Pantai Aroun</td>
</tr>
<tr>
<td>5</td>
<td>Pantai Teupin Sirkui</td>
<td>Pantai Sumur Tiga</td>
</tr>
<tr>
<td>6</td>
<td>Pantai Lueng Anging</td>
<td>Pantai Reuteuk</td>
</tr>
<tr>
<td>7</td>
<td>Pantai Kasih</td>
<td>Air Panas Jaboi</td>
</tr>
<tr>
<td>8</td>
<td>Pantai Pria Laot</td>
<td>Pantai Balohan</td>
</tr>
<tr>
<td>9</td>
<td>Danau Aneuk Laot</td>
<td>Pantai Chum</td>
</tr>
<tr>
<td>10</td>
<td>Tugu KM Nol</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Gua Sarang</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Swim Bath</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Pantai Paradiso</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Air Terjun</td>
<td></td>
</tr>
</tbody>
</table>

Source: Sabang Tourism Office, 2014
Sabang area is 153 km\(^2\) which is divided into two sub district, 18 kemukiman, and 72 villages. The topography includes lowland, undulating land, hilly, and mountainous, and the rocks along the coast. There are 5 islands that make up the city of Sabang namely Pulau Weh, the largest island, Pulau Klah, Rubiah Island, Seulako Island and Rondo Island.

Due to its marine tourism potential, Sabang has seen an increase in the number of domestic tourist visits for the past six years, with the highest level recorded in 2013. Sabang Tourism Office has been contributing to the increase by organizing numerous events to attract tourists to Sabang (Figure 2).

![Figure 2. Number of Domestic Tourist Visits to Sabang 2008-2013 (Person)](image)

*Source: Aceh Tourism Office, 2014*

The increasing number of tourist visits will have impacts on the quality of the environment in Sabang, one of which is in the area of waste management. A sustainable development process which is closely related to environmental issues and the sustainability of the next generations calls for constant attention and efforts from all stakeholders, including in the area of research. Therefore, an effort to determine the complaints of domestic tourists in Sabang is deemed necessary.

1.2. **Formulation of Problem**

The problem to be discussed in this research is how domestic tourists respond to tourist attractions in Sabang.

1.3. **Objective of Research**

The purpose of the research is to find out the response of domestic tourists to tourist attractions in Sabang.

1.4. **Significance of Research**

It is hoped that this research will enrich the study in the field of sustainable developmental economics and offer policy makers and other parties some insights into the improvement of tourism sector in Sabang.
2. LITERATURE REVIEW

2.1. Theoretical Foundation

2.1.1. Domestic Tourist Demand

Tourism demand is an individual or a group of people intending to travel to Sabang which depends on a number of factors. Foster (1985) mentions several main factors influencing the travel such as: 1) the tourist profiles which can be categorized into: (a) the social and economic characteristics consisting of age, education, and income rate, (b) the behavioral characteristics consisting of motivation, attitude, and aspiration of the tourists, 2) the knowledge to do the traveling consisting of the information on the tourist destination as well as its facilities and services 3) the travel characteristics consisting of distance, length of stay at the destination area, cost, and travel time, 4) the resources and characteristics of the destination consisting of types of attraction, accommodation, availability and quality of services and facilities, environmental condition, and so on.

McEachern (2001) mentions the factors that influence demand other than the price such as income, price of related goods, taste and preference, change in the estimation of future relative price, and people. And then, Clawson and Knetsch (1975) state that the recreational demand is generally shown in the form of a list of volumes or visit rates at various levels of travel cost. They also add that there are several factors influencing the demand for recreation sites, namely: 1) Individual factors or factors associated with potential users which consist of: a) the number of individuals present in the vicinity of the recreation site, b) geographical distribution of the potential consumers in relation to the ease and inconvenience to reach the recreation site c) social and economic characteristics such as age, sex, occupation, number of family members and education level, d) average income and its allocation, e) average leisure time allocation, f) special education, experience and knowledge related to recreation, 2. Recreational factors such as: a) beauty and attractiveness, b) intensity and management system, c) number of alternative recreation sites, d) recreation site’s capacity to accommodate visitors, e) characteristics of climates and weathers of the recreation site, 3. Factors related to the link between the potential demand and recreation site such as: a) length of time spent traveling from home to a recreation site and back, b) comfort in traveling, c) travel cost, d) travel expenses to visit the recreation site, e) promotion cost.

2.1.2. Previous Study

A study by Emira (2012) showed that the people in Banda Aceh are willing to pay IDR 30,150 which is higher than the average waste retribution fee of IDR 21,000 that they have been paying so far, and also higher than the waste management tariff of IDR 29,000. Meanwhile, the willingness to pay of the people is influenced by several factors such as income, amount of waste produced, and people perception of the level of service.

Zubair’s study (2011) on the characteristics of household waste reveals that it is dominantly composed of organic waste (67.14%), plastic (14.09%), paper (12.84%), wood (0.22%), fabric (0.14%), rubber (0.13%), metal (0.13%), glass (4.98%), and other types of waste (0.33%). The economic potential of recyclable household waste is IDR 4,109,183 per day, and 130 tons of it can be turned into raw material for organic compost per day.
A research by Koens (2009) on the impact of tourism development in Costa Rica reveals the increasing number of waste mounds and poor urban planning.

The result of Iskandar’s research (2004) indicates that Banda Aceh government should invest more in waste processing because of its economic feasibility. In addition, private sector can be involved in the project.

3. METHODOLOGY
3.1. Scope and Location of Study
Sabang was chosen as the location of the study because it has rich tourism potential and has attracted a large number of domestic tourists. This study was conducted in 2014 and the respondents were the domestic tourists visiting Sabang at that particular time.

3.2. Method of Data Collection and Sampling
Primary and secondary data was used in this study. The primary data was obtained through interview using questionnaire tailored for domestic tourists. The writer also conducted an observation at the tourist attractions. The secondary data was collected using documentary technique and literature review. Relevant agencies such as Sabang Tourism Office are the sources of data.

The population of this study was all domestic tourists who visited Sabang in the year in which this study was conducted. The method used was non probability sampling, where each member of the population does not have an equal opportunity or probability to be selected as sample.

3.3. Analysis Model
This is a descriptive qualitative study using the triangulation method by means of in-depth interviews. The acquired data will be sharpened in each phase in such a way that a result can be obtained.

4. RESULT AND DISCUSSION
4.1. Trip to Sabang
While visiting Sabang, tourists will find more than marine tourism because there are mountains, lakes, white sandy beach and black sandy beach, sea, and unspoiled forests and awake waiting for a visit.

Sabang can be reached by a 45 minute or 1,5 hours by ferry from Ulee Lhee port in Banda Aceh which is only 15 kilometers. The fast ferry takes around 45 minutes, but the slow ferry takes more or less than 2,5 hours.

National airlines have regular flights from Jakarta to Banda Aceh via Medan. International flights to Banda Aceh are available from Penang, Malaysia with firefly and Lion Air, and Kuala Lumpur, Malaysia with Air Asia.

4.2. Characteristics of Domestic Tourists
The characteristics of the domestic tourists are: 1) Male tourists 61,3% and female 38,7%. The majority of respondents are male due to their position as the heads of
households who play a determining role in making decision regarding recreation, 2) 73.5% of the respondents do not specifically allocate funds for holiday purposes, while 26.5% do, 3) The domestics tourists come from Medan (68%), Aceh (23%), Jakarta and Java region (9%).

4.3. Response of Domestic Tourists

The main complaints of the domestic tourists during their stay in Sabang are about waste management (78%), transportation (12.19%) which relates to the ferry management i.e. unreliable scheduling of Sabang-bound ferry during peak holiday seasons (long holidays and public holidays). A study by Muhammad et al (1997) maintains that tourists are not satisfied with the local transportation services in Sabang which are not well-managed. Unreliable ferry schedules during long holiday periods is an example. Other complaints are related to availability of restaurants or eateries and clean water (9.75%), which is shown in Figure 2.

![Figure 3. Domestic Tourists' Complaints in Sabang](source: primary data, 2014)

5. CONCLUSION AND SUGGESTION

5.1. Conclusion

It can be concluded that the response of the domestic tourists in Sabang is primarily related to waste management (76%). Meanwhile, 14.11% of the response is related to the management of ferry i.e. unreliable ferry schedules during peak holiday seasons. The remaining complaint is about the availability of restaurants or eateries and clean water (9.89%).

5.2. Suggestion

The following are the writer’s suggestions based on the result of study:

1. Better waste management efforts by Sabang Government are required. A clean environment will be an effective promotional effort to attract tourists.
2. The transportation system should be well managed. This includes the scheduling and cleanliness of the ferry service and transportation in Sabang. Private sector can be involved to assist the government in this area. In addition, the government of Sabang should ensure the provision of clean water as well as the availability of diverse
culinary options especially during holiday season where the number of visits escalates. This can be done by involving private sector such as event organizers.

REFERENCES


ANTIOXIDANT ACTIVITY AND PHENOLIC CONTENT OF PURPLE SWEET POTATO WITH VARYING SOLVENT RATIO AND EXTRACTION TEMPERATURE

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ABSTRACT

Pressurized liquid extraction (PLE) method was used to extract pigment from purple sweet potato with four different solvent ratio water and ethanol (100:0, 60:40, 40:60, 0:100) and extraction temperature (100, 110, 120 °C). In this study, the effects of solvent ratio and temperature were determined on yield, antioxidant activity and total phenol of purple sweet potato extract. Antioxidant activity was measured by radical scavenging method (DPPH), and total phenol was measured using the Folin-Ciocalteau method. There were no significant effects of solvent ratio and extraction temperature on yield of purple sweet potato extract. The yield of purple sweet potato extract produced about 47.71%. The highest antioxidant activity (80.88%) was reached by extracting with 100% water, while extraction temperature was not effect on antioxidant activity of purple sweet potato extract. However, total phenol of purple sweet potato extract was effected by solvent ratio and extraction temperature. A higher total phenol was obtained from extraction temperature 100 °C and solvent ratio water and ethanol (40:60). The higher temperature was used for extracting the lower total phenol content obtained.

Keywords: pressurized liquid extraction, antioxidant activity, total phenol

INTRODUCTION

The use of food colorant nowadays more widely in the food processing industry of food and beverages because the color that was given on food products give attractive for consumers. Food colorant used can be either natural and synthetic. Synthetic color is widely used because it provides advantages which have high stability, efficient in the use for a little can provide the desired color, the price is cheap, and easily obtainable. However synthetic color had an impact that dangerous in health as causing carcinogenic, therefore it is necessary to find an alternative natural dyes such as anthocyanins.

Anthocyanins is the salt polihidroksiflavilium (2-ariIbenzopirilium) (de Mann, 1989), a flavonoid pigments that are present in various vegetables, fruits, and flowers that can have a positive impact on health by neutralizing free radicals and reduce the risk of cancer. Sources of anthocyanins in purple sweet potato that is sianidin, pelargonidin, peonidin, and malvidin (Francis, 2002 and Yudiono, 2010). Concentration and pH determined distinctive the color of anthocyanins either red, blue or purple. (PERSAGI, 2009). Anthocyanin pigment is polar, so that it can dissolve in polar solvent such as ethanol, acetone, and water. In this study, water and ethanol were used as a solvent. Water is polar so it can extract anthocyanins, in addition also a solvent that cheap, safe and readily available, while ethanol is a semi-polar solvents. Anthocyanins have a polarity level that characterizes semipolar (the constant dielectrics 30-40) (Ricter, et al., 2006), so that ethanol required to be added in a solvent water to improve the efficiency of extraction of
anthocyanins, as well as be able to obtain a solvent that has a polarity approaching polarity anthocyanin.

The conventional method is often done for the extraction of natural antioxidants (anthocyanins) of the plant is generally conducted with an organic solvent (acetone, methanol, ethanol) that is carried out at room temperature for several days. Pressurized liquid extraction (pressured Liquid Extraction, PLE) is a method that is fast and efficient extraction of anthocyanin extraction. Pressurized liquid extraction method can save costs because it reduces extraction time and can minimize the use of solvents that are toxic / poisonous (Bjoèrklund, 2000). At this extraction method, required high temperature and pressure, and the appropriate solvent ratio. The Increase of temperature and pressure can cause a decrease in solvent polarity. Yudiono (2010) stated that the decrease in polarity of water can increase the total anthocyanin extraction results.

Extraction of pigments from purple sweet potato with PLE method has been carried out by using water solvent (Rabah, 2005; Yudiono, 2011) and using a solvent mixture of methanol and water (Truong, et al., 2012). Temperature and time used varies from 20-140°C with 20 minutes (Truong, et al., 2012), 105-125 °C with a time of 20 minutes (Yudiono, 2011), and 200-300°C with 20 minutes (Rabah, 2005). In this study, PLE was used to extract a pigment of purple sweet potato using a mixture of a solvent water-ethanol to minimize the use of toxic solvents such as methanol and to improve the effectiveness of the extraction rather than simply use a solvent water.

The objective of this study was to determine the effect of a solvent ratio of water and ethanol and the use of extraction temperature on yield of extract, antioxidant activity and phenolic content of purple sweet potato extract.

MATERIALS AND METHODS

Purple sweet potatoes were peeled and cut into small pieces (± 5 mm). Fifty gram sample was taken and 200 mL a mixture of a solvent water-ethanol (100:0, 60:40, 40:60, 0:100) was added. Solvent was adjusted to pH 3 by adding acetic acid. The sample was autoclaved for 20 minutes at 100, 110 and 120 °C and filtered. Filtrat was keep for 12 h in refrigerator. The filtrate was recovered by centrifugation (5000 rpm, 15 min). The filtrate was then evaporated using a vacuum rotary evaporator at 80 °C until 1/10 of volume of beginning. The filtrate was analized for yield, antioxidant activity and total phenol. The experiment was arranged in a completely randomized design as a factorial arrangement of treatments (four solvent ratio and three extraction temperature) with three replications. Data were analyzed using ANOVA.

RESULTS AND DISCUSSION

1.1 Yield.

Solvent ratio and extraction temperature had no significant effect in yield of purple sweet potato extract. The average of yield resulting from extraction of purple sweet potato pigment was 47.71%. The result indicated that each treatment was given to the process of extraction with variation of temperature and a mixture of a solvent water-ethanol have the
same relative yield. This is because the process is carried out with an approximate extract obtained by 1/10 of the volume of the beginning.

1.2 Antioxidant activity.

Antioxidant activity is capability possessed by an antiradical compounds to capture free radicals. Analysis of antioxidant activity performed with the principles of free radical scavenging using DPPH (1,1-diphenyl-2-picrylhidrazyl) method. The activity of antioxidants in the sample results in discoloration of DPPH solution of concentrated purple color to pale yellow. Color changes indicate the ability of the sample in reducing free radical activity DPPH (Permana et al., 2003). Inhibition of free radicals DPPH by anthocyanin having a mechanism by donating the hydrogen atoms of most of the hydroxyl groups to compounds free radicals DPPH so that form a compounds free radical DPPH more stable (DPPH-H) (Prior, 2003).

In this study, there was significant effect of solvent ratio on antioxidant activity of purple sweet potato extract. The differences in antioxidant activity of purple sweet potato extract is shown in Figure 1.

![Figure 1. Effect of solvent ratio on activity antioxidant of purple sweet potato extract.](image)

Means followed by the same letter are not significantly different by LSD\textsubscript{0.05} = 14.48.

A higher antioxidant activity was exhibited by the purple sweet potato when extracted by mixture a solvent water-ethanol 100:0 as compared to others treatment. The result obtained could be due to there are another antioxidant compounds that contain in purple sweet potato extract that produced. According to Teow et al. (2007), the main antioxidant constituents in hydrophilic extract are primarily phenolic compounds and anthocyanins. In addition, purple sweet potato contains vitamin A, vitamin B, vitamin C, thiamin and riboflavin (Iriyanti, 2012). Vitamin C is one of the antioxidants that also have water-soluble properties (PERSAGI, 2005). Vitamin C in which it is dissolved in sweet potatoes is thought to follow when using water solvent a lot, so that it can produce a higher antioxidant activity.

1.3 Total Phenolic Content

The total phenolic content of purple sweet potato extract was measured according to the Folin-Ciocalteu method. The reagent determined total phenol by reducing yellow
heteropolyphosphomolybate-tungstate anions to blue (Li-chen et al., 2005). In the present study, there were significant effects of solvent ratio and extraction temperature on total phenolic content of purple sweet potato extract. However, due to the interaction effects between solvent ratio and extraction temperature, the results would focus on the interaction effects. The interaction effect between solvent ratio and extraction temperature on total phenolic content of purple sweet potato extract is shown in Figure 2.

![Figure 2. Interaction effect between solvent ratio and extraction temperature on total phenolic content of purple sweet potato extract. Means followed by the same letter are not significantly different by LSD\(_{0.05}=217.83\).](image)

The total phenolic content of the sample ranged from 64.47 – 675.30 mg GAE/g. The total phenolic content of the 100 % water solvent at extraction temperature 100 °C was not significantly higher than that of other solvents ratio at the same extraction temperature. Whereas the total phenolic content of the purple sweet potato extract at extraction temperature 120 °C was significantly less than that of extracted at 100 °C and 110 °C. The results indicated that the total phenol content of the extracts decreased with increasing extraction temperature in all a mixture of a solvent water-ethanol except for extracting in a solvent water-ethanol 60:40 at extraction temperature 120 °C. This is could be due to the increased temperature influence quantification of bioactive compounds such as phenolic. According toCacace and Mazza (2003) a particular phenolic compounds such as flavonoid families (mainly anthocyanin and flavan-3-ol derivatives) are sensitive to heat, hence to avoid degradation of the thermo-sensitive phenolic compounds an upper limit must be respected.

**CONCLUSION**

Solvent ratio water: ethanol (P) had significant effects on antioxidant activity, and total phenol. The higher antioxidant activity obtained with a solvent ratio of water:ethanol 0: 100 by 80.88%. The extraction temperature had no effect on the yield and antioxidant activity of the purple sweet potato extract. Interaction between solvent ratio and extraction temperature had significant effect on total phenolic content of purple sweet potato extract. A higher total phenol was obtained from extraction temperature 100 °C and solvent ratio...
water and ethanol (40:60). The higher temperature was used for extracting the lower total phenol content obtained.

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THE ANALYSIS OF LEARNING MATERIALS
IN CHARACTER EDUCATION OF THE SOCIOLOGY TEACHING
IN THE SENIOR HIGH SCHOOL BANDA ACEH

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ABSTRACT

Starting in 1976, sociology officially became one of the subjects taught in senior high school programs throughout Indonesia. There are still, however, several major problems in teaching it in particular the lack of locally relevant teaching materials and the lack of teachers with a background in sociology. As a result teachers are assigned to teach sociology with no experience in sociology in particular the experience needed to prepare sociology teaching modules based on local wisdom and culture. Thus their sociology teaching is usually totally focused on using nationally prepared textbooks so that there are no lessons based on local character and as a result the lessons are boring and uninspiring and often irrelevant. By contrast if they can make or get good teaching modules that incorporate local traditional wisdom students can learn much from these local values, local wisdom and local life experiences. The aim of this study is to find better ways for the teaching of sociology and for students to learn the principles of sociology and to find the best of teaching materials available for constructing a better paradigm for character education: and also to identify the various barriers and difficulties inhibiting the provision of highly successful character education through the study of sociology. The research method used is a descriptive, qualitative approach. The results show that in teaching sociology in Banda Aceh the implementation of teaching character based on local wisdom has major problems and obstacles. In particular the standardised national education program ending with standardised national final examinations emphasizes rote learning unrelated to the real life of the students. This raises contradictions because the centrally prepared material makes it difficult to introduce local indigenous values, culture and traditions. Most teachers tasked with teaching sociology have no experience of teaching sociology nor have they studied sociology. For most teachers, teaching sociology is an extra subject added on to the teacher’s main specialised teaching load. The textbooks provided are prepared on a centralized, national basis and local teachers have not been enabled to develop special materials for the classroom based on learning local, regional cultural values and traditions. Many parents no longer pay attention to their children’s education at school, they assume the education of their teenagers is the responsibility of the teachers and the school whilst their role is only to care for their children at home and to provide the funds and transport needed for their teenagers’ education.

Keywords: Teaching Character Values and Local Wisdom

1. Introduction

Education in general has a noble purpose, which is to consciously, systematically and in accordance with a plan mould the private character of (young) people according to their needs and also the needs of their community and also the needs of the nation. Many factors can and do influence education, one such factor, which is a determining factor is the availability of competent human teacher resources in accordance with specialisations; another very important factor is the role of the people as the source of the students. This is important because what is provided and nurtured in the schools represents everything that’s needed and made available to the people. Because of this truly what is learnt at school...
cannot be far from what is there amongst the people. If it is far from the norms of the people then what Hary J Gunawan (2013) called disintegration will occur. In other words the education will not reach the general standards and norms of the people and the purpose of the education will not be achieved.

The Province of Aceh is a special area (in Indonesia) with much potential, both natural and social, which also has much local wisdom in accordance with Sharia Islam laws and values. The same is true for the City of Banda Aceh, the capital city of the province, which has expressed a vision to become a spiritual city based on Islamic sharia law. To achieve that vision will need efforts from many people in particular teachers able to train students in Islamic values. Teaching and leading by example in the schools is needed to ensure the upcoming young generations are fully trained and inculcated to practice the local wisdom.

One important subject for study which can assist to reach these goals is the study of sociology. Sociology, however is often looked at as just a filler subject, in fact sociology is only offered as part of the IPS or social studies curriculum (not as part of the IPA or science curriculum). Often people think of the IPS group of students as the group that is not so clever and sometimes maybe not so diligent. As a result a paradigm has developed with a dichotomy between the IPA and the IPS students whereby the IPA group is regarded as budding intellectuals and prioritized whilst the IPS students are regarded as second rate. As a result teaching without thinking, follows this character dichotomy.

2. Materials and Methods

This is a qualitative research project. The respondents are all, everyone of the High School sociology teachers in the City of Banda Aceh together with other associated persons thought to have knowledge in the area of the problems being studied and/or data that is relevant to this study like sociology experts and leaders of traditional culture. The methods used for gathering data were in-depth interviews, real time observations and document searches.

Treatment and Analysis of Data, the data and views gathered will be treated by the qualitative ‘Triangulation’ method. The aim of the analysis was to outline categories which are relevant to the purpose of the study in order to give birth to very good research results.

Continuous editing was done from the beginning of the study to avoid a pile-up of irrelevant data so that the study continually gathered data to support the previous findings of the study and reinforce data already in hand.

3. Results And Discussions

Sociology is a new subject for study in Indonesia. First entering school curricula in 1994, the aims and means of study have been developing continuously in accordance with the vision for education in Indonesia – viz: to develop character in accordance with Section 3 of (Indonesian) Law No 20 of 2003. Remembering that the Republic of Indonesia has 1,128 different cultural groups occupying different places in the innumerable islands of the Indonesian archipelago each with its own character, the study (of Sociology) needs to be adjusted to take account of the local culture so that the results of their studies will be of benefit for the students when they return to their communities.
There are many problems for sociology teachers to overcome in order to teach the values of character in accordance with those set down in the national curriculum whilst at the same time incorporating local customary values and wisdom. These problems are not just with the teachers themselves but also with the text-books, the curriculum and the teaching modules which are not yet in accordance with the hoped for lesson ideals. Indeed some problems even stem from government regulations themselves. Based on research in the City of Banda Aceh in 2013, the writer has tried to outline some of these problems in the sections that follow:

3.1 Problems in the Implementation and Application of Character Values in High Schools in Banda Aceh City.

Based on the results and analysis of the various data collected these problems can be summarized as follows:

a. Difficulties with Regulations and Standards for Measurement

Law No 20/2003 concerning the National Education System states that the purpose of National Education is directed and is aimed so that the students can actively develop their personal potential to possess spiritual strength, self control, individuality, noble character, intelligence and skills. Clearly, according to what is outlined in that law, education is not just aimed at making students clever in an academic sense but is aimed at making human beings that are wholesome, who are capable of serving our creator, human beings who will dedicate themselves to humanity and the global environment.

National Education aims to create young people who are not only intellectually clever but who have also developed inner feelings or a conscience and who are resilient in facing the challenges of real life. The basic teaching they get must be capable of developing wise values and directed to developing the Intelligence Quotient (IQ), Emotional Quotient (EQ) and also the Spiritual Quotient (SQ) of the students concerned.

Taking special note of this statement of purpose the direction of development of teaching needs to pay attention to various characteristics which cannot be separated from local wisdom as the place where the students adapt and live with their families. Note that the pressures of teaching are decentralistic in nature while, on the other hand, the decision to implement standardised nationwide testing in the UN (National End-of-Academic-Year Exams held in April-May) which emphasise cognitive aspects only is contradictory because of its centralistic nature.

The two opposing directions can create confusion for teachers trying to teach. On the one hand, (from the Education Department) there is an emphasis on using teaching materials which are locally based whilst on the other hand the government (read the Education Department again) insists on standardized national teaching materials whereby the teachers are expected to drive the students to achieve the highest possible results in the NU using the nationally based materials provided meanwhile each region and even each area has its own distinctive and different characteristics.

Besides this there is a feeling of failure and even of “self-punishment” for teachers if many of their students fail the National exams in a subject which that teacher is taking. Hence the performance of the teacher concerned is believed to be poor. In this situation the moral values of the teacher are tested between being honest and assisting in cheating.
Being honest means accepting the results of the students as they are according to the results obtained by the students themselves. Assisting with cheating means systematically doing things to help the students get better results to preserve their image and the image of the school. This is because, in Indonesia, the percentage and level of passes in the National exams has become the measure for assessing the standard of the school. (viz: a high level of passes gives a school higher prestige). This situation can smear character values because there is no culture amongst the people where ‘cheating’ is regarded as a good sign of character.

From this phenomena/situation many points arise which can become problems because:

1. Many teachers are confused in teaching because they have a dual role viz: the purpose of teaching is to develop character in accordance with the local wisdom of the people whilst at the same time the students are required to pass the centralitic National exams as an indicator of the success of the students, the teachers and the school as well as the success of any other directorates concerned.

2. As a result of the ‘self-punishment’ which the teacher and the school will receive if many students fail the National Exams the teachers automatically have to focus their teaching on the materials needed to pass the National exams rather than any locally based materials.

3. The growth of bad values like cheating, buying and selling of answers and other dishonesty - even though the school is an institution which must guard good values, the need to pass the National exams causes pressures to support bad actions.

4. The materials tested are not synchronous with the aims of the National constitution and with laws for National education because the NU is only concerned with intellectual cleverness. Intellectual ability certainly does not guarantee the equality and ability of people because its not connected with the work ethic nor with the (social & natural) environment.

b. Teachers of Sociology in Banda Aceh have no background in Sociology

In Banda Aceh the teachers are still the factor that determines the success of the lessons and the ability to achieve the learning goals. The success of students depends very much on the teachers performance in class. In the classes the students are still not sufficiently independent to manage the conditions of the classes themselves. If the teacher is not in the class, the students can often make a big row that can disturb neighbouring classes hence the role of the teacher is very important to manage the behaviour of students in their classes.

For the study of sociology in Banda Aceh there is not yet one teacher who is specifically trained in sociology. 100% of the teachers, teaching Sociology in the High Schools in Banda Aceh have no training in Sociology or some other relevant discipline eg Anthropology. In general the teachers of Sociology have a background in teaching Geography, History, Economics, Educational Administration or Indonesian language. Thus the teaching of Sociology as a subject can not yet be said to be professional because the teachers have no previous background or experience in the subject.
As a result the (sociology) teachers have only minimal professional competence (in sociology) which therefore needs to be developed in order to make them good teachers (of sociology). Thus principles and characteristics for teaching sociology well are not yet done properly not only the basic teachings but also and in particular the teachings about local, character, traditions and values are not taught in the schools. The low background knowledge of sociology makes it difficult for the “instant” sociology teachers to develop teaching materials and to design research projects to investigate local culture.

c. **There is not yet any special training for teachers delegated to teach sociology in Banda Aceh.**

Training is one way to improve teaching performance in a sustainable way; ideally training should be given at least once a year; this is important given the continuous and rapid development of science and technology and even of social sciences. Teaching methods also need to follow new developments in science and technology; relevant new developments need to be mastered by teachers in order to improve their teaching methods.

Although we are sure that in-service training is important to maintain and improve the performance of teachers up until now the sociology teachers have not had any regular or systematic in-service training (i-s t). Teachers from other disciplines are nearly all in the same boat; although teachers of other disciplines have had some i-s t, it has not been enough to come near to ideal. That is far from the case with sociology teachers – they were given some minor i-s training in sociology by IKIP (teaching institute) in 1985 and the next was after the Tsunami in 2006, the latter was paid for by foreign NGOs.

With respect to the i-s t in these two years, only 1% of the sociology teachers in Banda Aceh participated in some sociology training and 3% in some training in improvements in teaching methods but 96% did not have any in-service training at all let alone training in teaching of sociology.

As a result of such non-existent in-service training the teachers teach based on what they learnt in the various teaching courses they attended before starting teaching. Remembering that teaching about character only started in 2003 only those teachers who studied sociology from 2003 on ie those who graduated from 2005 on would have had a chance to master the patterns and methods for the teaching of character in sociology. As a result there is a big gap between the requirements to teach about character in the high school sociology courses and the previous training and ability of the teachers given this task.

As mentioned above, the high school teachers tasked with teaching sociology in Banda Aceh don’t have a background in sociology but come from all kinds of backgrounds as a result the sociology teaching is highly varied depending on the competency of the individual teachers, their understanding of the teaching materials, their artistry in teaching and their ability to do research into sociology especially their ability to do research and collaboration into local character, traditions and customs.

The need for In-service training in sociology for sociology teachers in Banda Aceh is very important for multiple reasons including to:

1. Improve the ability of the teachers to teach sociology;
2. Increase the teachers ability to incorporate local wisdom, character and values into their teaching of sociology

3. To make the materials, models and methods of teaching sociology uniform in accordance with the characteristics, principles and purposes of teaching about character in sociology.

4. Develop research models to provide local materials for teaching sociology.

d. Sociology Teachers have dual roles.

As mentioned above none of the teachers at present teaching sociology in Banda Aceh high schools had any background in sociology. They were all directed to assist with teaching sociology in addition to teaching their other specialty subjects at other times usually in accordance with their basic training. This dual role increases their work load and can make the teachers feel uncomfortable (in their dual role).

This dual role can also create an imbalance in their professional duties. The teachers will naturally give top priority to the teaching of their own specific subject whilst the teaching of sociology will get second place in their priorities. The dual role can even create stress for the teachers because on the one hand they have to be professional and teach their specific subjects (that they have been trained to teach) whilst on the other hand they have to be professional and teach sociology for which they have had no training. According to Briner (Rahayu Apriliaswati 2014) this kind of stress can be called internal stress he characterizes as Openness to Experience.

Their dual role like this can result in in their work being not focused even though teaching requires full concentration, adequate preparation of materials, media and methods as well as field research to find out about local wisdom in accord with basic teachings.

The key to teaching sociology puts emphasis on teaching based on locally based materials; accordingly the teacher is required to do extra work to unearth local wisdom, traditions and customs from the local people. This kind of work which is needed to strengthen the teaching of character in sociology has not been done by the high school sociology teachers in Banda Aceh. It has not been done because the teaching of sociology is a second cousin to the teaching of the teacher’s own specialized subject where the focus of their professionalism is!

e. The teaching materials supplied for sociology are not appropriate.

The sociology teaching materials – i.e., books supplied from the central government education department are not appropriate for specific cultural groups like the Acehnese (the materials supplied were prepared for a megalopolis where the dominant culture is Javanese). In general these materials are not appropriate. Our research showed that all the sociology teachers still used books supplied as part of the national teaching packet so that it is still difficult to introduce local wisdom, values and culture as part of the sociology teaching materials. As a result there is a discontinuity: what is in the teaching materials is not representative of the culture outside the schools and what is in the culture around the schools is not in the teaching materials.

The materials for teaching sociology have specific cultural characteristics – this is quite different from other social sciences: this characteristic is not well understood by
teachers not trained in sociology. Sociology is quite different from other sciences like anthropology, history, economics etc. That there is not yet a book for teaching sociology specifically for the Acehnese is a difficulty for the teachers assigned to teach sociology in Banda Aceh.

The teaching materials available for teaching sociology in Banda Aceh are nationally based having come from the national packet of materials for teaching sociology. They are oriented to a Javanese megalopolis and are not appropriate for a minor city with a specific culture in a province that has chosen to introduce Islamic Sharia law. Teachers with no specific training in sociology are not capable of developing specific materials for teaching sociology to include the local wisdom and culture of Aceh. Experts in sociology in Aceh have not yet taken an interest in this situation ie. the need to develop teaching materials based on local wisdom to strengthen the teaching of character in the High Schools. Because of this it is very important to prepare books for teaching character based on local wisdom and culture. When such books are available it will enable teachers without sociology backgrounds to create lessons which are contextual with local wisdom, values and culture.

f. The Acehnese people and in particular the parents of the students have not yet been involved in compiling local wisdom, culture and values.

Parents of students are an important element to support education. Parents must understand that they have the prime responsibility for the education of their children in accordance with their (the parents) values.

Nowadays many parents no longer take notice of the education that their children receive at school. For various reasons including not enough time they leave the schooling of their teenagers to their schools, the parents tend to only feel responsible for providing their teenagers with a home and paying for whatever has to be paid for. In the various models (for school governance) there appears to be no opportunity for the parents to be involved in the education of their teenagers; in fact these difficulties may have been made by the schools themselves which have not created formats (for school governance) which make it possible for parents to be involved in the programs of the schools.

The tendency for a pattern like the above has occurred in various large cities (in Indonesia) including in Banda Aceh; many institutes manage their teaching on their own without the involvement of the parents, the parents themselves also appear unwilling to become involved; possibly because they have not been invited to participate and also because they feel that for various reasons it is no longer their responsibility.

In the teaching of sociology these problems need to be overcome because the first step in creating education for character based on local culture must come from the parents and the people themselves. Local wisdom, values and culture must come from the elders of the community through the parents to their teenage children so these values and wisdom will become universal within the community and vice versa.

3.2 Teaching to develop Character based on Local Wisdom, Culture and Traditional Values and It's Likely Effect on the Social Behaviour of Teenagers in Banda Aceh
The implementation of teaching character in Indonesia is still new, there are still many things that need to be done to develop the teaching of character to a high standard. Teaching about character needs a well planned system based on wisdom using high standard materials and equipment to plant character values into the school population including knowledge components, consciousness and desire and actions to implement values as practised by the (local) peoples not only the values of their relation to God, but also their values of ego i.e., of self, their values of family and friends and their values in relation to their environment even to their nation so that they will become character based human beings. The program for teaching character is not a development program, but it is a program to develop motivation and improve behaviour with an aim to create change for the better in the character of people overall, to come back to an inner-power that is clean, truthfull, dedicated, fair and not involved in any anti-social activities that are against the values of religion and against the culture of the local people.

To maximise the teaching of character in schools all stakeholders must be involved, including the teachers themselves, viz.: the curriculum units, the teaching processes and the evaluations as well as the various equipment needed, the quality of relationships, the handling and management of the teaching units, the school management, the programming of activities including co-curriculum activities, the empowerment to make available necessary infrastructure, the funding and cash flows, and the work ethic of all the people in the school environment who are responsible must be co-ordinated and actively play their roles according to their respective functions.

Considering all these components our study found that in Banda Aceh High Schools implementation of teaching about character using local wisdom has not yet taken root and there are no concrete plans from all the actors in the school environment to improve the teaching of character especially using values from local wisdom.

Many in education do not yet understand the special characteristics needed for teaching sociology and have not yet mastered how to make plans for teaching sociology and character based on local wisdom and values; these needs need to be understood and followed by all parties concerned as a guide to living for the people which is integrated in the lessons at the schools.

What has been done up till now is what has been done for a long time, using materials which are very generalised from nationally produced books. Most of the teachers don’t yet understand about local materials that could be included in the teaching of sociology in their schools. There are even some that are of the opinion for various reasons that there is no need to teach sociology using materials based on local values. From such expressions it is implicit that many teachers now teaching sociology don’t yet know how to blend national theoretical concepts with local values from the people. However, truly what is written in universal theory can in fact be seen all around amongst the local people.

Aside from the various shortcomings in teaching practices in Aceh in general, the character values which from the past gave meaning to life and were descended from Islamic Syariah values, are now undergoing pressures for change both from the younger generation and also from older better educated people. This can be seen as many of the young generation now spend their time doing things of no benefit, viz: sitting around in cafes. Previously this was only done by young men, now it’s increasingly being done by
young women too. Beatings and even murders, extortion, apostasy (change of religion), bribery, corruption and nepotism wherever there is an opportunity, buying, selling and copying of theses, plagiarism, cheating in the National exams, smoking (now being copied by young ladies whilst previously it was very taboo), drug addiction and promiscuity are now being done by many teenage high school students in Banda Aceh (2.46% have even had free sex, Abubakar dkk. 2010). Recent studies show that 10% of the prostitutes in Banda Aceh are teenagers either still in high school or who have dropped out.

Like it or not these asocial activities are the product of the inability of their teachers and their schools to teach the students how to form deep character values. Previously this was done by their parents, their community and their religion teaching them character values. The present part-time teachers are not yet capable of putting together good material for teaching character values, at present they are just capable of touching on normatives or academic values and are not yet able to teach students how to internalise character values in reality. The teachers at present are not capable of preparing material with appropriate character values; the teaching of character in the schools until now has just started to touch on the level of normal knowledge or academic knowing values and is not yet at the level of internalisation or reality for the daily life of the students in a really concrete way.

Academically the teaching of character is the teaching of values, the teaching of common sense, the teaching of morals and the teaching of good personality the purpose of which is to develop the ability of the students to make good-bad decisions based on the values of society, to care for and maintain what is good and be capable of shaping good personal values for daily life with empathy for others and without being forced to do so.

From the big picture, the macro view, the value of teaching character is to maintain and guard the values of national education, that is to shape people who have good values, good morals, good character, people who are responsible and people who are useful, hard working and dedicated to their families, their religion, their culture and their country.

From the close perspective, the micro view, the development of character values at school can be classified according to four pillars as follows:

a. The results and activities of the teaching learning process.

b. The daily activities in the form of the school culture.

c. The results of the co-curricular and extra-curricular activities and

d. Daily activities at home and amongst people (outside of the school).

Formation of character values in class needs to be developed; ideally this would be in an overall program encompassing all subjects and taught in accordance with each field covered and integrated or embedded into all subjects.

The diagram below graphically shows how the teaching of character values is developed from local wisdom and values. For Banda Aceh the steps to teaching locally based character values are not drawn in a micro way – these include school lessons, school culture, extra-curriculum activities, parental modelling, and village culture. In general there are 18 character values however the teachers are not yet capable are demonstrating and developing all these character traits in their classes.
Figure 1. Relationships & Processes for Developing Education in Character based on Local Wisdom and Traditions in the City of Banda Aceh

Character values can, in fact, be taught in every class and every activity they do not need high sounding pronouncements but they do need to be planned in such a way that the students are faced with them. Every teaching activity develops abilities in the cognitive, affective and psycho-motor domains. Because of that, it does not always need special lessons to teach character values based on the local wisdom and the character of the people. Nevertheless special values like, fairness = equality of opportunity, work ethic = work hard & smart, truthfullness, honesty, tolerance, discipline, sharing, charity, compassion, autonomy = independence, nationalism, love of nature and love of reading and also religious values can best be developed in special lessons designed to develop these values.

In order to develop some other values like empathy = social caring, care of the environment, curiousity, creativity and entrepreneurial initiative require special conditions to be deliberately organised together with relevant teaching modules and methods so that the students get opportunities to put into practice the values being taught. Because of the synergy needed for these special requirements such training has not yet been done in the High School sociology courses in Banda Aceh.
4. **Conclusions**

Based on our research results above, several important points can be drawn as conclusions in this study, amongst others:

a. Aside from numerous obstacles which can interfere, the most important need for teaching character is government regulations and standards for assessment. The aim of National education is not only to create capable people with intellectual intelligence but also to develop wisdom based on good character values especially local (decentralised) character values. On the other hand, the requirement to conduct National End-of-School-Year Examinations creates contradictive intellectual pressures because of their centralistic uniform national characteristics. These two opposing requirements creates confusion for the teacher in programming the materials for the class. The teacher is driven extremely hard to get the highest possible results in the national exams with materials supplied from the national centre whilst each area/region has different characteristics. Various means have been employed to avoid cheating (in the National exams) for example - leaking of the answers, giving clues to the answers and so on which blacken the local character are even facilitated by some teachers.

b. One hundred percent (100 %) of the High School sociology teachers in the City of Banda Aceh do not have a relevant background for teaching Sociology. They have had little training and minimal experience which means that their minimal level of competency needs to be further developed to become good teachers of Sociology. The principles and characteristics needed in teaching sociology cannot be developed, without training; the teaching must also train the new teachers how to connect the sociology teaching materials with the local cultural character values and also how to do sociological research to find out and to collect material from the local people.

c. The sociology teachers are almost always required to teach at least one other subject so they usually have to perform multiple roles. This condition can create a work load that is not easy to cope with for the teachers themselves. Dual teaching roles like this can result in priorities which are not balanced evenly; for the teacher who has to teach sociology but for whom it is not his chosen discipline his priority will be for his chosen discipline and not for sociology. Dual teaching roles can create stress for the teacher because he has to be a professional in a field which he did not study before.

d. Sociology materials have their own distinctive character and are different from the materials for other social sciences, this is not often understood by other teachers, accordingly when teaching it, it is difficult to say which other science is close to sociology – anthropology, history, economics, even some other sciences all have some commonalities. As there is not yet any book for teaching sociology which specifically covers the character values of the Acehnese it is difficult for the teacher of sociology in Banda Aceh to develop material for the class especially since the materials available all have a National character and come from the National packet for teaching sociology. The teachers of sociology in Banda Aceh are not yet able to develop material that incorporates the local values, traditions and character of Aceh.
e. Parents and citizens are very important in supporting the kind of education provided in schools. However, in this day and age, many parents don’t take much notice of what their children are learning at school. They expect that the schools will be responsible for educating their teenagers and their responsibilities as parents are to provide a home and transport plus necessities (eg. read laptops and tablets) plus allowances. This is now the norm in big cities worldwide including in Banda Aceh. The parents are also reluctant to become involved in activities at the school because they are not consulted by the school in preparing the School’s programs especially for preparing the teaching materials to be used.

f. Academically, education to guide character is education in values, education for conduct of life, education in morals and education in attitudes. The purpose of it is develop the ability of students to make decisions based on values held by the people, to care for and maintain good moral values and to be capable of maintaining and empathising with those good values in daily life without any use of force. Formation of character values in class needs to be done in an overall way in every subject in accordance with it’s domain and integrated into each subject (the embedded approach). In Banda Aceh, in a micro way there cannot yet be seen any clear steps to teach character based on local values, whether through teaching in schools, or developing school values and ethics eg SOP, or through extra-curricula activities and even through training in character values at home or in the community.

In the schools in general, 18 values of character are taught however the teachers are not yet capable of connecting with and developing these values in-micro in class.

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APPLICATION LEARNING MODEL
BASED ON PROBLEM BY USING MODULES
IN IMPROVING STUDENT LEARNING OUTCOMES OF MUSHROOMS CONCEPT

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ABSTRACT

This study aims to describe the quality of students' skills in problem solving, improve the quality of the learning process, and improving student learning outcomes in subjects fungal biology concepts through problem-based learning strategies with the cooperative approach aided module. The subjects were high school students in Banda Aceh in the academic year 2014/2015, in amount of 30 students. This research was conducted in two cycles, each cycle consisting of planning, implementation, evaluation, action and reflection. The results showed that the application of problem-based learning strategies can improve the ability of students in problem solving, improving the quality of the learning process in terms of student activities, and improve student results. Student learning outcomes in cycle I and II respectively 66.74 and 71.41. Most of the students gave a positive response and hope that the problem-based learning strategies based modules can be continued and developed in the subjects of biology concepts mushrooms.

Keywords: Model Problem Based Learning, Learning Outcomes and modules

1. Introduction

Biology subjects of fungus concepts, is one of the subjects which have problems that both the lectures and the quality of student learning outcomes. Base on interviews researchers through clinical approach to some of the students who take biology subjects revealed fungal biology concept is one of the subjects is difficult. In addition, there are complaints from the students will be the lack of books or teaching materials that can handle biological difficulty in using scientific language. According to students, there are foreign books that available in libarary, however, there are two difficulties in studying the biology that it ishow to understand the concepts as well as language of the book.

In biology, it was found that the lack of readiness of students to follow the lessons of biology, learning management with information and discussion methods generally still tend to lead to the provision of information, so that learning is still dominated by the teacher. Teacher posed the question can be answered by the students rarely or only answered by a particular student. Most of the teachers answered questions that posed by them. On this learning, the idea of beginning students is relatively less explored and considered in learning, students tend to be passive, self-motivated students to learn less, and the sharing of knowledge among students less facilitated.

Biology subjects that performed at this moment, tends to only pay attention to the number of subjects and the allocation of available time, by pursuing the achievement of the curriculum without considering some important things that have been outlined by the curriculum. In the subjects of biology, students are expected to understand the concepts of
the fungus and its applications. In addition, students are expected to develop the power of thought to solve the problems encountered.

Troubleshooting procedures that performed by students, tend to be unstructured, students perform troubleshooting directly at the level of fungi alone. Teacher as a teacher not only instills a concept that should be studied, but also gives insight to the students to do the ways of solving problems in accordance with the scientific role of science itself, so that a pattern embedded in problem solving. One way of resolving problems raised by Heller (1992) includes several stages, namely (1) visualization of the problem, (2) a description of the necessary concepts, (3) completion of the plan, (4) implement the settlement plan, and (5) researching and reevaluate.

In learning based on problem, learning is designed in the form of learning that begins with the structure of the real problems related to the concepts of mushrooms to be covered. Lessons started after the student was confronted with a real problem structure. In this way, the students know why they are learning. All the information they collect through review of teaching materials, laboratory practical work or through discussions with their peers, to be able to solve his problems.

Learning based on problem, intended to improve learning outcomes and student motivation because through learning based on problem, students learn how to use an interactive process to assess whether they know, identify what they want to know, to collect information and in collaboration evaluate the hypothesis based on the data they have collected. Therefore, it is unfortunate that this adult subjects biology is still dominated by the teacher. Learning approach offered combines problem-solving strategies with supporting environment to help students implement the strategy. Learning based on problem, can be implemented through a problem-solving exercise in cooperative groups.

The implementation of a cooperative approach to learning has shown effective results in helping students perform complex skills (Heller, 1992), in the functioning of a good group of students divide knowledge of concepts and procedures when they solve problems together, as long as the interaction of group members can ask for an explanation and justification to others. Good criticism will clarify all group members thinking about concepts that are used and how the concept is applied to practical problems encountered.

On the other hand, Lazarowitz (in Dorothy, 1994) indicate that learning through cooperative approaches can improve academic objective, inquiry skills, self-esteem of students, student behavioral tasks, and academic atmosphere. Tobin (1990), showed that cooperative learning can improve academic objective, self esteem, students can also increase the motivation to learn and tasks, improving students' attitudes in a positive direction towards teaching materials, and encourage students to learn more and help one to another.

Based on the above reasoning, thus follow by conducted research on implementation strategies with a learning based on problem approach to support environmental groups as a cooperative. The issue to be answered in this study were (1) to what extent the students skills in problem solving that can be enhanced through learning based on problem strategies with assisted module cooperative approach?, (2) to what extent the implementation of learning strategies can improve the quality of the learning process?, (3)
to what extent the students learning outcomes that can be improved through this learning strategies?, and (4) How students respond to this model?

2. Research Methods
2.1 Research Subject and Object
The research subjects were X grade class students that follows the biology subject, totaling 30 people. The object of this study is problem solving ability of students, the quality of the learning process, student learning outcomes, and the students response to applied learning strategies.

2.2 Research Design
This research is a class action that consisting of two main cycles. Each cycle consists of four stages, namely the action planning stage, the stage of implementation of the action, the stage of observation and evaluation of the actions, and the act reflection stage.

2.3 Planning Stage
Activities that carried out at the planning stage are as the following. (a) Develop module that given to students at the beginning of learning which contains the basic competencies, indicators of learning outcomes, key concepts that must be mastered by students, the questions structured and guided. (b) Setting up a research instrument in the form of the initial test (pre-test), the test results of learning (formative test), observation sheet group learning activities, student perception questionnaires. (c) Prepare a plan of learning.

2.4 Implementation Action Stage
Activities or actions undertaken are as the following.
(a) Divide the class into small groups (3-4 people).
(b) Providing pre-test to determine students' prior knowledge.
(c) Distribute to students the teaching materials in the form of a module package.
(d) Disseminating the contents of the module and how to use it.
(e) Implement learning program with group discussion method with a cooperative approach.
(f) Provide a conclusion or summary of the concepts that have been discussed and provide stabilization task concepts and tasks related to the next meeting.
(g) Implement formative test (achievement test) at the end of each cycle.
(h) Restoring the work / assignments and student test results a week after the assignment or test performed.

2.5 Observation and Evaluation Action Stage
Activities carried out at the stage of observation is as the following.
(a) evaluate the development of problem solving in which students through inspection tasks, the initial test, and the test results of learning. (b) Observing the learning process using observation sheet. (c) evaluating student learning outcomes at the end of
each cycle, the form of the test result of learning (formative test). (d) Evaluate the students response to applied learning models, conducted by circulating a questionnaire to students.

2.6 Reflection Actions Stage
Based on the observation of the action at the end of each lesson and end of the cycle, researchers with the teaching team hold a reflection to determine the advantages and disadvantages of the measures that have been implemented. Results of this reflection is used to enhance the implementation of measures in the next cycle. In addition, the reflection is done on the last cycle is used as an ingredient to make a recommendation of this study.

2.7 Data Collection Technique
The data that students perform problem solving ability gathered through inspection tasks, the pre test, and formative tests. Data quality learning process in the form of student activity in the classroom was collected by observation method using observation sheet. Data were collected through student learning outcomes achievement test (formative tests) at each end of the learning cycle. Students' response to the data collected by questionnaire learning strategies.

2.8 Data Analysis Techniques
The data regard to the quality of students skills in problem solving were analyzed descriptively by using the troubleshooting steps designed by Heller (1992), with an average success criteria for the quality of students' skills in problem solving in both categories. Data quality learning process observed through observation of students in the learning activity were analyzed descriptively. Data student activities include (1) the task, (2) cooperation within the group, (3) the interaction between groups of students, (4) the interaction of students and teachers, (5) requested the question, and (6) to answer questions. Criteria for success is an increase in activity.

Student learning outcome data were analyzed descriptively using the average score (scale of 100) and the percentage of students who received a passing grade. The succeed criterion is the average score of graduation ≥ 70 and the percentage of students who received a passing grade B and A greater than 70%.

The data of student response against the learning strategies were analyzed by comparing the number of scale 4 and 5 to the amount of scale 1 and 2. Student responses are positive when the number of scale 4 and 5 is greater than the scale 1 and 2. The criteria for success is the students' response to the positive category strategy to this lesson.

3. Results and Discussion
3.1 Research Result
3.1.1 Ability Troubleshooting
Students' skills in problem solving then conducted evaluation that it is perform inspection tasks, the pre test, and formative tests. Based on the inspection tasks, the pre test, and formative tests in the first cycle, most of the students' problem solving do not structured yet. There is less scrutiny of the question. For example, if the question suggests
students to explain a concept, students only mention these concepts without explanation. In addition, students are less likely to re-examine the answer so often miscalculated or incorrect use of the unit.

Students' skills in problem solving on cycle II had no increase. Most of the students perform a structured problem solving, ranging from visualization problems up to an evaluation or re-examine the results of the settlement of the problem in question so there is no calculation errors or incorrect use of the unit.

3.1.2 Quality of Learning Process

To determine the quality of the learning process, the observed activity of students in the classroom. Activity of students in the first cycle can be described as follows. All of groups performs a good job. At the first meeting, there are some groups who can not work together, but at the next meeting of the group is getting better cooperation. The interaction between groups always occur during class discussions, especially among groups presenter and a buffer group, but have not looked interaction between students buffer group. Student interaction with teachers occurs when there are problems that can not be solved, so the student demanded an explanation from the teacher. The question posed in more discussion refers to the issues that the group task can not be completed and only certain students who ask questions. At the initial meeting, only the student presenters who provide responses to issues in the discussions, other students rarely actively involved in giving feedback, but at the next meeting, in addition to student presenters groups, some students from other groups already participate in responding to the problems in the discussion.

In the second cycle, all groups perform the job well. Cooperation of students in the group and between groups has been good. Student interaction with teachers occurs when lecturers were asked to provide an explanation of the problem can not be solved during the discussion. Students are asked questions and respond to questions already more and more so that the discussions were tough.

3.2 Learning Outcomes

Data obtained from the student learning outcomes in formative test results. The average score of student learning outcomes in the first cycle was 66.74 and the second cycle was 71.65. Distribution of student learning outcomes in cycles I and II are presented in Table 1 and Table 2.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Group Members (students)</th>
<th>Test Score</th>
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<tbody>
<tr>
<td></td>
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<td>0-39=E (students)</td>
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<tr>
<td>I</td>
<td>4</td>
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<td>II</td>
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<td>V</td>
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<td>VI</td>
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</tr>
<tr>
<td>VII</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>VIII</td>
<td>3</td>
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<tr>
<td>Total</td>
<td>31</td>
<td>1 (3.2%)</td>
</tr>
</tbody>
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Table 2. Recapitulation Student Results on Cycle II

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of Group Members (students)</th>
<th>Test Score</th>
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<tr>
<td></td>
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<td>0-39=E (students)</td>
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<tr>
<td>I</td>
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<td>II</td>
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<td>III</td>
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<tr>
<td>IV</td>
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<tr>
<td>V</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>VI</td>
<td>4</td>
<td>0</td>
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<tr>
<td>VII</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>VIII</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>3 (9,7%)</td>
</tr>
</tbody>
</table>

3.3 Student Perceptions

Most students showed a very positive response to the application of learning as in this study and hope that the learning model like this can be continued and developed the concept of fungal biology. Suggestions/feedback from biology student responses on the concept of mushrooms with learning strategy are (1) the task given too much, (2) the role of the lecturer is indispensable in providing a preliminary explanation and after the class discussion is finished, (3) questions in class discussions in order not to extend or exceeded the topic being discussed, and (4) the role of moderator in directing the discussion needs to be improved.

Discussion

The results obtained in the first cycle is not satisfactory. Students perform troubleshooting capabilities are lacking. Solving problems that do tend to be unstructured and is not evaluate / re-examine the issues that have been completed so frequent errors in giving units or miscalculation. This happens because the students have not been trained in solving problems in accordance with the stages raised by Heller (1992). According to Heller (1992) there are five stages in problem solving. The first is a visualization problems. This stage in the form of a translation problem statement into a form of visual and verbal comprehension of the problem situation. This step is taken in the form of images or statements. The second is the description of the concept. This stage requires students to use a qualitative understanding of the concepts and principles to analyze and express the problem in terms of field of study. The third is the completion of the plan. This step description of the concept in the form of translation into a form suitable mathematical statement with the problem, determining the information required and determine the algebraic procedure to adjust the variables. The fourth is to implement the settlement plan. Here, students use math rules to obtain unknown variables on the one hand and the variables that are known on the other side and find a numerical solution. The fifth is to examine and re-evaluate. Students evaluate whether the final settlement obtained feasible or reasonable, whether the mark and the units are correct, whether the solution in accordance with the experience and expectations, how large numerical number should be.
In the first cycle, students activity in learning are unsatisfactory. Cooperation among the students in a particular group is not going well. Smart students who do not want to help their friends who have difficulties, while student academic abilities are less reluctant to ask their friends and teachers. This indicates that the student has not interpret that requires cooperative learning among students occurred sharing knowledge. In addition, in classroom discussions, most students are more likely to ask questions task group that can not be resolved at home. This shows that students learn just focus on the task and not learn in their entirety to all the concepts. It also led a group of students outside presenters could not provide a response to the problems in the discussion. This is reflected in the results of initial tests of students, many of which have scores below the passing score. Discussions are not going well because most students passive and only a few people who are actively involved. Moderators are also less able to steer the discussion and so most of the time used to think of a question that can not be addressed group of presenters.

Student learning outcomes in the first cycle is low (average score of 66.74), there is even a student who has a score of 38 (E). Mastery of the concepts of mushrooms in line with students' understanding of these concepts during class discussions take place. The low student learning outcomes caused by the learning process is not optimal and the lack of prerequisite knowledge that students should have mastered.

The implementation of corrective actions in the second cycle is quite effective in improving students' ability to solve problems, activities, and student learning outcomes. Corrective actions taken on the second cycle is (1) emphasizes that the problem solving of the task group, the pre tests, and formative tests to be more structured in accordance with the steps designed by Heller (1992), (2) equalize the involvement of students in discussions with the effective role of moderator, and the teacher as a mentor also directs the course of the discussion, and (3) improve student collaboration within and among groups resulting in the sharing of knowledge among students who have different academic abilities.

In the second cycle, the problem solving ability perform by students more better. Troubleshooting is done by most of the students are already structured in accordance with the steps designed by Heller (1992), although the five stages of solution is not explicitly visible in the work of the students. For example, in a matter of completing the count, the students began by writing the statement is known about the biology in the form of a statement, write the question, then students think about concepts that will be used to resolve such problems, working according to the concept that was decided, and finally re-evaluate the completion so there is no calculation error or misapplication of the unit.

Activity of students in the second cycle is more better. Some aspects were very prominent and lasted well is teamwork, interaction among students and between students and teachers, the students were asked and answered in class discussions, then experienced significant improvement from the previous cycle. This finding is supported by the statement Carin (1993) in Wahyu Widada (1998) that the cooperative learning provides opportunities for students are actively involved in learning activities. The characteristics of cooperative learning are (1) every member has a role, (2) direct interaction between members, (3) each member is responsible for learning, (4) the teacher helps students develop interpersonal skills groups, and (5) lecturer only interact with the group when necessary.
The average student learning outcomes in the second cycle was 71.65, higher than the cycle of learning outcomes I. Students who earn a grade of B and A are also more and more (61.3%). The average student learning outcomes in the second cycle is quite good, although not achieve the success criteria as defined in this study (70%).

Application of learning with problem-based learning strategies with the cooperative approach with the help of module received a positive response from the majority of students. Statement of students in student perceptions questionnaire clearly illustrate that cooperative learning has been going very well and almost all members of the group get benefit from the learning activities. Most students expect that this model be continued and developed in biology.

Some suggestions/comments submitted by biology students against biology learning with based on learning strategies problem are (1) the duty is reduced, (2) a description of the teacher is very necessary before and after the class discussion, (3) questions in the discussion is not to extend / beyond the topic being discussed and (4) the role of the moderator needs to be improved. Suggestions students to load the task is not too much and needs to be reduced because the teacher actually less justified in giving the task.

Conclusion

Based on research results, we can conclude the following. (1) The quality of students' ability to do problem solving (problem solving) can be enhanced/developed through learning based on problem strategies with the cooperative approach with the help of modules. (2) The application of learning based on problem strategy with the help of modules cooperative approach can increase the activity of the student or the quality of the learning process biology (3). Student learning outcomes in biology learning can be enhanced through learning based on problem strategies with the cooperative approach with the help of modules. (4) Most students responded positively to the biology of learning based on problem strategies with the cooperative approach with the help of modules.

The suggestion based on the findings in this study are the following. (1) The model of learning based on problem with cooperative approach with the help of modules can be applied to improve the quality of the learning process and student learning outcomes. (2) Application of learning strategy as designed in this study will be effective if teachers really have a good qualification in their field and provide more time to examine all of the students work so that the student can be immediately get returned of the result as for feedback.

References


MODEL OF LEARNING ENGLISH IN WRITING COURSE 
(RESEARCH AND DEVELOPMENT)

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ABSTRACT

This study aims to produce a model of learning to write English in an effective writing course for students of English Education at USM and UMUHA. Specifically, the research objectives are to: 1. know the learning model described in the writing course for students of English at USM and UMUHA. 2. Finding the appropriate learning model for writing courses for students of English at USM and UMUHA. 3. Finding the model in the course of teaching writing to students of English at USM and UMUHA effectively. 4. to know the results to be achieved by the students in writing at USM and UMUHA based on the application of learning models of writing. 5. to know the effectiveness of the learning model of writing. 6. to know the results achieved by the USM and UMUHA students against other aspects of teaching writing, the proficiency, vocabulary, and grammar. This research method using the Research and Development (R & D) for trying to seek a teaching model for students of English Writing. The teaching model arranged can be implemented conceptually and operationally. The models were developed based on theories of learning Writing more effective than existing learning model. This research was conducted in the city of Banda Aceh. Samples for determining the location specified in stratified (stratified sampling). The implementation of this research is at the University of Serambi Mekkah and Muhammadiyah University of Banda Aceh. Both universities are located in the city of Banda Aceh which become the center of education for the people of Aceh. USM and UMUHA are private Universities.

Keywords: Writing Course, English Learning, Email

1. Introduction

English is considered as a foreign language. Given the importance of this language, the Indonesian people are trying to learn both formally and informally. At the present time, the teaching of English has been introduced at the level of kindergarten (TK). Has provided directives regarding the various subjects taught to students from kindergarten to high school. Similarly, the level of college, the government based on the decision of the Minister of National Education No. 232 / U / 2000 has established that the curriculum in Indonesia consists of a core curriculum and institutional. The core curriculum program strata 1 (S1) ranged from 40-80% of the total credits of a course of study. The curriculum is set nationally by the Minister of National Education; whereas the institutional curriculum is determined by each University. In the institutional curriculum, there are few subjects that should be studied by the students. One is the English language courses that are required in anticipation of the era of globalization.

Today, experts in various countries have agreed that the main purpose of learning a foreign language is an attempt to develop communication competence (communicative competence) (Hadley, 2001). Communication competence referred to by practitioners such as foreign language teaching, Canale and Swain (1980), including grammatical competence, sociolinguistic competence), discourse competence, and strategic
competence, Savignon (1991) asserts that in learning a foreign language, students need to learn and practice the four language skills, namely: listening (listening), speaking (speaking), reading (reading), and writing (writing). Speaking Course and listening are generally held in small classes ranging from 20-25 students. While reading and writing courses are usually held in large classes (more than 50 students). And ideally, the number of students in a class for learning a foreign language is less than 20 (Harmer, 2001). The number of students for speaking subjects were divided into small classes given each student needs to practice conversing. Listening to the course, the number of students in one class is also small considering the general lecture was held in the language laboratory with the number of seats ranging between 20-30 pieces.

For reading and writing courses, including a large number of students due to several reasons, among others, are as follows: first, often appeared assumption that this course requires a little more direct interaction between faculty and students during class activities. Secondly, it has become a tradition of teaching courses in reading and writing with large class. Third, limited facilities, classrooms, faculty and funds if the course is also divided into smaller classes.

The number of students in a class for reading and writing courses often be one of the causes of lack of effectiveness of teaching. In principle, the ideal number of students must be controlled lecturer during the process of teaching and learning in the classroom. Considerable number of students for the course reading led to the reduction in the lecturer's attention to the problems faced by individual students in the classroom. Although the course of writing seems to be 'passive', each individual needs to obtain penaganan alone. Writing an essay in English and the problems that encountered by each individual student should be treated carefully.

However, a reduction in the number of students in each class is not the only solution. Number of hours of face-to-face limited also a major obstacle for writing practice also requires infinite time, both inside and outside the classroom. Writing skills involve the mastery of aspects that must be controlled, such as the selection of vocabulary, grammar and coherence between sentences and paragraphs (Hedge, 2001). When writing a person must be capable of expressing his ideas into written form that certainly has a different order when revealing to in writing. These conditions would have an impact on students writing ability and without realizing they have trouble.

Various aspects affect the writing process. Many researchers are trying to make model of learning to write. Weigle (2002) states that the models described such experts are not perfect because the process involves highly complex with cognitive activity. Similarly, the teaching methods that have been used, seems to have not reached the maximum expectation. Students can not be stimulated to be active in developing writing skills. Most initiatives are still centered on the lecturer. Ideally, students should have the motivation and creativity of its own to try to develop their English writing skills outside the classroom. Therefore, should be considered an alternative learning English writing skills more profitable.

Given the variety of issues that arise in the course of writing learning, a common thread can be drawn as the subject matter, namely learning courses for students of English writing that has not been demonstrated in accordance with the expected results. To that
end, a writing course learning model that can address the challenges that exist for this, need to be developed so that the outcome for the better future practice. The learning model is expected to accommodate the conditions of the course of writing in the field. The comparison between the three models proposed by Hedge on learning model. The elaboration refers to the idea of Seel and Ritchey (1994) to prepare a lesson plan. According Seel and Ritchey (1994,) there are five separate domains with respect to learning technology overarching theory and practice in learning technology. As for the 5 domains are: design, development, usability, management and evaluation. The relationship between the five domains are not linear, but rather complementary. A study could focus on one domain, but the discussion will be associated with another domain. Relations between these domains is synergistic.

In this study there are four research problems which are formulated as follows:
1. How is the condition of the teaching model of English writing skill, the implementation and evaluation of English writing in USM and UMUHA?
2. How is the design of learning models, implementation and evaluation that can be developed in the teaching of English writing for students in USM and UMUHA more effectively?
3. How is the effectiveness of the learning model that is developed to improve the writing skills of students of English at USM and UMUHA?
4. Is there any effect of the application of learning model design against other aspects, namely proficiency, vocabulary and grammar?

1.1 Research Objectives
This study aims to produce a model of learning to write English in an effective writing course for students of English Education at USM and UMUHA. Specifically research objectives are to: 1. To know the learning model described in the writing course for students of English USM and UMUHA. 2. Finding the appropriate learning model for writing courses for students of English at USM and UMUHA. 3. Finding the model in the course of teaching writing to students of English at USM and UMUHA effectively. 4. To know the results to be achieved by the students in writing at USM and UMUHA based on the application of learning models of writing. 5. To know the effectiveness of the learning model of writing. 6. To know the results achieved by the USM and UMUHA students against other aspects of teaching writing, the proficiency, vocabulary, and grammar.

1.2 The Significance of the Study
This study will contribute to theory of learning English in Universities particularly in the course of teaching writing. Then, give the new facts on the findings of similar studies that have been conducted previously, especially teaching writing courses at universities in Indonesia. Next, provide an alternative model of teaching writing courses in Universities especially for lecturers and broaden the lecturers’ mind in Universities about the need for improving the teaching of writing courses, especially for students of English. And provide a challenge for other interested parties to further explore the field of study that investigated.
1.3 Teaching Writing

In the mastery of the language, there are two skills that are called productive skills that are writing and speaking skill, in addition to other skills which is said to be receptive skills of reading and listening. Writing is one way to find out and find things that are in the mind (Cox, 1999). A person not only can express their ideas in written form, but also can crystallize an idea and its imagination through writing. Harmer (1998) states that in language learning, writing skills will be more easily observed than speaking skills. In addition, writing skills are also more easily corrected than speaking skills, considering the writing equivalent language is more permanent than talk that is oral. Each person has their respective strategies in writing. Nonetheless, the Hedge (2002) describes that writing includes serangkaian planning process. When writing, someone read it and repeat it again, vote, members and melanjutkan back his comments. Revisions occur throughout the writing process is done in some time editing of the forms of language such as grammar, word choice, spelling and punctuation. (Scriven (1997) warned that writing takes time to think, reflect and prepare. Further, the Hedge (2001) adds that students who are learning to write should be given opportunities directly involved in the practice of writing. They need the experience of stringing words into a bouquet and practice writing based on their ideas as often as possible.

Teacher became one of the resources required during the process of writing. Hedge (2002) explains that the writing exercises, students trying to complete the task. For that teachers need to give awards (reward) for writing that has been made by giving them feedback. The main purpose of teaching writing is to exercise produce a comprehensive essay (Hedge, 2001). Learners require writing skills for social life, education and professional

Chandrasegaran (2002) describes the two principles in the teaching of writing that if the writing is mental activity (cognitive) in making decisions, then learning to write is: 1. Make the right decision from a context that includes the purpose of the text, the author's purpose, objectives reader to read the text, the environment in which writing and reading occurs; 2. Knowing which one is the right decision to be implemented, so that the decision can be made before writing to the hands of readers. In an effort to explain the process of writing, some experts have done research. Hedge (2002) explains that the way in which many experts to describe the process of writing is to do an interview about what has been done (retrospective interview) by learners when they are writing. It, is also often referred to as a think-aloud protocol. In this process, someone requested. Recounting the steps that have been done during the writing process.

1.4 Writing Teaching English As A Foreign Language Inggris

Writing skills in English as a foreign language is often regarded as the most difficult language skills developed compared with other skills (Bee Edwars, 1984; Hewin, 1986). Writing in English as a foreign language includes a lot of aspects that must be considered. In addition to the mastery of grammar, vocabulary and punctuation in a foreign language, students are also required to be able to understand in accordance with the rules of speakers of foreign languages. Harmer (1998) states that the teaching of writing in English as a
foreign language into a strengthening in the development of language skills and the development of learning styles is visual.

1.5 Use of E-mail In Learning English Writing

The Ability to communicate on Internet has influenced the development of language teaching (Anderson-Inman and Kettern, 2003). Access via email provides the opportunity for students to communicate outside the classroom. E-mail is used as a tool in the learning process. Salisbury (2000) states that learners will be able to interact with the instructor and other learners to discuss the problems they face. This interactive system allows learners acquire knowledge of information other than the available resources. In relation to medial, language learning to write in a foreign language, Felix (1998) states that the use of e-mail to practice writing is a form of authentic material. Therefore, students can immediately practice their writing skills in the real world (1996) also supports this statement. He stated that the e-mail can be used for the development of writing skills both individually and in groups. In this case, the use of e-mail as a means of written communication can bring out the interaction between writers and readers. That way, the article can be produced in accordance with less expectations of readers writing based on responses given.

1.5.1 Model of Teaching Writing

Hedge (2001) see model of writing that can be approved by many practitioners, so that the model of teaching writing in the world of language teaching is varied. Language teachers are still different views on methods of writing, aspects of writing, as well as the role of teachers and learners in the development of teaching and learning activities to write. The various processes of writing are in accordance with the following experts: Weigle (2002) noted the three models of the process of writing that affect the process of learning to write with reference to the act of writing as a cognitive activity. The first model was developed by Hayes and Flower (1980). The second model is of Bereiter and Scardamalia (1987). The third model is of Hayes (1996). All three models are much discussed by other experts when discussing the development of writing skills. The explanation is as follows.

1.5.2 Model Hayes and Flower (1980).

Hayes and Flower (1980) (cited in Weigle, 2002) describes the model as a process of writing in the sense of the writing environment which consists of the task and the results of posts made. Long-term memory is the writer will affect the writing process. In this case, the aspect of long-term memory consists author of knowledge about the topic, target audience and plan writing stored, number of cognitive activities will take place in the planning, translating thoughts through text, and perform any recurrence. Planning involves the acquisition of ideas, compositional and background writing purposes. After that, do the editing on the text. The author will monitor the course of the planning process, translation and recurrence in the process of drafting the text. An important aspect of this model is that writing is a process that is repeated. Therefore, the process of writing a cyclical process of writing. When writing, a person will reflect on what she had done and come back again in the previous step to clarify matters that have not been written. Thus, giving
clear instruction in the writing process will be more effective than giving a bouquet models to students, then they were asked to follow that model.

2. Materials and Methods

This research method using the Research and Development for trying to seek a teaching model for students of English Writing. The teaching model arranged can be implemented conceptually and operationally. The models were developed based on theories of learning Writing more effective than existing learning model. This learning model is operationally oriented real circumstances in the classroom. This research was conducted in the city of Banda Aceh. Samples for determining the location specified in stratified (stratified sampling). Place the implementation of this research is at the University of Serambi Mekkah and Muhammadiyah University of Banda Aceh. Both the universities are located in the city of Banda Aceh which become the center of education for the people of Aceh. USM and UMUHA are private Universities. This study consists of faculties and students from USM and UMUHA. Students are used to capture the data is logged in both university students that are following the lecture Writing. Lecturers involved in data collection are those who teach subjects Writing. The data used in this study are primary and secondary. The primary data obtained through information from study subjects who shaped both qualitative and quantitative. The qualitative data obtained from questionnaires, observation and interviews both with the lecturers and students. Quantitative data derived from test results in the form of numbers that need to be translated into statistical calculation so that later can be explained its meaning. Secondary data were obtained through the documents available in the English program both USM and UMUHA. These data include the progress report for teaching writing, student attendance, manuals and information oral or other written. The study was planned in two stages, for two years, the method used is the research method, the collection of data in this study come from five instruments of sources: they are observation, study of documentation, interviews, questionnaires and test results.

2.1 Procedure I. Research

Borg and Gall (2003) describes the ten steps in research procedures. Research and Development. Meanwhile, Sukmadinata (2005) outlines the steps in Research and Development research into three sections, namely preliminary studies, model development and validation test. Based on both of these references, the simplification of procedures carried out this research.

1. Preliminary study

This stage focuses on the study of literature associated with learning models to be developed. In addition, observations of conditions in the field is done to obtain the actual picture. Field observations are needed in order to obtain information about the current condition of the teaching of writing in PT. Aspects examined include learning model that has been used, planning and implementation, evaluation of learning, as well as a means of supporting activities.

2. Draft Model.

The design of the model for teaching writing in this study refers to the components of education and learning as a system. Besides various variables classroom teaching is also a consideration. Student is the default variable that has
varied levels of English proficiency. In addition, their knowledge about writing also varies. Motivation and intelligent, they showed heterogeneity. These variables are the conditions encountered in the learning process. Students will go through the learning process of writing using the model of learning through three sources of input, namely the explanation of professors, lecturer corrections, as well as communication via email. Feedback and lecturer corrections is an aspect that is given during the formal face-to-face in the classroom serves as a reinforcement for accuracy (accuracy) writes. While email communications are designed to be implemented outside the classroom through the provision of tugs-duty by the lecturers that the process requires the use of e-mail is becoming amplifier for fluency) writers. By using these two aspects, the student will be able to improve their English writing skills more effectively. Students are expected to increase their vocabulary of the English language. This result is possible to be achieved as a result of their frequent excercise to open internet in searching of information that is written in English. With frequent reading the site in English on the Internet it is possible for them to master more vocabulary. Besides vocabulary, the other output is expected to increase mastery of grammar. It is not independent of the communication functions that are used as a means of exchanging information. The end result of the process of learning to write English by utilizing the internet is to help students become proficient in English writing. Given writing skills are part of other skills in mastering the language, then the model is expected to facilitate mastery of the English language skills overall. Broadly speaking, the fourth stage of the implementation of the development of the learning model can be illustrated in the attachement.

3. Test Model

The next stage is the development of learning model for students in writing English skill. At this stage, the draft prepared early models and followed broadly, to obtain the results of the final draft. Preparation of the initial draft learning model development includes writing lesson plans; learning procedures; implementation of learning and learning evaluation. Further trials conducted by cyclical in the field. Tests conducted two phases limited trial and more extensive trials. The number of testing are determined based learning model refinement previously believed to have been sufficient to be validated after observing the results achieved for several rounds. The phase is limited, each round takes 3 weeks for the implementation of the learning model developed with details of activities consisting for one week through one face-to-face in class with time allocation +100 minutes (2 credits) as well as the process of settlement in and outside the classroom. After that one week to practice writing outside the classroom through the provision of tasks using the internet. The next week was to determine the response of faculty and students after the ongoing activities that explored through informal interviews with them. On a broader test, divided into two sub-phases each lasting for 5 weeks. Each sub-stage consists of 3 rounds in a chain because it wanted to see the feasibility of the model that has been developed.
4. Development Research Instruments

The research instrument was developed based on data collection tools required through the steps:

1. Preparation of the instrument which directs the necessary data and determine the measuring instrument in accordance with the type of data.
2. Preparation of questions in each data collector to match the instrument that has been set.
3. Ask the expert opinions and considerations associated with the instrument developed for the validation of the contents of the construct.
4. Perform an improvement over the arrangement of the instrument after obtaining input from experts who are competent.
5. Perform test instrument on 30 samples with characteristics similar to the subject of real research.
6. Remove and renew the questions according to the test results for improving models.
7. Doubling the instrument in accordance with the number of samples required population.

2.2 Materials / Instructional Materials

Lecturer gives the material that has been determined in accordance with the courses level taught in writing. Students are given a topic by referring to the material being discussed at the weekly discussed in class. On each face to face lectures provide enough time for students to write essay draft. Students obtain material from the lecturer as input to aspects of language, spelling, and writing a good way. Provision of material used as a support for the writing process. Thus, students can apply the theory they have learned through training to write the truth.

2.3 Learning Model

Through feedback and correction lecturers students will get training post for accuracy (accuracy) obtained during the last lecture in the classroom. To launch them, in writing, students are assigned training outside the classroom through email correspondence with them by choosing good partner. The aim of this training as a platform to practice writing fluency. Students looking for a partner abroad in cyberspace that have cultural backgrounds and different languages. Through these activities, students have the opportunity to accelerate and improve writing skills. Topics for the material used in the initial design is starting from the simplest to the most difficult determined by the lecturer, according to the hierarchy that is writing I, II, III, and IV.

2.4 Media and Learning resources

The facility of writing emails to practice writing with a foreign counterpart can be said to be low. If the student write a letter via mail for communication with partners in other countries, then the cost will be expensive. However, they can write continuously to accelerate and improve their writing ability via e-mail, students can save costs for the delivery of each message to be delivered. To their counterparts abroad. Moreover, the
process of delivering a message can be done quickly compared to conventional mail delivery which can take a few days. Via email messages sent can be received upon delivery is completed. Thus, the use of email can accelerate the reach of time to get a response back when doing writing exercises with their counterparts abroad.

3. Results and Discussion

In accordance with the try out activity that have been conducted to implement the writing teaching model. Mostly, the problems occur in the practice of writing outside the classroom using the Internet. During the try out activity they are considered an important aspect and the other is personal. The biggest problem to the implementation of the teaching model of writing and anticipated solutions are as follows: The main difficulty faced by the students when they are practicing writing via email is detected. Looking for partners who are willing to undertake regular email correspondence is not easy. Students sometimes already successfully performed first contacts with foreign partners to correspond with emails. However, students should look for other partners because the email sent did not reply anymore. Partners not to blame considering they have no commitment to do the correspondence. Additionally not all interested partners to follow the procedure of writing a predetermined learning. Therefore, students should contact several names for the contact to practice writing English with their partners are not disconnected.

Teaching writing skill at USM and Muhammadiah are not as expected. The number of the students in one class is generally great in number in class training opportunities. Learning is not suitable between the explanation of the theory and practice. Students still need to be trained about the knowledge of English grammar and as well as vocabulary. In addition they need theory and practice for the development and preparation of sentences to paragraphs can be coherent. When they practice writing, students do not use the computer to facilitate the learning process such as spelling check, editing. The material to be used in the lecturing activity too much. As a result, the opportunity to write becomes less. In the case through practice in classroom students can obtain feedback from the lecturer. Students mostly rely on the input and correction from lecturer in writing exercises. They have less chance to express his idea in English.

4. Conclusion

Teaching writing skill at USM and Muhammadiah University do not meet the target as expected. The number of students in one class are generally ltoo large in order to write in class training opportunities. Learning is not suitable with theory and practice. Students still need to get knowledge of English grammar and vocabulary ion the theory and practice for the development and preparation of sentences to paragraphs coherent arrangement. When the practice of writing, students do not use the computer to facilitate processing such as spell checking or editing. The material covered in the lecture writing too much. As a result, the opportunity to write becomes less. In the case through practice in classroom students can obtain feedback from the lecturer. Students mostly rely on the input and correction lecturer in writing exercises. Mareka less get a chance to express his English training that can be universally understood. Posts should be understood mareka from various cultural background readers.
References

THE IMPLEMENTATION OF PERFORMANCE ASSESSMENT TO ASSESS
STUDENTS’ MATHEMATICAL COMMUNICATION ABILITY ON TOPIC
DERIVATIVE AT SENIOR HIGH SCHOOL BANDA ACEH

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ABSTRACT:

This present study purposes to find out Performance Assessment conducted toward performance, behavior or interaction of students (Mustamin, 2010:34). According to Mustamin (2010:35), in mathematics learning, this assessment consists of presentation, project or investigation, observation, interview and product construction. Moreover, Mueller (2010) classifies this assessment task into three categories: constructed response, product dan performance. This task could be a product or performance, such as essay, ordering decimal number, mind mapping or concept map, making a prediction, drawing conclusion, journal response, homework reflection, self assessment, pair evaluation, evaluating others’ work, figural representation, solving problem, measuring an object, and conference. Then, task in product form requires students to construct a product that can describe students’ understanding of concept and certain skill or their ability to apply, analyze, synthesize or predict the concept. For instances, writing an essay, story, poem, paper and research report, project, analyzing geometry, case study, book review, article review, constructing an object, design, planning, experiment, survey, recording, graphing of data, analyzing data and the use of statistics in media, solving real world problem, logical sequences, proposal, making a map, budgeting, creating a poster, video, game, comic, book, etc. So, performance assessment related to real world problem is essential to be implemented to assess and develop students’ ability in mathematical communication. Therefore, performance assessment is a good solution to increase students’ achievement in mathematics and form their behavior through value of mathematics education. As a result, the writer conducts this research to find out models of performance assessment to assess students’ mathematical communication ability on the topic derivate at Senior High School Banda Aceh.

Keywords: Performance assessment dan Mathematical communication

1. Background

Assessment is vastly important in teaching and learning process to measure students’ ability and skill in certain subjects as well as to know how far the learning objectives have been achieved. Oakland Community College (2008) states that assessment is purposely used to observe and improve students’ learning. Using an assessment, a teacher can measure whether learning process is effective or needs to improve (Oermann & Gaberson, 2006:1). Mehrens & Lehmann also argue that assessment aids students by providing feedback that identifies strengths and weaknesses (1991, p. 9). So, it benefits not only for teachers but also students as a feedback to improve learning achievement.

Moreover, assessment not only measure students’ score but observes process of their learning as well. It is an on-going process (Oakland Community College, 2008). Airasian defines that “assessment is a broad process of collecting, synthesizing and interpreting information in which testing, measurement, and evaluation play contributing parts” (2005,
One of assessment used to assess students’ learning process is authentic assessment. It is different from traditional assessment including pencil and paper test that focuses on one single answer and final result. This assessment helpfully assesses and observes how students’ mathematical communication ability which is not enough thoroughly assessed by traditional assessment only. Authentic assessment focuses on “how” and “why” students answer a problem rather than merely look at one single answer (Mustamin, 2010:34).

Hence, Kementerian Pendidikan dan Kebudayaan (2013:10) requires that teachers apply the authentic assessment in teaching and learning process.

Advantageous of authentic assessment is that it is able to assess students’ mathematical communication ability. Nevertheless, several teachers frequently consider mathematical communication so insignificantly to assess that they simply concern on computation and calculation aspects. Whereas, mathematical communication is highly significant to convey mathematical symbols and ideas in order to be figured out by others. Sumarmo (2006:2) states that mathematics is universal symbolic language and able to be understood by others, whenever and wherever. Moreover, mathematical communication ability is one of requirements in mathematics learning standard given by National Council of Teachers of Mathematics (NCTM) that students need to be able to: (a) Arrange and relate mathematical thinking through communication; (b) Communicate mathematical thinking logically and clearly to their friends, teachers, and others; (c) Analyze and assess mathematical thinking and strategy used by others; (d) Use mathematical language to express mathematical ideas correctly (CSSU Curriculum Frameworks, 2004:21). Besides, mathematical communication is required to solve a problem. It means that if students are not able to communicate well in comprehending mathematical problems and concepts, they cannot solve the problems well (Hulukati as cited in Qohar, 2009:M-339). Therefore, teachers are required to have capability to implement this assessment to observe, assess, and develop students’ mathematical communication ability.

However, in reality, some teachers often would rather use traditional assessment than authentic assessment in mathematics learning so that computation is more dominantly being a focus in assessment than mathematical communication. As a consequence, mathematical communication ability is less developed that makes students get difficulty to express their mathematical ideas and finally cannot solve mathematical problems. Based on Rohaeti’s study in 2003, mathematical communication ability of students still needs improvement (Fachrurazi, 2011:78). Hajjina (2013:4) also finds mathematical communication ability of students in solving problem is low. They tend to answer directly without explaining the steps of problem solving.

One of solution offered in this study is implementing one of authentic assessment, namely performance assessment. Performance assessment is an exact way to give students tasks that contain mathematical communication aspects and allows them to explore possible varying answer (Sumarmo, 2006:15). Rudner & Boston and Wiggins state that it requires students to demonstrate their strategies by creating a response or a product (as cited in Houghton Mifflin University, 1997). This assessment aims to observe how students’ understanding of the concepts that have been taught and how their abilities to apply procedural knowledge or skills (Airasian, 2005, p. 235; Suskie, 2009, p. 26). It
emphasizes on real-world problem solving (Airasian, 2005, p. 234) and requires to solve realistic and meaningful problem (Lane, 2010, p. 3).

Afterwards, study conducted by Idha (2008:69) reports learning by using performance assessment can increase understanding of biology concept and students’ motivation. Therefore, performance assessment with real world tasks is properly implemented to assess and develop students’ mathematical communication ability. So, in this study, the writer intends to find out performance assessment models on derivative topic to be implemented at senior high school in Banda Aceh.

Specific amis of this study are: (1) Finding out models of performance assessment used to assess students’ mathematical communication ability on derivative topic at senior high school; (2) Implementing models of performance assessment to assess students’ mathematical communication ability on derivative topic at senior high school; (3) Finding out students’ respond toward their mathematical communication ability either in oral or written form through performance assessment implementation on derivative topic at senior high school; (4) Investigating students’ mathematical communication ability either in oral or written form through performance assessment implementation on derivative topic at senior high school.

2. The Critical Review

Learning is an activity to gain knowledge and skill and to change behavior. The ones who are learning need to be actively engaged in learning. Based on Kementerian Pendidikan dan Kebudayaan (2013:7), learning principle emphasizes on developing students’ creativity (tut wuri handayani) including mathematics learning, students have to be active in improving their creativity.

Mathematical learning refers to principle “learning how to learn” that consists of four pillars of education: (1) learning to know; (2) learning to do; (3) learning to be; dan (4) learning to live together (Sumarmo, 2006:2). In this case, students find their own learning and teachers act as organisator and facilitator. Learning based on creativity more emphasizes on students’ ability to find their own knowledge based on learning experiences and principles that allows them to develop higher order thinking (Kementerian Pendidikan dan Kebudayaan, 2013:8). Moesono argues that learning mathematics should be able to develop students’ ability on mathematical problem solving, critical thinking, and communication (as cited in Sumarmo, 2006:7-8). In learning process, students need to be active and creative, especially in mathematics learning in which students are required to have good ability in understanding of concept, solving a problem, thinking critically as well as mathematical connection and communication.

Sumarmo (2006:3) stated some basic abilities and behavior that need to be belonged to students in mathematics learning. Basic abilities required for students are: (1) Recognizing, understanding and applying mathematical concepts, procedures, principles, and ideas, (2) mathematical problem solving, (3) mathematical reasoning, (4) mathematical connection, dan (5) mathematical communication. The behaviors required for students are critic, carefulness and objectivity, appreciation on beauty of mathematics, curiosity and interest in learning mathematics. The behaviors and the ways of thinking as mentioned above will grow mathematical disposition. Moesono (as cited in Sumarmo, 2006:7-8)
argues that mathematics learnings should be a tool to develop ability of problem solving, critical thinking, and creative communication.

Mathematical communication is a way to utter mathematical ideas through oral and written task, picture, diagram, using objects, doing algebraic process or using mathematical symbols (NCTM, 2000:60). Also, National Education Department defines mathematical communication is an ability or skill to state and interpret mathematical concepts or ideas in oral and written task or demonstrate mathematical problem solving (as cited in Putri, 2011:551) which can be examined by listening, presentation, and discussion (Ramdani, 2012:48). Those are some indicators of mathematical communication mentioned by Sumarmo (2006:3):

- Explaining idea, situation, and mathematical relation, both in oral and in written form, by using real object, picture, graphic, and algebra.
- Expressing daily events in mathematical symbols.
- Listening, discussing, and writing about mathematics.
- Reading mathematical written form and creating relevant problem.
- Constructing conjecture, composing argument, formulating definition and generalization

Implicitly, mathematical communication comprises two aspects, namely oral and written form. Ansari asserts oral communication can be uttered by mathematical representation which according to Jakabsin can be classified into three categories (as cited in Agustyaningrum, 2010:30). They are:

- Creating conceptual model, such as picture, diagram, table, and graphic (drawing aspect).
- Constructing mathematical model (mathematical expression aspect).
- Verbal argument based on analyzing toward illustration and formal concepts (written text aspect).

Based on the aspects of mathematical communication stated above, the writer provides some aspects observed in this study as follows:

- Ability to express idea, situation, and mathematical relation to real life, picture, and algebra in oral and written form.
- Ability to interpret mathematical ideas in oral and written form.
- Ability to use terms, symbols, and structures to construct mathematical model based on certain problems.
- Ability to discuss and present dealing with mathematics.
- Ability to solve a problem with order structured steps.

A way used to assess students’ mathematical communication ability in this study is implementing authentic assessment. This assessment is conducted comprehensively to assess students from input, process, and output. This assessment assesses students’ readiness, process and result of learning (Kementerian Pendidikan dan Kebudayaan, 2013:10). One of authentic assessment forms used in this study is performance assessment. Performance assessment measures students’ ability to demonstrate relevant skills in authentic context.

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There are some reasons why performance assessment is recommended to use. It emphasizes on real-world problem solving (Airasian, 2005, p. 234). It requires students to do the real world tasks that will help students to learn their lessons meaningfully. When students are given the opportunity to work on meaningful and real world tasks, they have demonstrated improved performance on performance assessments (Lane, 2010, p.60). As stated by Lane (2010, p. 4) “performance assessment requires students to construct an original product or response such as writing an explanation of one’s solution.” They will get involved directly in the assessment process and the teacher will assess them based on performance observation, rather than as the traditional assessments—paper-pencil based assessment—that assess the students at the end of learning process. So that, assessment assessment becomes even more relevant when students become involved in their own assessment (Edutopia, 2008).

Moreover, performance assessment is also helpful to measure students’ ability in applying procedural knowledge (Suskie, 2009:26), translating knowledge and understanding into action (Airasian, 2005:234-235), demonstrating important skills (Arends, 2004:245), evaluating acquisition of knowledge, concept and skill (Wren, 2009:1), and developing content-specific skill (Mandernach, 2003). Palm (2008:3) adds performance assessment is good in assessing complex skills and communication of students. In the other words, this assessment purposes to observe students in planning problem solving and demosntaring skill and knowledge (Kementerian Pendidikan dan Kebudayaan, 2013:16).

There are some advatagous in implementing performance assessment formally, as follows:
- Showing how students use their knowledge to do activities and produce an object;
- Instrument of the assessment can be used many times;
- instrument of the assessment can be used for diagnostic purposes;
- using the same instrument, teachers can make students’ achievement graphic overtime;
- allowing students to compete with themselves;
- not final result, but part of learning process; and
- making learning relevant to real world life.

(Kementerian Pendidikan dan Kebudayaan, 2013:16)

To sum up, implementation of performance assessment in learning not only helps teachers to assess students’ ability but also is used for diagnostic puposes, observe students’ learning development, make meaningful learning by relating lesson to real world life, and develop students’ mathematical communication ability.

3. Research Method

This study is a descriptive-quantitative research because it purposes to investigate and describe students’ mathematical communication ability in explaining idea or concept in solving mathematical problem related to real world problem. According to Bugin Bungin (2009:48-49), descriptive-quantitative research attempts to describe and explain various conditions based on nature of the event.
Methodology chosen in this study is research and development combined with experimental method and the one group pre test post test design (Suharsimi, 2006:86) in the fourth step of research and development. Research and development method is chosen because it has complex process in each steps that can accommodate various purposes in this research (Borg & Gall, 1989:785). Assessment model developed is teaching product related to instructional technology that needs justification in the process. Consequently, the writer needs much time to read many references and theories, visit and do focus group discussion to relevant subjects, and teach in the classroom in order to observe and find out various facts and conditions of mathematics learning at senior high school in Banda Aceh. Research and development method needs continuous process and high desire, delligent, critic observation, and patient to produce various creative ideas.

Then, doing action research method in the fifth step of research and development is a justification to observe how far this assessment works properly, effectively and significantly for senior high school students.

Table 1. Steps of Research and Development

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<th>Main Step of Borg and Gall</th>
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<td>Research &amp; Information Collecting</td>
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<td>Planning</td>
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<tr>
<td>Develop Preliminary form of Product.</td>
<td>Develop Preliminary form of Product</td>
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<td>Field testing &amp; Product Revision</td>
<td>Preliminary Research</td>
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<td>Dissemination &amp; Implementation</td>
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Data needed in this study are obtained by giving performance assessment task and questionnaire for students. It is conducted to answer the first research question namely how students’ mathematical communication ability by implementing performance assessment. The task given in this study consists of three types as follows.

a. **Paper**

Students are required to write a paper about derivative application in daily life with real world problems. This task takes a week. It purposes to investigate students’ mathematical communication ability in written form including students’ ability in stating relationship of mathematics to daily life, sharing ideas or concepts by picture and algebra as well as modeling mathematical problems. This task is assessed by paper rubric.

b. **Presentation**

This task is given after students write the paper. Students are asked to present what they write in the front of class. This task purposes to investigate students’ mathematical communication ability in oral form including students’ ability in stating relationship of mathematics to daily life, sharing ideas or concepts by picture, interpreting ideas as well as ability in discussion and presentation. This task is assessed by presentation rubric.
c. Written Test

Written test is conducted at the last meeting. The test consists of four questions in essay form. It is allocated for two lesson hours, 2x40 minute (80 minutes). This test purposes to investigate students’ mathematical communication ability in written form including stating ideas or concepts by picture and algebra, interpreting ideas and modeling mathematical problem. This task is assessed by test rubric.

d. Questionnaire

Questionnaire is given after learning process at the last meeting. It purposes to answer the second research question about students’ respond toward their mathematical communication ability through performance assessment implementation. After the writer gets score from the tasks, it will be determined criteria of the score based on standard grading of curriculum 2013. The score obtained based on rubric will be converted and determined predicate based on the following table.

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<th>Interval</th>
<th>Conversion</th>
<th>Predicate</th>
<th>Category</th>
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<td>A</td>
<td>Very good</td>
</tr>
<tr>
<td>91 – 95</td>
<td>3.66</td>
<td>A-</td>
<td></td>
</tr>
<tr>
<td>85 – 90</td>
<td>3.33</td>
<td>B+</td>
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(Source: Kementerian Pendidikan dan Kebudayaan, 2013)

RESEARCH FINDINGS

Based on the data analysis, students’ achievement in mathematical communication ability either in written and oral form through performance assessment implementation obtains good category in average. Students’ mathematical communication ability through tasks given—i.e., paper, presentation and test—achieve good score. The following pictures describe students’ achievement on the three tasks.
To assess students’ mathematical communication ability, there are eight criteria used in the rubric for paper task and test. However, both have two different criteria and six similar criteria.

Analyzing on the similar criteria, it is found that students’ ability in algebra process and calculating through paper and test achieves the highest score in average, good category on paper task and good category on test. Conversely, drawing conclusion obtains the lowest score namely enough category on test and good category on paper. Ability in determining steps of problem solution is not significantly different between both paper task and test. Yet, the category obtained is different, good category on paper and enough category on test. Students’ ability in mathematical modeling, interpretation on questions, and using algebra/symbol shows satisfied result, very good category on paper and good category on test.

Analyzing on the different criteria, in paper task, ability in stating derivative application achieves good category while ability in stating ideas/situation by picture includes in enough category. The two criteria not in paper task are algebra derivative and optimization concept. Students’ achievement on the two criteria obtains good category.
Based on the result above, good achievement in algebra and calculation are caused by learning process at school that usually focuses on calculation. Mahmudi (2009:1) states that generally mathematics learning more focuses on computation so that normally students are good at calculation. It is supported by Hamidah’s study (2013:51) that shows 80.8% of students do correctly on calculation. This case is based on students’ respond that indicates they are good enough in algebra process and calculation as much as 50%. The low achievement in drawing conclusion on test happened because students are not used to draw conclusion after solving a problem. Rasiman (2013:190) finds the same case on his study, students are not able draw correct conclusion yet. Students admit their ability in drawing conclusion is less than calculation.

Regarding to steps of problem solving, students achieve enough category in average on test because they do many errors in the fourth question. Most of them write incompletely for steps of problem solving. It is assumed students frequently use shortcut in solving a problem especially questions in multiple choices that are generally used in national or final examination. Rasiman (2013:190) also finds in his study, students do not write completely in the steps of problem solving yet. Moreover, difficulty factor in the fourth question also affects on students’ score. Similar to Sulastri’s study (2013:56), she reports, students’ mathematical communication ability does not achieve good score because of the high difficulty of the questions. Students are frequently given routine problem based on the textbook (Tandilling, 2012:25) so that they face difficulty on non-routine problem.

Problem interpretation and mathematical modelling obtains good achievement because students drill exercises either through discussion or paper task. They solve many problems on worksheets and find many of which to write in their papers. The real world problems given in the tasks help students to engage their meaningful learning. Mandernach (2003) believes performance assessment tasks are able to develop meaningful learning for students. Consequently, they are easier to comprehend the problems and able to make mathematical model based on the problems given. In the study of Rasiman (2013:190), students are able to state what they have been known from the questions and find out the solution. Study of Nugroho (2012:89) also reports students’ ability in converting a problem into mathematical model achieves good score after drilling on discussion first though. After discussion, Rofiah (2010:97) also finds almost half of students number increases in mathematical modelling ability. It is supproted by students’ respond that states their ability in mathematical modelling is higher than determining steps of problem solving.

Based on the paper written by students, only a group who is good in stating picture about derivative application while the rest’s score is still in enough category so that the average obtained in this criterion is counted in enough category. This result is different from Hamidah’s study (2013:51) that reports 87.8% of students are able to state picture or graph through performance assessment implementation.

Moreover, students’ ability in algebraic function derivative is good enough because they also use derivative concept for other subject, physics. So, they are good in determining derivative for simply algebraic function. But, in the fourth questions, most students are not able to determine algebraic function derivative in fraction form because they only get the material in the first meeting and do not do more exercises yet on that
material. However, based on students’ respond, they are more capable in determining derivative than mathematical modeling.

Furthermore, students’ mathematical communication ability in oral form is counted in very good category for a criterion, answering questions. Whereas, it is achieved in good category for some criteria: sharing information, understanding paper material and cooperation. Students are able to explain correctly good answer. They also can build their cooperation with the others by working in team. This task allows them to drill and practice their skill and knowledge in demonstrating what they have learned. Rudner & Boston as well as Wiggins (Houghton Mifflin University, 1997) and Mueller (2012) stated that performance assessment gives students opportunity to demonstrate their knowledge and strategy they have learned. Accordingly, presentation task is beneficial to observe students’ knowledge and skill (Mustamin, 2010:39) besides assess and develop oral mathematical communication ability of students. Moreover, this assessment can build relationship and cooperation among students.

![Figure 2: Students’ respond toward performance assessment and their mathematical communication ability](image)

Based on questionnaire analysis, it is found that students give positive respond for the learning process through performance assessment. They are interested in the tasks given: paper, presentation, and test. It is assumed students rarely did some discussion in mathematics class. So that, the students feels enthusiastic to what the writer implemented in the classroom. Moreover, implementing various tasks also makes students not getting
bored. Arends (2004:246) said that performance assessment task allows students to be assessed by varying tasks. The, similar respond is also attained from Hamidah’s study (2013:64) that applies performance assessment in the classroom found students are interested in learning process.

In conclusion, the highest average through paper task with very good category is achieved in ability of mathematical modeling, algebra process and calculating, interpreting on the questions. However, the lowest with enough category is got in stating ideas or concepts by picture.

In presentation task, the highest score (very good category) is answering questions and the lowest (good category) is cooperation. Last, in written tests, the highest is algebra and calculating process (good category) and the lowest is drawing conclusion (enough category). Students respond positively toward the performance assessment implementation.

References


IMPLEMENTATION APPROACH SCIENCE TECHNOLOGY SOCIETY (STS)
IN TOPIC ENVIRONMENT FOR IMPROVING LIFE SKILL JUNIOR
HIGH SCHOOL STUDENTS IN ACEH BESAR

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ABSTRACT

Science Technology Society approach is one approach that links between science learning in the classroom with the advancement of technology and the development of communities that exist around the students. Through this approach, students are trained to integrate his understanding of the natural world (science) with manmade world (technology) and the social world through the daily experience of students within the community, as well as the expected increase in life skill siswa. The aim of this research were: 1) to determine learning achievement and student learning activity with STS approach the subject matter SMP environment in Aceh Besar, 2) to determine the level of ability of teachers to implement the STS approach in order to improve student achievement, especially on the subject matter of the environment, 3) to determine the response of teachers and students to the application of the STS approach to learning the subject matter of the environment. The study population was a science teacher and students in Junior High School in Aceh Besar. As the samples were taken 10 SMP, each school is taken 2 teachers and 10 students. Data collection instruments used observation sheets, questionnaires, and interviews. Data were analyzed descriptively using the formula percentages and qualitative analysis of the narrative. Results of the analysis of the data and findings obtained from this study are as follows: 1) Implementation of STS approach can improve the quality of student activity is very active category. 2) Implementation of STS approach can improve student learning outcomes 3) Implementation of STS approach can improve the quality of science and technology literacy of students is a good category. From the distribution of students' responses revealed that students have a positive attitude and perception towards learning science with STS approach.

Keywords: science technology society, approach to learning, life skill.

1. Introduction

Science education is an education that is designed in such a way so as to motivate students to be creative to find a skill itself, this is because science education is always in direct contact with the reality of the living environment of students. Science education should be able to unpack and develop the whole potential of the students, so that students have the life skill to deal with all the problems and challenges in the future. Learning science is a whole way of thinking to understand natural phenomena as a way of investigation of natural events.

Presentation materials science lessons conducted by teachers has been rarely linked to students' learning experiences in everyday life. This causes a perceived lack of meaningful science learning. Students often feel bored and less interested in science subjects leading to lower student learning outcomes. Based on interviews and observations at several junior high schools in Aceh Besar, shows that science learning achievement of students in some classes is rather low and yet achieve mastery. Teachers in this case should be able to select and use materials and learning approaches in accordance with the material.
being taught. To overcome the problem of student learning are necessary to a change in the approach to learning, one of which is the approach Science Technology Society (STS).

Approach Science Technology Society (STS) is one approach that links between science learning in the classroom with the advancement of technology and the development of communities that are around students. Through this approach, students are trained to integrate his understanding of the natural world (science) with manmade world (technology) and the social world of everyday experience of students in the community. Science learning STS-minded approach can foster an attitude of science and technology students. Science is not just a science that is memory, but a science that deals with the world around students and can be applied to the student's learning experience in everyday life. This is consistent with the expression Yanger in Sabar (2007), "Whereas the main purpose of learning the STS approach is that students can understand the concept of science and its relevance to life, being curious, critical, responsible, self-sufficient, has an interest to know and learn events in the neighborhood ".

Moving on from the background of the above problems, then that becomes the problem in this research are: 1) whether the application of the STS approach to the subject matter of the environment can boost learning activities and student achievement in Junior High School in Aceh Besar?, 2) how is the level of ability of teachers the STS approach in order to improve student achievement, especially on the subject matter of the environment ?, 3) how the responses of teachers and students to the application of the STS approach to learning the subject matter of the environment?

2. Literature Of Review

2.1 STS Science Learning Approach

Science learning activities using STS approach sought to be taught in the classroom can be attributed to real-world situations outside the classroom situation concerning the development of technology and society. This illustrates that the STS approach is executed to prepare the students to face the future. The STS approach requires that students be included in the determination of objectives, planning, implementation, how to get information, and evaluation of learning. As for which is used as a stylist (organizer) in the STS approach is issues in the community that are related to science and technology. STS is seen as a learning process that is always appropriate to the context of human experience.

Human knowledge obtained by studying this natural phenomenon stems from the knowledge gained through observation and experience, which stems from the reasoning. Actions based on reasoning that is subsequently gave birth to a variety of concepts, theories, laws and other provisions that are universal and sustainable so as to encourage the birth of technological mastery (Jailani, 2007). Students in this case are invited to enhance creativity, scientific attitude, using the concepts and processes of science in everyday life. As said by Abdul Majid (2007) that "learning by doingto make the learning process more fun". Therefore, teachers should provide opportunities for students to do what he learned, so that students gain real experience ".

According Mardana, P. (2001) "Learning science approach to STS (Science Technology Society) will lead to meaningful science learning process (meaningfull Learning)". Science learning for students will not only benefit the development of science
itself, but how science can be used to solve problems in everyday life to improve the
quality of life.

2.2 Characteristics of Approach Science Technology Society (STS)

According to Yager in Keni Agustina (2011), in general, learning by using STS
approach has the following characteristics: 1) Identification of local issues that have an
interest and impact. 2) The use of local resources (human, objects, environments) to seek
information that can be used in solving problems. 3) Involvement of students actively in
search of information that can be applied to solve problems in everyday life. 5) The
opportunity for students to act as citizens of the country where he tries to solve the
problems that have been identified. 6) Identify how science and technology impact on
society in the future. 7) The freedom or autonomy in the learning process.

Science learning approach developed STS does not alter the main points of
discussion in the curriculum, but it helps clarify the students' understanding of the main
points of discussion that must be mastered. Excess STS approach seen from the goals
expressed by Rumansyah (2006) is as follows: 1) Students are able to connect with the
social reality in the classroom learning topics. 2) Students are able to use various avenues
or perspectives for mensikapi various issues or situations that develop in a society based on
the scientific view. 3) Students are able to make himself as citizens who have social
responsibility (Patience: 2007).

2.3 Material Learning Environment With STS Approach

Learning material environment with STS approach in principle different from the
traditional approach to learning. The information presented by teachers, textbooks and
curriculum guide will not make much sense, when presented as irrelevant information. STS
approach seems to be driven by a curiosity to learn about the environment through social
issues in society (Sabar: 2007).

The material is the material environment whose scope is very broad, so that students
tend to memorize the concept given by the teacher without knowing the basic principles of
the environmental matter. Learning material environment can be started by raising issues
in daily life concerning the environment. STS’s learning approach is an approach that seeks
to link learning to real world (Mackinlu, A. 2001). Trying to integrate an understanding of
the natural world (science) with manmade world (technology) and the social world of
everyday experience of students in the community. A teacher is expected to implement the
stages STS approach in teaching environmental materials, namely: initiation/start, the stage
of concept formation, concept application phase, the stabilization phase of the concept and
assessment phases.

Stages STS approach to learning the material environment:

1. Initiation phase/started, which began with conveying learning objectives that
students can understand about the environment as a whole, raising issues about the
environment in the society by asking questions to arouse students’ prior knowledge.
For example the teacher asks, "How can the state of the environment in our
environment today?." Teachers help students identify problems by explaining that the
various natural phenomena that occur today can be harmful to the environment such
as floods caused by land to water absorption getting narrower due to the widespread use of land for development as it happens in major cities. Damage to the environment caused by excessive human activities and irresponsible as illegal logging and forest fires.

2. Formation of concept phase, which at this stage the teacher helps the student to choose the environment that environmental issues are not evenly spread of plants in the school yard, there are places that are dominated by grass and there is a population of a little grass. Open areas of grass are more common in areas shaded by other plants. Usually the area is overgrown with lots of herbs and grasses are rarely flooded when the rains because plants can absorb and store water for their daily needs. Students must also be able to distinguish which one is said to population, community, environment, habitats and niches, by way of observation in the school environment and then fill in worksheets that have been distributed.

3. Phase application concept, which at this stage the teacher directs students to analyze and apply the material environment has been conceived with the environment. Here, students are not only observe the environment in the school environment but also associated with the environment-environmental else that exists around the residence of students, such as the environmental fields, rivers, gardens, pools, sea and so on. For example, students mention any populations that make up the environmental field, which is certainly different from populations that exist in the environment of the school environment. Students are also directed to better safeguard the environment and preserve the environment.

4. Phase stabilization concepts, which at this stage the teacher gives an explanation of the key words are difficult to understand students as said population, community, environment, habitat and phoenician. Teachers conduct stabilization concepts such as the emphasis on key words is important to know the student to improve memory of students.

5. Assessment phase, which at this stage the teacher evaluate students’ understanding of the concept of the environment and assess whether students feel sensitive to the problems or situations that exist in the environment or not to ask questions.

2.4 Concept of Life Skills Education

Life skills-oriented education for students is as a provision in the face and solve the problems of life and life, both as an independent person, a resident of the community, as well as citizens. If this can be achieved, then the factor dependence on existing jobs as a result of high unemployment, can be lowered, which means the national productivity will be increased gradually. Conceptually, life skills can be divided into two main types, namely: 1) Life skills are generic (generic life skills), and 2) specific life skills. According to the above concepts, life skills is the ability and courage to face the problems of life, then proactively and creatively search for and find solutions to overcome them.

Each of these types of skills that can be divided into sub-skills. Generic life skills consist of personal skills, and social skills. Personal skills include proficiency in understanding the self (self-awareness) and thinking skills. Proficiency know ourselves basically an appreciation of ourselves as creatures of God Almighty, as a member of
society and citizens, as well as realize and appreciate the advantages and disadvantages that capital as well as in improving themselves as individuals that are beneficial to the environment. Proficiency rational thinking skills include, among others, to identify and find the information, process and decision-making, and creative problem solving skills. While the social skills include communication skills and proficiency in collaborations skills.

Life skills are skills specific to the job or face certain circumstances. This skill consists of academic skills or intellectual skills, and vocational skills. Academic skills associated with occupations that require more thought or intellectual work. Vocational skills associated with occupations that require more motor skills. These skills include basic vocational skills and specific vocational skills (occupational skill).

2.5 Implementation Approach STS For Life Skill Development Students

One function of school education is to develop the potential of students to confront its role in the future by developing a number of life skills. Life skills is an ability to create or find new solutions to problems (innovation) by using facts, concepts, principles, or procedures that have been studied. The discovery of new problem solving process and the product can be useful to maintain, improve, and update the live (Depdiknas: 2010). Besides, the life skills should be pursued achievement by integrating the learning experience that is relevant to everyday life (Barba, R: 1995).

In particular life skills that aims to: 1) to actualize the potential of students so that they can be used to solve the problems faced. 2) Provide an opportunity for the school to develop flexible learning, in accordance with the principle of broad-based education. 3) Optimize resource utilization school environment by providing opportunities utilization of existing resources in the community, according to the school-based management. (Barba, R: 1995).

3. Research Methods

This is a descriptive study, the population in this study are science teachers and students in Junior High School in Aceh Besar. As a sample taken 10 SMP, each school is taken 2 teachers and 10 students. As data collection instruments used observation sheets, questionnaires, and interviews. This instrument to 1) determine the increase of learning activities and student achievement with the application of STS approach the subject matter in the SMP environment can in Aceh Besar, 2) determine the response of the teachers who carry out learning during field trials, which are required either after a teacher read guides and after completion of the test in class, 3) to determine the response of the students, especially the difficulties experienced at the time of the STS study, done after the teacher in the classroom test. Data were analyzed descriptively using the formula percentages and qualitative analysis of the narrative.

4. Research Result

Results of this study showed that both students and literacy activities in science and technology students (80%) have achieved success criteria This means that implementation of the STS approach in science learning activities can improve both the students and the students' science literacy and technology. Increased activity, science and technology
literacy occurs because science learning with STS approach can create a climate that is conducive to learning science, giving students the opportunity to actively to identify social issues and technologies that exist in the region as well as its impact, using local resources (human and material) to obtain information that can be used in solving the problem, students are actively involved in seeking information that can be used to solve problems in real life, students actively involved in expressing their opinions, conduct experiments, as well as an emphasis on process skills that students can use in solve the problem.

In more detail, the results of the analysis of the data and findings obtained from this study are as follows: 1) Implementation of STS approach can improve students' learning activities which (78%) are very active category. 2) Implementation of STS approach can improve student learning outcomes 3) Implementation of STS approach can improve the quality of science and technology literacy of students is a good category.

Student response to science learning approach to STS (80%) including both categories. From the distribution of students' responses revealed that students have a positive attitude and perception towards learning science with STS approach. Openly declare its response lerning and teaching students are; STS strongly agree with the approach, the more interesting because the subject matter is associated with problems, social issues and technology that exist in the community, so that lessons be meaningful, easier to understand, more motivated, an opportunity to express opinions very much. Through laboratory activities students can engage actively observe, collect data, interpret and make conclusions, so that students become more insight increases. Knowledge gained students longer be remembered as the students themselves who find concepts through experimentation.

5. Conclusions And Recommendations

5.1. Conclusion

Approach Science Technology Society (STS) is one approach that links between science learning in the classroom with the advancement of technology and the development of communities that are around students. Through this approach, students are trained to integrate his understanding of the natural world (science) with manmade world (technology) and the social world of everyday experience of students in the community. Based on the analysis of data and findings obtained from this research the following conclusions can be drawn. (1) Implementation of STS approach can improve the learning activities of students in Junior High School in Aceh Besar, namely the category of very active. (2) Implementation of STS approach can improve student learning outcomes (3) Implementation of STS approach can improve students' science literacy and technology is good category (4) The response of students and teachers to the STS approach in science learning including both categories.

5.2. Suggestions

Observing the instructional reform efforts that are being developed in Indonesia, teachers are expected to creatively try out and develop teaching materials and approaches as well as a distinctive model of learning, according to the real conditions in the workplace each, so in turn will appear teaching models version teacher concerned, which must
increasingly enriched learning approaches and models that already exist. Based on the findings mentioned above suggested that science teachers throughout Aceh Besar SMP in order to try to apply the STS approach with a variety of strategies in teaching science as an alternative to increasing the activity of the students, learning outcomes, literacy science and technology, and to increase the response of students in learning science.

Bibliography


THE EFFORTS TO IMPROVE MATH PROBLEM SOLVING SKILLS OF STUDENTS IN THE MATERIALS CALCULATE MULTIPLICATION THROUGH THE JARIMAGIC OPERATION METHOD IN 2ND GRADE BASIC SCHOOL IN LAM URA DISTRICT ACEH BESAR

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ABSTRACT

All this time, multiplication is taught through the concept of repeated summation trained through exercise (drill), followed by memorizing its multiplication results. In practice, students are burdened with memorizing and repeating summation, so that many experienced an error in determining the final result of multiplication of the number. Many methods and strategies that can improve the mathematical problem solving to multiplication without having to memorize which one of them with methods jarimagic. This study raises the issue of (1) How to improve students' mathematics problem solving ability in arithmetic operations of multiplication through jarimagic method in 2nd grade of Basic School in Lam Ura Aceh Besar? (2) How is the students learning mastery in arithmetic operations of multiplication through jarimagic method in 2nd grade of Basic School in Lam Ura Aceh Besar? The purpose of this study was to describe the increase in mathematical problem solving ability of students in arithmetic operations of multiplication through jarimagic method in 2nd Grade of Basic School in Lam Ura Aceh Besar. The second purpose was to describe students learning mastery in arithmetic operations of multiplication through jarimagic method in 2nd grade of Basic School in Lam Ura Aceh Besar. Benefits of the research theoretically are to improve the quality of education and enhance the teaching and learning interactions. Practical benefits of this research can be used by teachers, students, and school. The method used is the method of classroom action research with two cycles were conducted in 2nd grade of Basic School in Lam Ura Aceh Besar. Each cycle consists of planning, action, observation, and reflection. The subjects were math problem solving ability of students in arithmetic operations of multiplication through jarimagic method. Retrieval of data in the form of tests and observation guidelines. Data was analyzed using qualitative techniques.

Keyword: Math Problem Solving, Multiplication Calculate Operations, Jarimagic Method

1. Introduction
1.1 Background

Subjects of mathematics in primary school consists of three aspects: numbers, geometry and measurement, and data processing. Every aspect is taught includes the basic concepts students need to learn in preparation to learn the concepts of higher. One of the math subjects taught in elementary school second grade is the multiplication of numbers. Multiplication is the problems that arise after the students successfully passed addition and subtraction.

But the reality in the field in mathematics during the time in 2nd grade of basic school in lam Ura Aceh Besar Simpang Tiga, there are still many students who have not mastered mathematics courses well, especially in multiplication material. Of the 20 students, about 60% of the students have not reached a value of 70 for multiplication material. For
multiplication of numbers up to five, some students have mastered well. But for the multiplication of numbers six to ten most students still have not mastered properly. This is because a lot of students who have not been able to memorize multiplication up to number ten. Some students are also less careful in working on the problems of multiplication arithmetic operation. They still use talis (stake) in calculating the multiplication. In count even if the deviation is only one, the final result will definitely be wrong.

Sanjaya (2009) says one of the problems facing our education is a problem of weak learning process. In the learning process, students are less encouraged to develop the ability to think. Classroom learning process is directed to the child's ability to memorize the information, given the range of information to related to daily life. This fact applies to all subjects. Especially mathematics, students memorize about multiplication, but are not able to solve problems related to daily life.

Students still use the summation using tally / pillar on completion, so it had an error in determining the final result of multiplication because students are less scrupulous in accumulating the number. So that the final resolution that is given is wrong. Students also did the re-examination. It can be concluded that the students have not been able to complete math problems correctly.

The process of education as above, will obviously give unsatisfactory results caused by several things, among others, the selection of learning strategies, and the selection of learning methods that do not fit. To obtain results in accordance with the purpose of learning requires the ability to choose a strategy and appropriate learning methods because the strategies and methods of learning is the most important thing that must be considered in the learning process, especially methods of calculating the multiplication material.

Many methods and strategies that can improve the mathematical problem solving for multiplication, such mencongak method, method of abacus, Kumon method, and the jarimagic method. The trend of learning to count using jarimagic method, inspired us to try to use it in order to solve the problems mentioned above. Jarimagic method researchers choose this because it is very suitable with the level of development of learners, fun and may increase the interest and ability of solving mathematical problems, particularly at the material multiplication arithmetic operation. This method is expected to provide a solution for students in math multiplication, especially for students who lack the ability to remember, because the actual math is not to memorize but to understand.

Jarimagic is super fast counting method using fingers to count on the operations of addition, subtraction, multiplication, division, squares and square roots (Auliya, 2011).

Based on the description above, this research proposal titled about, "Improvement of Mathematics Problem Solving Students In Operation Calculate Multiplication of Numbers Through Jarimagic Methods in 2nd grade of Basic School in Lam Ura Aceh Besar district".

Thus, based on the background of the problems above, the formulation of the problem in this research are: 1) How to improve students' mathematics problem solving ability in arithmetic operations of multiplication through jarimagic method, 2) How is the students learning mastery in arithmetic operations of multiplication through jarimagic method in 2nd grade of Basic School in Lam Ura Aceh Besar?

The purpose of this study are: 1) Improving students' mathematical problem solving ability in arithmetic operations of multiplication through jarimagic method, 2) Knowing
students learning mastery in arithmetic operations of multiplication through jarimagic method in 2nd grade of Basic School in Lam Ura Aceh Besar.

2. LITERATURE REVIEW
2.1 Mathematical Problem Solving
   According to Big Indonesian Dictionary (1996) the term capability is derived from the word "capable" means "power (can, could, be able to) do something. While the ability means the ability; prowess; strength. Dalyono (2010) describes the readiness (capability) as the readiness or willingness of someone to do something, as a force that makes people can react in a certain way. The ability of someone constantly evolving, these developments to adjust to the environment and are able to solve the problems or issues that it faces. There are many strategies or steps in problem solving. According Hudoyo and Sutawijaya (1997); Prihandoko (2006); and Subarinah (2006), the most common measures used by Polya (in Ruseffendi, 1991) which includes:
   1. Understanding the problem
      Understanding a problem is done by: reading the problem repeatedly, identifying what is known of the problem, identifying what is going to be sought, ignore things that are not relevant with problems, and do not add things that do not need so that the problem is being different with the problems encountered.
   2. Troubleshooting Planning
      Planning a problem solving related to organizing concepts corresponding to strategize. Problem-solving strategies include: Create tables, pictures, suspect, look for patterns or rules, reasoning, drawing up settlement procedures.
   3. The implementation of the settlement plan
      At this stage is to implement the settlement plan that has been created that is running the procedure that was created in the previous step to obtain or produce a solution or an answer. Implementation by the facilities that have been established.
   4. Looking back the settlement
      Answers that have been obtained must be rechecked the truth. Is there an answer or other means that can be used, checks can be made by substituting the answer into the model.

2.2 Jarimagic Method
   Jarimagic is super fast counting method using a finger on the operations of addition, subtraction, multiplication, division, squares and square roots can be done quickly using the fingers of our hands "(M.FajarAuliya, 2011).
   Jarimagic is a simple and fun way to teach basic math to students according to the rules begin to hang correctly in advance about the concept of numbers, symbols, numbers, and basic arithmetic operations, and then teach you how to count with the fingers. The process is initiated, conducted and ended happily. (Wulandari, 2007). Learning steps multiplication group numbers 5-10 as proposed by (M.FajarAuliya, 2012) is as follows:
   1. Students in advance need to understand the numbers or symbol numbers.
   2. Know the formation of fingers used in the multiplication jarimagic 5-10.
   3. Students are taught ways of calculating the jarimagic with the following conditions:
The formula used is:

\[
\text{multiplication } 5 - 10 = (T)_B
\]

NB : T : the number of fingers that face down
B : multiplication fingers that open

4. Demonstrate the use of jarimagic method in the multiplication operation.

**Example : 1**

\[7 \times 9 = ?\]

![Hand diagram](image)

Answer:
Multiply right and left finger that open
Totalize right and left finger that face down
T = number of facedown fingers = 2 + 4 = 6
B = Multiple of open fingers = 3 \times 1 = 3
Result : \[7 \times 9 = (T)_B\]
= 6 _ 3 = 63

3. **Research Methodology**

3.1 **Subject and Object of research**

The subjects were 2\(^{nd}\) grade of Basic School in Lam Ura Aceh Besar in the academic year 2015/2016, amounting to 20 people. Male students were 8 people and women students were 12 people. While the object of this study is the jarimagic method.

3.2 **Place and Time Research**

This research was conducted in the 2\(^{nd}\) grade of Basic School in Lam Ura. The village is located at Ateuk lam ura, SimpangTigaAceh Besar. The reasons for selecting Lam Ura Basic School for research is due to the lack of research on students' mathematics problem solving through jarimagic method performed at the school. The research was conducted in the first semester, lasts from July to December 2015 learning year 2015/2016.

3.3 **Approach And Research Type**

This study uses qualitative analysis research approach with classroom action research (PTK). PTK is in English known as Classroom Action Research (CAR), a study conducted in the classroom. Class, in this case is not bound to the classroom, but in a more specific sense, a class is a group of learners who are studying (Alam, 2001). This study categorized
qualitative research because the data source directly from the field, analyze the data tends to be inductive, and meaning is a matter that is essential (in Monawati, 1998).

3.4 Data Collection Techniques
According to Suharsimi Arikunto (2002) is a form of data collection techniques which data is done by recording the events, count, measure and record. Data collection techniques that will be used in this assessment are:

1. Tes
The tests used in this study is problem solving ability test (TKPM). Problem solving ability test given after the end of each meeting in the learning in each cycle. Form TKPM test is a test description (essay). This test is used to determine the success rate of students after learning by using the method applied to the material jarimag arithmetic operation of multiplication. Many items are in the plan is 5 items.

2. Observation Activity Against Teachers and Students
Observations were made to observe classroom activities for learning activities take place. The observed activity includes the ability to manage jarimag teachers and students in learning activities. Observation is intended to determine the suitability of the action plan has been drawn up to determine the extent of implementation of the action can produce a corresponding change to the desired. The observation of every observer summarized at each meeting.

3.5 Data Analysis
According to Arikunto (2005), Calculate the average value of mathematical problem solving ability test students each cycle can use the formula:

$$\bar{X} = \frac{\sum xi}{n}$$

Information:

\(\bar{X}\) : Average of result of learning
\(xi\) : Learning result Data
\(n\) : Total Students

4. CONCLUSIONS
One of the problems facing our education is a problem of weak learning process. In the learning process, students are less encouraged to develop the ability to think. Classroom learning process is directed to the child's ability to memorize the information, given the range of information to relate it to daily life. This fact applies to all subjects. Especially mathematics, students memorize about multiplication, but are not able to solve problems related to daily life. So that learning becomes less satisfactory.

Many methods and strategies that can improve the mathematical problem solving for multiplication, such mencongak method, method of abacus, Kumon method, and the jarimag method. The trend of learning to count using jarimag method, inspired us to try
to use it in order to solve the problems mentioned above. Jarimagic method researchers choose this because it is very suitable with the level of development of learners, fun and may increase the interest and ability of solving mathematical problems, particularly at the multiplication arithmetic operation. Jarimagic is super fast counting method using fingers to count on the operations of addition, subtraction, multiplication, division, squares and square roots.

References


The research, titled “The reduplication of Pak-Pak Boang” raises questions as follows: (1) What are the types of reduplication in Pak-Pak Boang, (2) what kind of form generated by Pak-Pak reduplication, this research aims to (1) describe the types and form of reduplication of Pak-Pak Boang. The source of the research are both oral and written, the oral sources were obtained from the native speaker of Pak-Pak Boang who live in Rundeng, Subussalam, Aceh. The sources of written language are obtained from published books about Pak-Pak Boang. The method of the research is descriptive qualitative. The data were obtained by recording, documenting study, and introspection. The data analysis is done by selecting data, data classification, presenting data, and writing conclusion. The results of research showed that the reduplication of Pak-Pak Boang are as follow: (1) The reduplication of Pak-Pak Boang consists of four types, that is (a) Phonology reduplication (b) syntax reduplication (c) Semantic reduplication (d) Morphology reduplication. (2) the form of reduplication consist of five form (a) Dwilingga reduplication, (b) Dwipurwa reduplication, (c) dwilingga reduplication (d) dwiwasana reduplication, (e) trilingga reduplication. The process of forming reduplication consists of seven forms (a) verbs reduplication, (b) Adjective reduplication, (c) noun reduplication, (d) pronoun reduplication, (e) adverb reduplication, (f) interogative reduplication, dan (g) Number reduplication. Pak-Pak Boang is the language of people in Subulussalam which go through many reduplication.

Keywords: Pak-Pak Boang Language, Reduplication

1. Introduction
1.1 Background
There is a repetitive of various words in Pak-Pak Boang Language, word such as, verb, noun, adjective, adverb, number, and pronouns or function word Fries. Pak-Pak Boang has words which can be repetitive. Based on the description above it can be said that the repetition is a process of morphology which can be repeated as a whole or partial. Reduplication is a repetitive grammar units, whether as a whole or partial, or with phoneme variation or not. The repetition is called repetitive word, while the unit which is being repeated is basic word (Ramlan, 1985).

Reduplication is a morphemic process that repeat its basic words as whole or partial accompanied by the alteration of sound. (Chaer,1994). Repetition or reduplication is the process of word reduction by repetition. (Alwi, 2003). Repetitive words are words which undergo the process of repetition, as whole or partial or accompanied by the sound alteration or not (Kosasih, 2008). One of the problems in languages that need more thorough attention is reduplication. That is why reduplication need more attention since it is important in daily communication, especially in the case of Pak-Pak Boang language.
1.2 The problem of study
Based on the background of study the writer explained, the problems of study are:
   a. What are the concepts of Pak-Pak Boang in Subulussalam, Aceh?
   b. How do sentences reduplicate in the language of Boang Kota Subulussalam, Aceh?
   c. What kind of reduplications are there in the language of Pak-Pak Boang?
   d. Producing local and national journal as a mean of spreading the scientific report widely to public.

1.3 The aim of study
Based on the problem of study, the aim of study are:
   a. To produce the concept of reduplication in the language of Pak-Pak Boang.
   b. To produce the scientific report regarding the meaning of sentences.
   c. To produce ways of preserving Pak-Pak Boang as a part of national culture
   d. To produce local and national journal as a mean of spreading the scientific report widely to public.
   e. To produce materials which can be used to enrich traditional literature.
   f. To produce material for teaching and learning in University of Serambi Mekkah.
   g. To produce materials for seminar, local, national, and other forum

1.4 Research Urgency
The Implementation of the research will produce materials in the form of theory and rules of reduplication of Pak-Pak Boang which were obtained from native speakers. The theory and rules will be very useful for the documentation of Pak-Pak Boang, since the language is nearly extinct and have not been investigated thoroughly. In general, this research is also useful for enriching the scientific languages archipelago located in Indonesia. Indonesian languages in which have very few native speakers left - including Pak-Pak bahasa Boang - need to be researched and documented so that when speakers of the languages die off, the languages will have documentation left to enrich the wealth of cultural treasures Indonesia

2. The result of study
2.1 The types of reduplication in Pak-Pak Boang
2.1.1 Phonology Reduplication
   (1) Silu-silu ‘Nails’
   (2) Da-da ‘da-da’
       Silu-silu, lae-lae a form which comes from the repetition of basic word. These are forms which sound the same and generates lexical meaning.
       Example:
           (3) Silu-silu na gedang kekhina. ‘All the nails broke.’
           (4) Sang luak hapona buk-buk mesekhaken. ‘Hairs are in all over the place.’

2.1.2 Syntax reduplication
   (5) Ulang ‘jangan-jangan’
   (6) Tuhu - tuhu ‘benar-benar’
Repetitive word, ulang-ulang, tuhu-tuhu are the form of words which have the same meaning but one word usually has higher status.

Example:
(7) Ulang - ulang desingi ko kaunma. ‘don’t approach his relative’
(8) Adikna tuhu - tuhu pehangke ‘his brother is lazy’

2.1.3 Semantic reduplication
(9) tua khenta ‘elder’
(10) nokhok malim ‘smart’

Tua khenta, nokhok malim these are the repetition of meaning from two synonym

Example:
(11) Bapakna Enggo Tua Khenta. ‘His father is old’
(12) Ia mencekhok dos bage kalak nokhok bak malim. ‘He speaks like a smart man.’

2.1.4 Morphology reduplication
(13) Menakha-nakhai ‘menyapu-nyapu’
(14) Menuulus-nulus ‘mencari-cari’

Menyakha-nyakha, menulus-nulus these are the type of morphology words which can happen in the base of words

Example:
(15) Umak sedang menakha-nakhai sang tukhe sapo.
‘Mother is sweeping in the house’
(16) Enggo udan, bakhu tohna sibuk menulus-nulus payung
‘when it has started to rain he is looking for umbrella’

2.2 The type of Pak-Pak Boang’s reduplication

2.2.1 Dwilingga (whole repetition)
(17) Ndaoh-ndaoh ‘jauh-jauh’
(18) Khebak-khebak ‘sama-sama’

Ndaoh-ndaoh, khebak-khebak these are the form of dwilinga repetition which does not change the root of base verbs

Example:
(19) Ndaoh-ndaoh aku khoh paen asa menengen ko ‘I came all the way here to see you’
(20) Kekhajo en khebak-khebak kita menyiapkenna. ‘We should finish this job together.’

2.2.2 Dwipurwa (Partial repetition)
(21) Leluhukh ‘Ancestors’
(22) Dedeholi ‘Man’

Leluhukh, dedoholi, these are the form of Dwipurwa (Partial repetition) which repeat only the base of the word.

Example:
(23) Anak-anak pekhana sehakhusna mengikuti jejak leluhukh kita.
‘Young people should follow the elders’ steps.’
(24) Zaman begenden anak dedeholi oda bisa ne dipecaya khatana.
‘Nowadays young men can’t all be trusted.’

2.2.3 Dwilingga Salin Suara (Repetition with sound alteration)
(25) khamah-tamah ‘Courtesy’
(26) kekhlap-kekhlip ‘sparkling’

Khamah-tamah, kekhlap-kekhlip these are words whose sounds can change the consonants and the voice.

Examples:
(27) Pekhtemuan idi diisi bak acakha khamah-tamah.
‘The meeting is filled with courteous acts’
(28) Hapona dihiasi bak kekhlap-kekhlip lampu hias.
‘The house is adorned with sparkling lampshias’

2.2.4 Dwiwasana
(29) Tekejut-kejut ‘shocked’
(30) Mewakhi-wakhi ‘days’

Tekejut-kejut, mewakhi-wakhi are dwisana repetition, the repetition of the rear leksem

Example:
(31) Mebege kabakh ia enggo mate mbue kalak tekejut-kejut.
‘People were shocked upon hearing his death’
(32) Enggo Mewakhi-wakhi umak oda balik mi hapo.
‘I haven’t gone home for days’

2.2.5 Trilingga
(33) Dak-dekh-dokh ‘dar-der-dor’
(34) Ngak-ngek-ngok ‘ngak-ngek-ngok’

Dakh-dekh-dokh, ngak-ngek-ngok are trilingga repetition, the repetition of base words three times.

Example:
(35) Dakh-dekh-dokh sokha senapang kalak mepekhang
‘Dar-der-dor guns sound went off’
(36) Ngak-ngek-ngok sokha anak dukak tangis.
‘Dag-dig-dug my heart Is beating hard when I see that girl’

2.3 Reduplication Form
2.3.1 Verbs reduplication
(37) Hanjakh-hanjakh ‘slowly’
(38) Tokh-tokh ‘quickly’

Hanjakh-hanjakh, tokh-tokh are the repetition of Verbs reduplication which can be generated in the process of reduplication.

Example:
(39) Hanjakh-hanjakh sambin letakken pikhingi. ‘Put the plates down slowly
(40) Tokh-tokh kona khoh mi sapo ku segen. ‘come to the house quickly tomorrow’
2.3.2 Adjective reduplication
(41) Mbekhu-mbekhu ‘beautiful.’
(42) Mende-mende ‘good’

Mbekhu-mbekhu, mende-mende are the reduplication which form roots, derivative, and conjunction.

Example:
(43) Kekhina anakna pate kelek mbekhu-mbekhuna. ‘All the girls are beautiful.’
(44) Pekhange anak pekhana sang kampong idi mende-mende. ‘he behavior of young people in that village is good

2.3.3 Noun reduplication
(45) Sayukh-sayukhen ‘vegetables
(46) Tetangga ‘neighbors’

Sayukh-sayukhen, tetangga, langit-langit. The reduplication form of grammatical meaning nouns which bore states.

Examples :
(47) Kekhina kalak sekel kepangan sayukh-sayukhen. ‘People love vegetables.’
(48) Tetangga hapoku khamah kekhina. ‘My neighbors are all friendly.’

2.3.4 Pronoun reduplication
(49) Ia-ia ‘Him’
(50) Kalak-kalak. ‘People’

Ia-ia, kalak-kalak are the reduplication form of an affirmation stating pronouns

Example:
(51) Ia-ia sambin keca kena kekhajo sitabohna. ‘He always has good job.
(52) Kekhina kalak-kalak si membangkang dihukum. ‘All rebels will be punished.’

2.3.5 Adverb reduplication
(53) Sada-sada ‘satu-satu’
(54) Telu-telu ‘tiga-tiga’

Sada-sada, telu-telu are the reduplication of adverb as a reduplicated noun.

Example:
(55) Sada-sada embahken bakhangna. ‘Each of you carry the stuff
(56) Kekhina dapet hadiah telu-telu ‘The three of them got gifts’

2.3.6 Interrogative reduplication
(57) Kade-kadeen ‘apa-apaan’
(58) Asal-asalen ‘asal-asalan’

Kade-kadeen, asal-asalen are the reduplication of Interrogative reduplication

Example:
(59) Kade-kadeen ko khoh mi sapoku bekhngin-bekhngin begen. ‘How dare you came to my house tonight..’
(60) Oda mende karena kekhajona asal-asalen hambin. ‘The quality of the work is not good’.
2.3.7 Number reduplication

(61) Mepuluh-puluh ‘thousand
(62) Sekhatus-khatus ‘hundreds’

Mepuluh-puluh, sekhatus-khatus are the reduplication of number.

Example:
(63) Mepuluh-puluh jokhma menema kepeng pembagien zakat.
‘They all wait for welfare.’
(64) Kekhina dapet sekhatus-khatus. ‘They all have hundreds.’

2.4 Reduplication Meaning

2.4.1 Repetitive Meaning

Repetitive Meaning ‘being repeated all the time’ regarding the reduplication of Pak-Pak Boang Language.

(65) Medalan-dalan ‘take a stroll
(66) Mangan-mangan ‘eating’

Medalan-dalan, mangan-mangan are words which are often used that have repetitive meaning.

Example:
(67) Kekhajona setiap wakhi medalan-dalan. ‘His job is just taking a stroll everyday’
(68) Anak-anaki hampekh setiap jam agakna mangan-mangan sambin.
‘All his kids want is to eat.

2.4.2 Various Meaning

Repetition is done not only with base vorbs but also with the meaning of base verbs in Pak-Pak Boang.

(69) Khame-khame ‘rame-rame’
(70) Mbage-mbage ‘banyak-banyak’

Khame-khame, mbage-mbage, kalak-kalak are words that are widely used in speech acts or deeds that are done by more than one person.

Example:
(71) Penangko idi kena kekhoyok khame-khame. ‘The mob beat the thief.’
(72) kekhina anakna mbue-mbue dapet wakhisen. ‘His kids get lots of inheritance’.

2.4.3 Resiproke Meaning

Repetition of words to have Resiproke Meaning which is done to the reduplicated verbs in Pak-Pak Boang.

(73) Cokhat-cokhet ‘Scribled
(74) Kekhlap-kekhlip ‘sparkling’

Cokhat-cokhet, kekhlap-kekhlip, khamah-tamah are words which have Resiproke Meaning.

Example:
(75) Bukuna kekhina habis tecokhat-cokhet. ‘The books are all scribled’.
(76) lampu sang mesjid kekhina mekekhlap-kekhl. ‘The lamps in mosque are all sparkling’.
2.4.4 Process Meaning
Repetition to have Resiproke Meaning is done with verbs, in the form of reduplication based on the meaning the words created.
(77) Gupak-megupak ‘Beating up’
(78) Meneneng-neneng ‘Sightseeing’
Gupak-megupak, meneneng-neneng are words which create specific meaning.
Example:
(79) Anak sekolah si mekhubat i tekhus gupak-megupak.
‘The kids from school are involved in fighting.’
(80) Kekhina kalak meneneng-neneng anak menguda si mbekhu idi.
‘People see that beautiful girl.’

2.4.5 Sudden Meaning
Repetition of the sudden meaning is done to the reduplicated verbs.
(81) Medetak-detak ‘Beating hard
(82) Tegejut-gejut ‘shocked’
Medetak-detak, tegejut-gejut are repetition of words which create specific meaning depending on the spoken words.
Example
(83) Jantungku medetak-detak cepet waktu kubege kona menenggo aku.
My heart beat so fast when you called me’
(84) Kekhina kalak tekejut-kejut waktu mege ia enggo mate.
People were all surprised upon hearing his death.’

2.4.6 Miscellaneous Meaning
Repetition of words to have Miscellaneous Meaning is performed to the verbs in the form of reduplication in Pak-Pak Boang Language.
(85) Mehembus-hembus ‘Blowing’
(86) Mekhasa-khasa ‘Feeling
Mehembus-hembus, mekhasa-khasa are repetition words in Pak-Pak Boang which form simple words.
Example
(87) Angin mehembus-hembu sang tepi pante gosong telaga.
‘The wind blew in gosong telaga. beach’.
(88) Unyak mekhasa-khasa khokhoh sang belanga pate kelek tabohna
‘My sister tasted the delicious gravy in the pot.’

2.4.7 Feeling Meaning
Repetition of words to have feeling meaning is performed to the verb in Pak-Pak Boang language.
(89) Memangan-mangan ‘Eating
(90) diencep-encep ‘Sucking
Memangan-mangan, mengencep-ngencep are repetition which have the meaning of feeling according to the context of words spoken by others.
Example
(91) Kekhina undangen sang bekas pesta idi memangan-manganen sitabohna ‘The food in the party was delicious.’
(92) Hakhu tabohna khokhona bak kuahna diencep-encepna ‘He sip the gravy because it was so good.’

3. Conclusion and Advise
3.1 Conclusion
Having completed a research on “the reduplication of Pak-Pak Boang” which was done to the community of kampung Rundeng, Subulussalam, the writer found that the reduplication of words based on the types are, (a) Phonology reduplication (b) syntax reduplication (c) Semantic reduplication (d) Morphology reduplication

The form of reduplication of Pak-Pak Boang are (a) Dwilingga reduplication, (b) Dwipurwa reduplication. (c) dwilingga reduplication (d) dwiwasana reduplication. (e) trilingga reduplication

The process of forming reduplication are as follow (a) verbs reduplication, (b) Adjective reduplication, (c) noun reduplication, (d) pronoun reduplication, (e) adverb reduplication, (f) interrogative reduplication, dan (g) Number reduplication.

3.2 Advise
The study of Pak-Pak Boang should be continued by other researchers to discuss more details about Pak-pak Boang grammar, syntax, and semantics.

The reduplication of Pak-Pak boang needs to be documented so that there will be written documentation to be taught in school or to people who want to learn it.

The whole community of Pak-Pak Boang and the Subussalam government should preserve the use of Pak-Pak Boang language, that way the language will not be diminished and will be the source of glory for the people of Subulussalam.

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MODEL-BASED DEVELOPMENT OF ENGLISH LANGUAGE LEARNING CHARACTERS IN IMPROVING STUDENTS’ ACHIEVEMENT OF SENIOR HIGH SCHOOL IN BANDA ACEH

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ABSTRACT

In the development of the intellectual, social and emotional, English language education has a central role and is supporting the success in studying all fields of study. Learning English is expected to help students know themselves, their culture, and the culture of others, so that in learning English is required based learning model that fits the character of the culture and identity of the nation's good. The main focus of this study is to describe and holistic descriptive of the character-based English language learning to improve overall student achievement. This study was designed to approach research and development, the research followed up by studying, investigating, and understanding as well as how to model the development of methods development program with the aim to improve or enhance the condition of the object under study. The study sample consisted of two high schools in Banda Aceh who have the background and the same characteristics. To produce a model of proper teaching in the teaching of English in high school in the city of Banda Aceh conducted systematic steps in the form of the process of action, reflection, evaluation, and innovation. The method used is direct observation, questionnaires, interviews, seminars, and development. Furthermore, this research is expected to produce English language-based learning model character in accordance with the national culture.

Keywords: development, English language-based characters

1. Introduction
1.1 Background

In communicating the language is a must and the capital that is capable of showing identity, neither of formal and informal situations. Even the language is considered a major influence on the formation of the cultural character of a student. Someone began to recognize the language since in the family environment, then continues to the school environment, and society. This is all the so-called educational environment. Educational environment has a great influence in children's education, because education process always takes place in a specific environment related to space and time, because it is an educational environment must be created effective and attractive as possible especially able to contribute more to the students, and how the educational process takes place outside of school, of course great influence, especially the environmental community, in addition to the family and school, community environment is the third environment in the process of formation of one's personality according existence. But education in our environment have not been able to deliver more value so as to make a person easy to face the future with good. Indonesia requires human resources in sufficient quantity and quality as the main supporter in development.
To meet the human resource, education has a very important role. This is in accordance with Law No. 20 Year 2003 on National Education System in Article 3, which states that the national education serves to develop the ability and shape the character and dignified civilization in order to educate the nation. National education aims at developing students' potentials in order to become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, capable, creative, independent, and become citizens of a democratic and responsible. Meanwhile, one to get an education with noble values, moral, creative and have a corresponding character of national culture can be obtained through the use of good language. As highlighted in the above statement, the language appears to have a role in pengelolahan and create the next generation of value-added. For that reason the need to analyze further how the role of language in character education (Law of the Republic of Indonesia Number 20 of 2003).

In accordance with the statement mentioned above, the development of the intellectual, social and emotional education language (e.g. English) has a central role and is supporting the success in studying all fields of study. Language learning is expected to help learners recognize themselves, their culture, and the culture of others. In addition, language learning also helps learners are able to express ideas and feelings, participate in society, and even discover and analytical skills and imaginative that was in him. This is related to the formation of the character of the students so that they can compete, ethical, moral, good manners and interact with the community. Based on research at Harvard University, United States (Ibrahim Ali Akbar, 2000), it turns out a person's success is not determined solely by the knowledge and technical abilities (hard skills), but rather by the ability to manage themselves and others (soft skills). Character is the values of human behavior associated with the Almighty God, ourselves, our fellow human beings, the environment, and nationality embodied in thoughts, attitudes, feelings, words, and actions based on religious norms, laws, manners, culture, and customs.

Character education is a system of cultivation of character values to the school community, which includes knowledge, awareness or willpower, and actions to implement these values, both to God Almighty (Almighty), ourselves, others, the environment, or nationality so that a man perfect man. Regardless of the various deficiencies in the practice of education in Indonesia, when seen from the national education standards as the reference curriculum development (SBC), and the implementation of learning and assessment in schools, educational goals can actually be achieved by either. Coaching character is also included in the material to be taught and mastered and realized by learners in everyday life. The problem, character education in schools during this new level touching on the introduction of norms or values, and yet at the level of internalization and concrete actions in everyday life.

English is one of the communications media in the form of oral and written. Can or is able to use English, the demands of life today because almost all electronic media are used daily are programmed using the English language, his example is Mobile Phone and Computer. English Lessons have four skill or skills are: Reading (Reading), Speaking (Speaking), Writing (Writing) and Listening (Listening). As an international language, English is used in communication in the fields of science, technology, trade, politics, and the areas in which many nations have an interest.
Given the importance of the position of English in Indonesia, then the need for institutions that can facilitate the teaching of English. One official government agencies participate in developing English language is a school. The school is one place/institution where English is taught, ranging from elementary school to high school and even up to the level of Higher Education. The school students are taught in English in the form of oral and in written form (written cycle). This is a challenge that needs to find a way out through a study, and the study will find English teaching model based characters that can improve the performance of students at the same school achievement.

1.2 Special Purpose
The purpose of this study was to discover, describe and explain the development model of character-based English language in schools to improve student achievement at the same school achievement.

2. Research Methods
In accordance with the objectives to be achieved, this study was designed to approach research and development (Borg&Gall, 1989), which followed research by developing a program with the aim to improve or enhance the condition of the object under study. To produce a model of the development of character-based English language learning in high school performed systematic steps in the process of action, reflection, evaluation, and innovation. The method used in collecting the data is as follows.

1. Observation
The first step taken is a direct classroom observation in the English lessons were recorded with a camcorder.

2. Questionnaire
That is by distributing questionnaires/number of questions in accordance with the purpose of research. Forms of questions will be formulated in such a way to allow the disclosure of indicators relating to the development of English language learning method based on the character of high school students in Banda Aceh. Questionnaire - the questionnaire systematically arranged in two forms in a closed and semi-open.

3. Interview
Interviews are used to deepen and find more detailed answers were not complete and may be missed through a detailed questionnaire. Interviews will only be made to the teachers in each school to obtain a more complete picture of the development of character-based English language learning in the learning of English Language subject.

4. Seminar
Besides interviews to sharpen and deepen the methods adopted in developing character-based English language learning in teaching subjects in English, it will be well with seminars and discussions to obtain uniformity of opinion between the parties with the other party.
5. Development

The development is another step in creating a character-based English language learning in high school in Banda Aceh is expected to create an atmosphere conducive learning and fun that can improve student achievement.

3. Result and Discussions

Stages of research are a process that must be passed researcher systematically. In terms of data collection researchers have gone through various phases as planned, in the form of collecting data through observation, distributing questionnaires and interviews. This data has been analyzed to determine the initial conditions of the process of learning the English language that has been taking place in the Junior High School (SMA) in Banda Aceh. Products/Draft this research is a model of character-based learning English to improve English learning achievement of high school students in Banda Aceh. For the products of this learning method researchers have settle the whole matter to the activity-based model of learning English characters by applying active learning, in the form of material written and spoken English are very interactive.

Based on the data findings, many teachers do not understand the activity-based model of learning English characters. In fact, they have applied the indicators of learning English character but they do not know that the indicators belong to learning English character. Many indicators of characters but this research is only focused on motivation, discipline, courtesy, cooperation, mutual love, mutual help, and responsibility. Discipline of the students in the learning process is timely, complete the tasks given in accordance with the schedule set, and comply with regulations. In motivation, the students are asked to study hard every time. They are asked to complete their work or homework. Beside, they are supported to dare to tell their opinions in discussion.

Furthermore, in courtesy, students are educated good manners to the teachers, the parents, other students, and friends. They are taught how to convey something in a polite way. For example when we ask, “What is your name?” This sentence is true and commonly used, but there are more polite e.g “Excuse me, would you like to tell me your name?” And so on. They are not only taught actions in good speech, but also behave well. In terms of cooperation, the student learner to get accustomed to cooperate in completing the tasks assigned to him so that the tasks to be completed feels light. This cooperation is not only developed in the classroom but in other places, for example in the home and other.

In the character-based education is no less important is to love each other abdominal. In this case the student learners to love each other in the learning process. Love each other always mean that students help each other if there is a problem faced. For example, if a student is no pen, the pen more students who have to be able to lend. More detailed example is when a student is unable to complete the task, the students were able to be able to provide assistance. Thereby creating mutual love between them. Furthermore, in terms of responsibility, the students are taught to be able to be responsible for the tasks assigned to him. Not only the responsibility of the tasks but also a responsibility to act had done. With this responsibility, the students understand the rights and its obligations.
4. IV. Conclusion

As an international language, English is used in communication in the fields of science, technology, trade, politics, and the areas in which many nations have an interest. But in fact in Indonesia, English is still a foreign language taught in schools from elementary schools to high schools and even up to the level of Higher Education. In order to improve students’ skills in English, then one alternative that is applied is to develop character-based English language learning. Character-based English language learning is expected to improve students’ skills in English, as well as be able to indicate the identity of a civilized nation is sublime with the use of English is good and right.

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SPREADING PATTERN IN INTERTIDAL GASTROPOD
BEACH PULOT LEUPUNG SUBDISTRICT
DISTRICT OF ACEH

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ABSTRACT

The study was conducted on 18 and 19 April 2015. As for the goal of this research was to determine the types of gastropods, density, diversity, index of similarity and pattern of spread. This research was done by using sampling area and using transect method squares in three areas, namely area A (predominantly reef substrate mixed with sand), B region (dominated substrate medium to large-sized rocks), C region (dominated substrate Mud mixed with sand) to create a line transect 3 pieces and 3 pieces of squares with a size of 1x1 m in each region. Results of the study found 19 species of 12 families with a total of 448 individuals. The types of gastropods were found in the study site is Drupella margariticola, Canarium urceus, Nerita filosa, Conus sanguinolentus, Turbo argyrocoma, Nerita undata, Lophiotoma indica, Cerithium punctatum, Trochus incrassatus, Polinices tumidus, Nassarius glans, Conus lividus, Telescopium telescopium, Lambis lambis, Lambis chiragra, Trochus radiatus, Tereberalia sulcata, Clypeomorus moniliferus, and Quayia decollata. The pattern of spread of gastropods in the intertidal beach Pulot the largely uniform which consists of twelve species, while seven species random. Gastropods density is highest in the region B (58.89 ind / m²) and the lowest in the region C (50.58 ind / m²). Diversity index (H') gastropods ranged from 1.774 to 1.044. Indeks of acid is about 0.34 – 0.20.

Keywords: Gastropods, Intertidal, Pattern Of Spread

1. Introduction

Slugs and snails are animals gastropod class. There are also types of animals live in the ocean, freshwater and also live on land. Gastropods constitute the largest class and popular. There are 50,000 species / species of gastropods are still living and fossilized 15,000. Because of the many types of gastropods, then the animal is easy to find. Gastropods very broad spread of various kinds of habitat, includes mangrove, tidal to a depth of 8200 m, But it can also be found diekosisistem gastropods seagrass, beach, and coral reefs. According Tomascik (1997 in Saripantung 2013) says that "Gastropod is one of a class of mollusks are known to associate with seagrass ecosystems". It can be concluded that the gastropods are among the most successful class of another class that is able to adapt.

Research on gastropod have been carried out, in 2013 conducted research in the area of intertidal gastropod Malayang Coast North Sulawesi about the existence of gastropods in the area. The study found there has been a change of 30 species to just 15 species. While the density of gastropods which are found in the intertidal beach Malayang 0.13 individuals / m² is currently 0.06 to 0.13 inividu / m², and the relative density ranging from 2% - 38.5%. Diversity index contained in the intertidal gastropod dead coral layered thin mud highest is H' = 2.412 following a rocky region is H' = 2.232 and lowest in rocky slightly gritty neighborhood is H' = 2.056. Dispersal patterns in intertidal beach Malayang everything except Cypraea felina were randomly spread in groups (Irawati et al, 2013). Water which have good quality tend to have diversity and abundance of gastropods are...
high, while the waters have poor quality tend to have diversity and abundance of gastropods are low. Decline in water quality in general may result in changes in community structure gastropods.

The beach is composed of rocks (rocky shore) is tampat very good for animals or plants that can attach themselves to this layer. This group includes many types of gastropods, molluscs plants that are large. Two species Uttorina undulatta and Tectarius malaccensis, stay and live at the top of the beach below it successively occupied by other species Monodonta Labio and Nerita undata. Then by Cerithium Morus and Turbo intercoslatis. Finally at the bottom there is a boundary-Lambis Lambis and Trochus gibberula (Hutabarat, 2008).

The aim in this study was to determine the types of animals gastropods and the pattern of spread of gastropods in the intertidal beach Pulot large Leupung subdistrict of Aceh district. The benefits of this research is to provide information and as a learning resource to add to the knowledge base about the types of gastropods.

2. Materials and Methods

This research was conducted Intertidal areas Pulot Beach Leupung subdistrict, Aceh Besar district, on 18 and 19 April 2015 at 08:30 to 10:00 and at 15:00 to 17:00 pm. Determination of sampling is determined through the technique of sampling area in the intertidal zone by the different types of ecosystems. Sampling was carried out at three stations, namely the region A (station I) is dominated by coral substrate mixed with sand; region B (station II) is dominated by medium to large-sized rocks; region C (station III) is dominated by mud mixed with sand.

Sampling was carried out with squared transect method according Fachrul (2007 in Gundo, 2010) at the time of low tide. With the following procedures at the time of low tide pulled at each station transect seaward line drawn along 20 m. Then placed in a sequence of 3 pieces of squares with a size of 1 x 1 m to 5 m spacing between the squares.

Data collection techniques in taking samples every quadratic gastropods. Samples gastropods are found on the surface of the substrate directly collected by hand, while to collect the types of gastropods living with immersing themselves in the colonies, substrate excavation to a depth of 15 cm using a trowel.

Each gastropods contained in squares counted and recorded, and every kind of gastropods are taken and inserted into a transparent jar then labeled for identification of its kind. Identification refers to the World Of Sea Marine.

3. Data Analysis Technique

3.1 Density

Density is the number of individuals per unit area gastropods. The density is calculated using the approach according to Cox (1967 Gundo, 2010).

\[ \text{Kepadatan(ind./m}^2) = \frac{\text{jumlah individu setiap jenis}}{\text{luas contoh}} \]
4. Diversity
Can be calculated by using the formula of Shannon diversity index (Ayunda, 2011: 19).

\[ H = -\sum pi \ln pi \]

Explanation:
\( H \) = diversity index
\( n_i \) = number of individuals of each species
\( N \) = the sum of all individuals
\( P_i \) = opportunities for the benefit of any kind

5. Similarity Index
To find out how much in common the spread of the number of individuals of each type gastropods uniformity index used by Krebs (1989 in Gundo 2010), namely:

\[ E = \frac{H}{\ln S} \]

explanation
\( E \) = index of similarity
\( H \) = diversity index
\( S \) = number of species

4. Distribution Index
To find out how the population distribution ecosystems performance used for distributing Morishita index according to Krebs (1989 in Gundo, 2010), namely:

\[ I_\delta = \frac{n_i \sum (X_i(X_i - 1))}{N(N - 1)} \]

where:
\( I_\delta \) = Index spread Morishita
\( N_i \) = number of sampling units
\( N \) = total number of individuals
\( X_i \) = number of individuals of species at the sampling to \( i \)

If the index distribution shows
\( I_\delta > 1 \) : individual distribution patterns are clumped
\( I_\delta = 0 \) : pattern of random distribution of individual species
\( I_\delta < 1 \) : The distribution pattern is the same individual (Nurhikmayani, 2013).

6. Results and Discussion
Pulot beach area is a region Gampoeng Pulot Leupung subdistrict, Aceh Besar district. Aceh Besar District is one district in the province of Aceh. Geographically located
in the district of Aceh Besar 5,2° position - latitude and 95,0° 5,8° - 95,8° BT. Long beach
195 km², with an area of 2974.12 km². Aceh Besar district has a diverse topography
consisting of plains, choppy, hilly, mountainous, and partly an archipelago. Which is
generally found lying areas and northern region of the east coast and west coast. And has a
variety of ecosystems including the coral reef ecosystem, brackish, mangrove and tidal
zones respectively.

There are areas of intertidal ecosystem consists of a substrate-substrate consisting of
coral reefs, muddy sand and rocky. On the outskirts of coastline contained in the intertidal
beach area there Pulot constituent plants such as mangroves (Rhizophora stylosa),
berumbang (Sonneratia alba), ketapan (Termenalia catappa), and palm (Nypa fruticans).

Based on the results of animal studie gastropods in Intertidal area Pulot Beach
Leupung subdistrict, Aceh Besar district, obtained 19 species of gastropods than 12
families total number of individuals was 448 in three observation area. The types of
species of gastropods were obtained including family into Pottamidae, Neritidae,
Nassaridae, Turridae, Stombidae, Cerithiidae, Conidae, planaxidae, Naticidae,
Turbinidae, dan Muricidae. Family Muricidae. the dominant families in the intertidal
region A and B, whereas in region C is the dominant family Pottamidae family.

Based on the results obtained and statistical calculation results obtained The pattern
of spread of gastropods in the intertidal beach Pulot the largely uniform which consists of
twelve species, while seven species are random. Species diversity index (H ’) Gastropod In
Intertidal Beach Pulot Leupung subdistrict ranged from 1.774 to 1.394, density ind / m² on
a region ranged from 26.6 to 1.33 ind / m² and relative density ranging from 50.29 to
2.51%. The density of the area and ranged from 19.6 to 1.33 ind / m² and relative density
ranged from 33.28 to 2.25%. Individual density in region C ranged from 16.6 to 1.33 ind / m² and relative density ranged from 32.85 to 2.65%. Similarity index ranged between 0.34
- 0.20.

Density

The highest density of gastropods types found in every area of research in a row
starting from the highest to the lowest are discussed as follows. A region with the highest
species density of 26.6 ind / m² and relative density of 50.29% was found in species
Drupella margaritcola while the lowest density of species found in Nerita Filosa with 1.33
ind / m² and relative density of 2.51%. Region B species with the highest density of 19.6
ind / m² and relative density of 33.28% also found in species Drupella margaritcola while
the lowest densities of the species found in Nerita undata by 2.25%. C region with the
highest species density of 16.6 ind / m² and relative density 32.85% species found in
Telescopium telescopium while the lowest densities of the species found in the species
Lambis Lambis with 1.33 ind / m² and 2.63% relative density.

Molluscs density show individuals who live in a particular habitat, certain extent, and
a certain time (Brower & Zarr, 1977 in Dibyowati, 2009). Region B has the largest density
of gastropods, because the habitat conditions in the region dominated by rock substrate that
supports the life of gastropods. While the region C has the lowest density of gastropods
this matter because of the condition of the habitat dominated a little muddy sand that does
not provide a place attached to the organism, especially gastropods. Inherent handy place
to defend themselves from wave action continuously moving substrate particles.

**Diversity Index**

The value of diversity index (H') type of gastropods in the intertidal beach Pulot
Leupung subdistrict, Aceh Besar district ranged from 1.774 to 1.044. Diversity index
included into high category contained in region B, namely 1,744 whereas in areas A and C
included into the moderate category, the value of diversity index (H') <1.6. According to
Arbi (2011, in Saripantung, 2013) states that "High-low index value diversity can be
caused by various factors, among others, the amount or individuals are obtained and the
existence of some kind that are found in greater numbers abundant than other species ".
Diversity index that are contained in region A and C supported by ecosystems that have
experienced pressure it intertidal or was failing as a result of human activity so much
plastic waste found. This is because in a region where tourism is fishing and close to
manufacture and mooring fishing boats that affect the ecosystem area, while area C is an
exit points of the fishing boat for a living thus affecting ecosystems found in the region C.
According to Vermeij and Zipser (1986, in Ayunda, 2011) states that "Waste plastic will
cover the surface of the sediment heavy foundation which contains a source of food, so it
will be difficult to take food gastropod ". This is consistent with the statement Suwondo et
al (2005) and Shanmugam & Vairamani (2008) that the species diversity index will
decrease with decreasing condition or the quality of aquatic environments.

**Similarity Index**

Uniformity index value at the study site ranged from 0.34 to 0.20. According
Saptarini et al (2010) "If the uniformity value obtained by approaching a value of 1 then
shows the composition of individuals of each species present in a community in a state of
good relatife, namely the deployment of each type of relatife equal or uniform although
some species of gastropods are found in large numbers compared to other species. "
Uniformity index value of a row from lowest to highest value approaching 1, is 0.20 (area
C), 0.27 (area A), and 0.34 (area C).

**Distribution Index**

Results of the analysis of distribution patterns of individuals in every area of
research indicates that A region Morishita index value distribution ranged from 0 to 0.75
thus the individual distribution pattern of the eight species found in this area are five
species, namely Canarium urceus, Nerita Filosa, Conus sanguinolentus, Nerita undata, and
lophiotoma indica are random. while three species, namely Drupella margariticola, Turbo
argyrostaoma, and Cerithium punctatum are uniform. Region B Morishita distribution index
value ranges from 0 to 0.32 distribution pattern of the six species found in area B are five
species, namely Drupella margariticola, Trochus incrassatus, Polinices tumidus, Nassarius
glans and Conus lividus are uniform, While the other species are randomly found in undata
Nerita species. In the C region the index value distribution pattern ranged from 0 to 0.32
distribution pattern of the seven species found in area C are four species that Telescopium
Telescopium, Clypeomorus moniliferus, Quayia decollate, and Tereberalia sulcata are
uniform, while the other three species are found randomly on the species Lambis Lambis, Lambis chiragra, and Trochus radiatus.

The pattern of spread of gastropods in the intertidal beach Pulot Leupung subdistrict, Aceh Besar district mostly spreading pattern is uniform which consists of twelve species, while seven species are random. According Nurhikmayani (2013) states that "Uniform spreading pattern rarely found in natural populations. Approaching such a situation is if there is thinning due to competition between individuals who relative tight " . Random dispersal patterns occur when environmental conditions are uniform and not the tendency of individuals to segregation. Satria (2010) also states that "Random distribution pattern occurs because of lack or absence of attraction or repel between individuals in a population." This situation will adversely affect the population as reproductive activity becomes low and the presence of the wild population becomes weaker or less sturdy.

Pattern of spread is influenced by several factors, namely the availability of food, subtract as habitat where life, the influence of ecological factors such as physics, chemicals and environment and adaptation strategies and biological interactions among populations that exist in the community (Budiman, 1981 in the Adi et al, 2013).

7. Conclusions

Types gastopoda contained in the intertidal beach Pulot Leupung subdistrict, Aceh Besar district found amounted to 19 species of gastropods than 11 families total number of individuals was 448 in three observation area. The pattern of spread of gastropods in the intertidal beach Pulot Leupung subdistrict, Aceh Besar district mostly spreading pattern is uniform which consists of twelve species, while seven species are random. The value of diversity index (H') type of gastropods in the intertidal beach Pulot Leupung subdistrict, Aceh Besar district ranged from 1.774 to 1.044. Diversity index included into high category contained in region B namely 1,774 whereas in areas A and C included into the medium category. Uniformity index value at the study site ranged from 0.34 to 0.20.

References


EDUCATION OF PRIMARY SCHOOL TEACHERS (PGSD) STUDENTS OF
SERAMBI MEKKAH UNIVERSITY BANDA ACEH

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ABSTRACT

The Application of Metacognitive Strategy can help students in order to be used to planning, controlling and reflecting every cognitive activity that they have done; so that they can improve their knowledge in solving a problem. Teacher is an educator as it is stated in National Law No.20, 2003 which also as an important factor in the process of teaching and learning and also a humane aspect in determining education success (Fasli & Dedi, 2001). Educators are professional experts that have to make lesson plans, do and assess teaching and learning process, do counseling and training as well as conducting research and public service especially for university educators. National Law No.20Th.2003 about National Education System section 37 states that Math is one of obligatory school subjects in primary and secondary schools. The objectives of this research are: (1) To have an instrument through metacognitive strategy which equipped with lesson plan; (2) University student manual booklet of teaching fraction in primary school through Metacognitive Strategy; (3) University student worksheet; (4) International proceeding. The sample of the research was PGSD students of Serambi Mekkah University. For university students, it is hoped that they can put into practice for their future students in primary school especially in learning narrative Math questions. The research is done in five stages of Plomp development which modified by combining stage of materials development (product) by Nieveen with concerning on quality aspects, they are validity, practicality, and effectivity (Method). Thus, it is hoped that through this research, it can result in an assessment of narrative Math questions which also assess the entire aspect of Math.

Keywords: Metacognitive, Primary school fraction materials, PGSD, Math teachings.

1. Introduction
1.1. Background

Educators are professional experts that have to make lesson plans, do and assess teaching and learning process, do counseling and training as well as conducting research and public service especially for university educators. National Law No.20, 2003 about National Education System section 37 states that Math is one of obligatory school subjects in primary and secondary schools. Math subject that is given in primary and secondary schools meant to provide learners with analytical, systematical, critical, creative and logical thinking as well as to equip learners to be able to work in a group. These abilities are the competencies that are needed by learners so that they would have the ability to obtain, manage and make use of information to survive in changeable, uncertain and competitive situation. A thinking ability can influence the interpretation of stimulus which involves perception, sensation, and memory (Sobur, 2003).

The Application of Metacognitive Strategy can help students to be used to planning, controlling and reflecting every cognitive activity that they have done; so that
they can improve their knowledge in solving a problem. Teacher is an educator as it is stated in National Law No. 20, 2003 which also as an important factor in the process of teaching and learning and also a humane aspect in determining education success (Fasli & Dedi, 2001). In teaching Math, the focus of learning still emphasizes on how to answer and finish questions by using formulas or certain algorithm, so that learners are lack of skill in real problem solving which is the main activity in Math teaching and learning. Thus, in solving the problems or questions learners tend to be passive and wait for the answer from teachers.

1.2. Main Objectives
The main objectives of this research are:

- Manual and instrument on how to implement metacognitive strategy in teaching fraction in primary schools;
- University student manual booklet of teaching fraction in primary school through Metacognitive Strategy;
- University student worksheet on fraction materials for primary school that use The Application of Metacognitive Strategy International Proceeding National Seminar

1.3. The Urgency of the Research
In teaching, a teacher must have at least four abilities; they are pedagogy, personality, professional and also social. Pedagogy is the ability to manage teaching and learning that include the understanding of learners, designing, implementing and evaluating the process of teaching and learning and to put into practice the potential and skill they have. This ability consists of: a) understanding learners characteristics, social, morale, cultural, emotional and intellectuality; b) understand learners’ family background and learners social community and the need of learning activities in multicultural context; c) understand of how learners learn and their learning difficulties; d) provide the way to build learners potential; e) know the principle of teaching and learning theories; f) develop curriculum in order to improve learners quality and achievement; g) develop educated teaching and learning activities; and h) do the evaluation process and the result of teaching and learning (Minister Regulation of National Education No. 16, 2007).

Personality Ability is steady, stable, mature, wise, and authoritative so that teachers can be a role model for the learners. Personality ability consists of: a) performance as a steady, stable, mature, wise, and authoritative individuals; b) performance as a good character and become a role model for their learners or society; and c) able to do self evaluation; d) develop a self lifelong learning.

Professional ability is the ability to master both the subject and the process of teaching and learning in a wide and deeper context with the possibility to guide learners and to sharpen their ability. This ability include: a) have command of the subject they teach and teaching methodology; b) have command in teaching and learning of structure and curriculum subject; c) have command and make use of technology in the teaching and learning; d) organizing the curriculum; and e) improve teaching and learning through research.

Social ability is the ability to communicate with learners, colleagues, and also other people in the community. By having this ability teachers can: a) communicate with
empathy with their students, colleagues and other people; b) have valuable contribution in education not also in the place where they live in, but also local, national and international; c) make use of technology in order to communicate and self development (Minister Regulation of National Education No.16, 2007).

By having all of these skills it is hoped that teachers can improve their ability and promote lifelong learning which in line with period of time. The learners’ condition needs a real concern from teachers especially for their achievement. This condition may have an impact on where some learners do not pay attention to and aware of what they learn. Thus, teachers need to develop the best strategy for teaching and learning which can increase learners' awareness towards their learning. It is hoped that this strategy can be developed through learning activities that adopt metacognitive strategy.

2. Literature Review

2.1. Theoretical

2.1.1 Teaching and Learning

Teachers are educators that can help learners in learning process inside or outside the classroom. Therefore, teachers need to fulfill their job by not only creating fun and enjoyable learning environment but also have to make learners impress towards learning. Teachers also need to think of certain strategy that fits with learning activities and also supporting media as the learning tools. Learning is a process of educating learners by using education principles and learning theories in order to create multi-ways communication; they are teacher and students, students and students and also students and teacher. Teaching is methods that used to pass the information about certain subject to learners in the classroom. Transformation is a new addition towards something that given to learners. From the result of teaching and learning process later on it will create certain changes or transformation that relatively long lasting both in implicit or explicit ways (Shababuddin et al. 2003). Thus, in teaching process there must be somewhat transformation of knowledge that will relatively stays on learners’ mind as a result of learning experience.

2.1.2 Teaching and Learning Approaches

There are two approaches in Math teaching; they are methodological approach and subjective approach (Turmudi, 2001; Wahyudin, 2007). Methodological approach is related to how learners associating the concepts that they have learnt into their cognitive structure which correspond to what teachers have taught them about. This approach is one of the ways that students used in adapting and understanding a concept, which later can bound together with their primary knowledge.

3. Research Methodology

The research is done in PGSD Serambi Mekkah University. The sample of this research was PGSD students (who focus on Math). The development of teaching fraction through Metacognitive Strategy is done by following five stages of Plomp development.
which modified by combining material development stages (product) by Nieveenwhich concerning on three quality aspects, they are validity, practicality and efectivity.

3.1.1 Pleriminary stage

There were many acivities that were prepared on this stage such as the identification and examination of the material, fraction material in primary school, students’ analytical condition, concept analysis, job analysis and determining the criteria of success that will be reached in teaching fraction by using Metacognitive Strategy. The activities above is explained as follows:

a. Front-end analysis,
b. Students’ analysis,
c. Materials analysis,
d. Job analysis, and
e. Competencies analysis

Design stage

This activity is done in the process of designing the instrument by choosing the format that will be used in the research. The next step are:

Creating fraction teaching concept for primary school through Metacognitive Strategy. The basis of this arrangement are the components model (syntax, social system, reaction principle, supporting system, and instructional and side impact), job analysis and topic analysis will be explained based on primary school material of teaching fraction to reach determined sub competencies.

Choosing the media (Students’ handbook of teaching fraction through Metacognitive Strategy. This activity is done in order to determine a suitable media in giving the teaching materials, result of teaching fraction competency, and problem solving. It also meant to show the benefit of as well as to solve daily live problem and to develop knowledge on teaching Math it self.

Choosing the format of instrument

The selection of instrument format for teaching fraction concept is adopted from Life Science model(Daniel, L., Ortleb, E. P., Biggs, 1995). This selection is dealing with the content, selection of teaching strategy and elementary learning resources.

Implementation stage (construction)

This stage is the next step of designing stage. At this stage, there will be prototype 1 (pleriminary) as the realization of previous design. The constructions result are then carefully observed to see whether supporting theories have been meet the criteria and well implemented in every component so that it will be ready to test its validity by the experts which will be test from theoritical and rational point of view and also the constrcution ofits consistency.
**Test, Evaluation and Revision Stage**

These activities were done when validating the fraction teaching instrument concept in primary school through Metacognitive Strategy that describe as follows:

Seek for experts and practitioners consideration of feasibility, function concept, matrix and derivative base economical context (on prototype 1) that has been made before. Instrument such as validation sheet which is given to validators.

Do an analysis towards validation result. If the analysis result shows the following:

1. valid without revision, it means the next step is to test the concept in the school (teaching and learning process).
2. valid with little revision, it means that the next step is to do the revision and then continue with testing the concept in school.
3. Not valid, it means that the whole concept need to be revised in order to have a new prototype. Then, the step is going back to activity (1), that is for experts and practitioners consideration. Here, there is a possibility to create a cycle (repeatedly validation activity) in order to have a new valid model.

**Place of Research**

The place of this research is in Serambi Mekkah University, Banda Aceh with the sample of this was PGSD students (concentration on Math). To measure the success of this research:

Fraction teaching in primary school through valid Metacognitive Strategy, handy, and effective which is showed by positive responses from university students toward teaching and learning process that had been done by the lecturer in school.

The accomplishment of PGSD students learning result (concentration on Math) on fraction teaching in primary school through Metacognitive Strategy, which is measured by using assessment rubric in school.

**The Execution**

The implementation of teaching fraction is done to see how far the practicality and effectiveness of the use of instrument in teaching. Based on the experiment and data analysis, it’s then decided to do the revision. The activities include (1) conduct an analysis to the data gathered from teaching and learning process, and (2) to do the instrument improvement based on the data analysis.

The operational activity in developing teaching instrument, in every stage teaching equipment and research instrument is systematically drawn in picture 3.1.
Picture 3.1 The system of Teaching Fraction in Primary School through Metacognitive Strategy
4. Conclusion

Based on the findings and the result of data analysis, it can be conclude that the set of learning device that developed were: (1) students’ handbook (BPM) of teaching and learning fraction in primary school through metacognitive strategy (2) Students’ worksheet (LKM) (3) Lessons plan (RPP), teaching and learning fraction in primary school through metacognitive strategy. The students of PGSD USM (focus on Math) understand the standard competency that meets the criteria of validity, practicality and effectivity.

Students’ handbook is designed based on the characteristics of metacognitive strategy learning model which include basic standard competency in the curriculum. The expected objective in every learning activity is the attainment of changes behavior or the improvement of students’ competency that involved in learning fraction through metacognitive strategy. Students’ handbook is designed in order to help students in understanding the fractions concept (1) The handbook introduction is the primary knowledge on certain materials (2) The development of cognitive skill allows students to solve cognitive type problems (3) The development of metacognitive skill is based on students ability in finishing metacognitive type problem which was given to them at the first step of this process which later in problem solving activity will follow certain steps; they are planning, observing and reflecting. Before it is implemented, firstly students were given cognitive type questions. Then, in metacognitive skill activity it also follows the same steps that are planning, observing and reflecting. By following these steps there will be a control process toward cognitive activity and given question.

Students’ worksheet (LKM) is designed based on the characteristics of metacognitive strategy which highlights the purpose of learning; that is the attainment of changes behavior or the students’ competency after the process of learning. The media that are needed in this process are: audiovisual aid, ruler, archer’s bow and compasses, answer key from students’ handbook and follow up. It is hoped that answer key contain all answers to each of question. The follow up section contains follow up questions that have to be extended by lecturers.

Lessons Plan (RPP) is designed based on the characteristics of metacognitive strategy which include procedure and learning organization in order to reach a basic competency that already determined and explained on the syllabus. The learning steps activity include introduction in which lecturer draw on students’ preliminary knowledge that related to the materials given, the development of students’ cognitive skill that provide opportunity to handle metacognitive type questions, the development of metacognitive skill is based on students ability in finishing metacognitive type problem which was given to them at the first step which later that followed by planning, observing and reflecting and closing section where lecturer directs students to make fraction summary.

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MATHEMATICAL DEVELOPMENT OF CHILDREN THROUGH CREATIVE CURRICULUM

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ABSTRACT

Early childhood have the potential to be stimulated so that it will grow and manifest in him. One development that should be stimulated is mathematical development. Mathematical development of children is crucial to cognitive development. It becomes very important, so it should receive appropriate stimulation in the development. Teachers should have the right way to develop the math skills of children, one way is to be made by the teacher is creative curriculum. Creative curriculum prioritize the learning process rather than results. The process of learning through discovery process until it becomes knowledge. Child's math is done through the creative curriculum, which is a process of learning that reaches knowledge discovery counting.

Keywords: Development, Mathematics, Creative Curriculum

1. Introduction

Science is man's attempt to understand the symptoms and the facts of nature, science is always associated with the development of today's developmental technologies faster and faster, and require human resources able to face all the problems and is ready to adjust to the new situation. create quality human resources and realize the whole person, then education is obliged to prepare a new generation that is able to face the challenges of the coming age. Education should start from an early age, because this period is a golden period (gold age) where early childhood education is the most important period in the formation of the brain, intelligence, personality and other aspects of development. This condition according to the National Education Law No.20 of 2003 on Early Childhood Education, article 1, paragraph 14 states that: Education is a conscious and deliberate effort to create an atmosphere of learning and the learning process so that learners actively developing the potential for him to have the spiritual strength, religious, self-control, personality, intelligence, noble character and skills needed him, society, nation, and state. Restrictions on early childhood among others submitted by the NAEYC (National Association For the Education of Young Children) which states that early childhood is children who are in the age range of 0-8 years, which is included in the educational program at the day care, day care children in the family (Family Child Care Home), preschool education either private or public, kindergarten and elementary school. (Anita, 2012). The structure of the learning program in kindergarten includes field development and the behavior of the formation of basic capabilities implemented in play activities, a gradual, continuous, and is habituation. The development of the formation of behavior is an activity that is carried out continuously in a child's daily life, including religious and moral values, and social emotional. While the field of basic capability is an activity that is prepared by teachers to improve creativity in accordance with the stages of child development, namely the development of language, cognitive, motor and physical art.
Cognitive development aims to develop children’s ability to think in order to be able to find a variety of problem-solving. These numbers emblem development aims to develop children’s cognitive ability to be able to process the acquisition of learning, can find a variety of alternative solutions to problems, and can help children improve math logic. The development of early childhood mathematics is part of a child's cognitive development. Mathematical development of children are at the stage of introduction of the concept of numbers, numbers concept of numbers and symbols, and math as a child mentioning numbers 1-20, imitate and emblem sort numbers 1-20, connecting the emblem or insignia pair of numbers with objects. Through creative learning can affect the ability of children in the learning process as a child may be able to focus, and develop upon ability to think. Fadillah (2012) states that the cognitive, namely, action know or think of a situation in which the behavior occurs. Cognitive the view that a person's behavior is more dependent on the insight of the relationships that exist in the situation. Susanto (2011) is the cognitive ability of individuals to connect, assess and consider an event or events. Cognitive processes associated with that mark a person's level of intelligence with various interest primarily addressed to the ideas of learning. With the development of cognitive abilities of the child, the child can connect, assess and consider an event or events that faced in everyday life. Based on the above opinion can be concluded that cognitive abilities can be regarded as covering all forms of recognition, awareness, mental understanding of the individual self is used in the interaction between the potential ability of the environment such as: the activity of thinking, build understanding and knowledge, and solve problems.

2. Math Child development

Mathematics is an abstract system organize and sort. Mathematics is something to do with ideas or abstract concepts are arranged hierarchically through the reasoning that is educative, whereas mathematics in early childhood is learning about math concepts through play activity in everyday life and are scientific. Mathematics is something to do with ideas or abstract concepts are arranged hierarchically through the reasoning that is educative, whereas mathematics in Early Childhood Education is learning about math concepts through play activities in daily life and scientific. Susanto (2011) says that Mathematics is a way of learning to manage the person's mind with the intention through this math one can organize his thoughts. Musfiroh (2005) reveals, mathematical intelligence relating to the ability to work with numbers and or using children’s cognitive skills. Children who had the ability to manipulate mathematical intelligence interested in the environment and tend to like to implement a strategy of trial and errata, they like to guess something. To improve children’s intelligence math, the teacher can give a game associated with the game of logical thinking or problem solving (problem solving).

Ministry of Education (2000) count is part of mathematics, necessary to develop numeracy skills are very useful for everyday life, especially the concept of numbers that are the basis for the development of mathematical ability. Meanwhile, according to Susanto (2011) that the count is the basis of some of the science used in every human life. At this time the child is at the stage that the child count counting beginning with objects from its immediate environment and a pleasant situation. Based on the above it can be concluded numeracy is the ability of children to recognize, understand, and be able to demonstrate the
numbers of children to answer some of the questions that will be useful in everyday life. Ministry of Education (2000), counting activities aimed so that children can have the following capabilities: 1) to think logically and systematically early through observation of concrete objects, pictures or figures that are around the child, 2) Can customize and involve themselves in social life in daily require skills in numeracy. Suyanto (2005) the purpose of calculating early childhood learning as logic mathematical or learn to think logically and mathematically with a fun and uncomplicated. Based on the above opinion can be concluded that counting aims that early childhood is able to think logically and systematically in daily life in a way that is fun and uncomplicated. Creative Curriculum in Learning Child The process of learning in early childhood learning is a process that can provide stimulation to every aspect of the development and potential of the child. The concept of learning for children can be done through doing direct and packaged in the form of games (Suryana, 2013). Play is exciting activities, fun, and raises the enjoyment for young children. Through play children acquire a way to learn and experiment about the surrounding world. Saraswati (2009) Play is a very important activity for the development of children. By playing, children can develop emotional, physical, and cognitive growth. Playing is a way for children to learn about their bodies and the world. At that time they will use its five senses. Play is a means to train the skills possessed child to become a competent individual that involves all the senses and arouse one's intelligence plural and is a vehicle for learning about how to learn. Tools educational games for early childhood education is a means which plays an important role to assist and support the educational process better, interesting and clear. Numeracy is a way of learning to name a number, then use the numeric names to identify the number of objects. According to Susanto (2011) that the count is the basis of some of the science used in every human life. At this time the child is at the stage that the child count counting beginning with objects from its immediate environment and a pleasant situation. Creative curriculum is the curriculum that can stimulate aspects of child development to realize any potential rehabilitated and reconstructed by the learning process fun and being able to develop the ability to think. Creative curriculum children gain knowledge through interesting activities and fun. Creative curriculum more priority to the learning process, not merely to achieve learning objectives. The learning process is very important in achieving the learning objectives interactive communicative (Dodge, 2009). Mathematical development of children through creative curriculum by developing children’s communication with other children, the interaction of children with learning media, tools and facilities that support the children’s learning activities, and is able to develop the ability to think of children, such as the ability to remember, understand, apply, analyze, evaluate and create.

3. **Creative Curriculum in Mathematics**

Development National standards in mathematics (NCTM, 2000) describe what children should learn in kindergarten. The main component of mathematics including: Concept figures; Patterns and relationships; Geometry and spatial sense; Measurement; Data collection, organization. Numeric is a basic mathematical concepts. These concepts evolve gradually over time the children explore, manipulate, and organize materials and when they communicate their mathematical thinking with adults and peers. Children are
said to have a reasonable figure when they have a good intuition about numbers and their relationships. As children get a sense of numbers, they understand, for example, what is "three" really means, and the "trinity" may be represented by the number "3", the word "three" or a set of three objects. They began to explore the relationship between quantities as more, less, and equal. Calculating is one of the emerging concept of the initial amount. It started with the development of verbal counting skills or rote counting sometimes numbers. Rote-memorization means of finger counting sequence, and rhymes that involve numbers. Contact means connecting one, and only one, a number with each item in a set of objects.

This technique should be modeled through the daily routine, and often must be taught directly. Sometimes children count objects twice. Model strategies to help children keep track of what they count by showing them how to move every object to the side after they had calculated it. Figures concept, summation, Numbers and Symbols Mathematics starters is an ability that can be mastered by a child in solving various problems encountered in everyday life. It is concerned with the patterns, sequences, classification, size, number concepts, one-to-one, the concept of geometric shapes, making estimates, as well as data processing simple by manipulating the media and using the concrete before operating the abstract symbols, as well as interaction through play. Classification capability is intended for children to categorize objects around them by type, function, color, or shape, such as a child's play group the objects are red and yellow in the classroom. Correspondence is an ability in which children can connect objects in accordance with their partner. This activity can be exemplified by the activity of a child's play when pairing shoes with socks, spoon with a plate, or a chair with a table. Sort the pattern is the ability of the child to know and follow the patterns that exist nearby in sequence. When there is a sequence pattern pencils, crayons, and paper, then after the child can sort the paper back by putting pencils, crayons and paper afterwards. In linking the concept of number of children expected to calculate the objects and connect it with the symbol of the corresponding numbers. Recognize geometric shapes in children early childhood is the child's ability to identify, designate, mention and collect objects around based on geometric shapes. On the ability to measure, children are expected to know the concept of the size of the informal or natural, such as using the span, steps, rope, stick or stick to measure the length, width, height or body. In the course of the estimation, the child begins to learn to make predictions logically well on a simple event, the composition or the number of objects in a container. While the ability to construct a simple statistical data is an opportunity for children to develop the skills of comparing the amount and probability of observation of some objects. Stages of Learning Mathematics Learning math is hierarchical, thus mathematical skills development activities beginning in kindergarten also need to be done gradually. Lorton tried to show the importance of these mathematical concepts introduced in children aged 4-5 years. This development is commonly referred to as the stimulation of mathematics beginning in kindergarten. Lorton based on Piaget's theory that shows how mathematical concepts are formed in children. According to him, the mastery of mathematics always go through three levels of suppression stages, namely: Level of understanding of the concept, the child will understand the concept of experiential activity / activities with concrete objects; Level transition, the process of thinking which is the
transition from the knowledge concrete towards the introduction of abstract symbols, in which the concrete object was still there and started introduced symbols. It form teacher should be done gradually in accordance with the child’s pace and speed capabilities that individually different; Emblem level numbers, the last stage in which children are given the opportunity to know and visualize the numbers emblem on concrete concepts that they understand. There are times where they still use concrete tools until they release themselves. Playing in Learning Playing is an activity that is carried out with or without the use of tools which generate understanding or provide information, give pleasure, without any coercion or pressure from outside, and are able to develop various potential in children. Suryana (2013) tried to classify the activity of playing on the order of school. Playing in the school can be described as a series that originated range of free play, play with guidance geared up to play. Free play is an activity where children can play in any game activities they like spontaneously and without the participation of teachers in it. Children are free to determine the tool of the game, play time, location, and also friends who are involved. In this case, the teacher only as a facilitator at the school. In the second phase or phases of play with the guidance, the teacher began to have little role in the game that can determine the type of game and the game provides a tool to be used. However, teachers are not involved any further when children carry out the game. There is a certain moment the teacher can help or a little advise when children have difficulty. Moreover, teachers are expected to better appreciate how the child in conducting the game. In the play activities are directed, role and greater teacher involvement. Teachers who will determine the type of game, the tools used, the rules, the location as well as the players. Nevertheless children can still enjoy the activities or feel pleasure. The important thing to note is the saturation point of the child during play, because almost all of which is determined by the teacher passed or not freedom of the child. Media in Learning Mathematics Starters Media varies greatly affect the creativity and speed of children’s understanding of mathematical concepts. Teachers can select media that is readily available, safe, and can be used with a variety of different ways. Provision of media does not always have to be at a great price, enough with simple models and usually found by children in daily. Ada several categories to classify the types of media that can be the beginning of mathematics developed in accordance with the stages of child’s understanding. As revealed by Lorton, beginning math media category consists of three phases, the first manipulative media (media concrete), subsequent pictorial media (semi-concrete), and the last is symbolic media (mathematical symbols). In implementing the learning of mathematics beginning in kindergarten, teachers need to provide the media with manipulative. The media duly adjusted to the level of readiness or maturity of the child at her age range, can be manipulated and varied so pleasant and rewarding for children. Provide the media also does not have to be expensive, teachers and parents can obtain it from the objects around the neighborhood children. However, media should still be considered hygienist, so do not bring disease in children and is not harmful to them. Not a sharp object, does not contain the element of fire, as well as non-toxic. Another important thing to consider in providing these media is not only an attractive appearance that is preferred, but the significance of which can be obtained by children, especially in terms of improving the mathematical ability of their starters. Quantity is the overall concept (knowing that the last object counted
represents the whole object). Three children to bring you a cake and he brings you all three not only third cookie count, she may have an understanding of quantity. A child whose understanding of the sequence numbers to know whether he counted three cookies row from left to right or go in a different order, the numbers are still three. Make a comparison involves knowing the meaning of terms such as more than, greater than, less than, and just as much. Children can learn the names of numbers without knowing what the symbols represent.

The concept involves looking at the number symbols, such as 3, and associate that number with three objects. Symbols figures only have meaning when they are introduced as a label for the number. Instead of teaching children to recognize numbers in isolation symbols, connecting symbols figure for the quantity. Note that it takes five spoons to fill the cup; Predicts it will take 10 blocks to make a fence, then count to see if the prediction is correct; Examples of five children and then look at the table with five plates, napkins, and forks. Pattern is a regular arrangement of objects, shapes, or figures. Pattern recognition allows children to recognize the relationship between the objects and then make generalizations about the combination of numbers and counting. Recognize patterns and relationships not only important mathematical goal but one that children will use science and literacy. For preschoolers, the goal is to identify and analyze patterns of simple, copy them, create them, and make predictions about them by expanding them. Preschoolers can easily understand the concept of recognizing simple patterns. When you "read" pattern-red beads, blue, red, blue, children can join in. After recognizing simple patterns, they can copy the patterns they see or hear. To extend the pattern, children should look for what comes next and continue with consequence. They can also create your own patterns, but often the rules that they make inconsistent.

Preschoolers Demonstrate understanding of patterns and relationships in the small car line up, red, black pattern of red, black, red, black, sponge painting patterned border around the image, creating rhythmic patterns such as clap-clap-snap, clap-clap-snap; create patterns with each cube (white, blue, green, white, blue, green). Geometry and Spatial Geometry and space intelligence to understand the forms and structures in the environment. Children learn and use their knowledge of two and three dimensional shapes when you give them a chance to create a design with pattern blocks, draw, paint, and cut out shapes in their artwork; returning the block to the rack with sorting them; and find shapes in the outdoor environment. First, children learn to recognize simple geometric figures such as triangles, circles, and squares. Furthermore, they learn the characteristics of shape (eg, a square has four sides).

At higher levels, they began to apply reasoning because they work with the form (for example, because it should be a triangle has three sides). Use geo board create geometric shapes with rubber bands; say. "You put your horse in the fence. I will make mine leap over the fence."; Note that the bubble looks like a circle; Use empty boxes, and containers to build a playground of imagination focus measurement measurements in preschool activities is on developing an understanding about principe and measure principles. Children learn the measurement of the opportunity to use the material and participate in hands. As a first step, the child makes comparisons without measuring tools.
Using the materials you provide to play, and slow. Furthermore, children use measures such as non-standard shoes, rope or ribbon, or even hand to measure objects. Formal instruction in measurements using standard measures such as hours, rules, scales, thermometers, and then measure times cups made, usually towards the end of kindergarten and primary classes. However, if the thesis of measuring instruments are made available to children, they will explore and they play and investigation. Be aware that only a short time left to clean up when the teacher turns over the sand timer; measuring table using the block unit; calculate how many cups of sand required to fill the bucket; use a piece of tape to measure the length of the carpet. Data collection, organization, and picture Data collection, organization, and the picture in preschool involves sorting, grouping, graphing, counting, measuring, and comparing. As part of the gathering, the children can begin to sort out and make a set with every plain in mind. Then they are even more deliberately, with characteristics such as color, shape, or size. Children develop and improve their sorting skills, they can sort out with more encouraging them to talk about the rules of sorting. Graphic is a direct extensive sorting and categorizing. A graph presents information in a way that is visually organized to help children to see the connection.

The graph is a way for children to display various kinds of information in various forms. Simple graph of the wear shoe types can develop from representative concrete for one symbolic; Concrete shoes with ties, Velcro, or buckles, and slip-on shoes; Symbolic - images that represent the type of shoes; After the children make a graph, they can use it to analyze and interpret the data. This step involves comparing, counting, add, and subtract, and use terms such as greater than, less than, equal to, and not equal to.

This graph was made after the child in the classroom collecting leaves in the street-road. For help children interpret this graph, the teacher can ask this question: What this chart tells us?; Leaf types which we collect mostly?; The leaves are not we in the same amount? How do you know that?. Linking Mathematics Content, Teaching, and Learning In a creative curriculum, mathematics content is presented in a way that preschool children learn. The data below shows how to connect the content of mathematics, teaching, and learning. The first column shows the contents of mathematics to preschool. The second column shows some of the many ways teachers can present this content effectively. The last column in the Developmental Continuum Lists goal you have to watch for activities, you will be able to observe to determine what kind of math in presenting content and methods to be used. Concept Number (Understand numbers, how to represent numbers, and relations between numbers). What can teachers do? Teach children counting songs, poems, and cants "1,2,3,4,5, I catch live fish. Calculate for the daily activities of children now, the cup is required for each child, brush needed for every child to compare container. Push the relationship between the number of "We have more red or cap blue cap over ?. Creative curriculum objectives: Viewing objects and events; Flexible approach to the problem; Compare / measure; Use numbers and counting. Patterns and Relations ships (admit, copy, extend patterns, make predictions about patterns in the environment). What can teachers do?: Clap hands and then tapped into the shoes of wood (clap, clap, clap, clap). Then move to more complex patterns (clap, clap, hats, clap, clap, hats); Create a "pattern man" with children (standing, sitting, standing, sitting) and help them describe the shoes of the timber; Drawing attention children `various
patterns in the neighborhood." I see a pattern in your day-red shirt, blue, red, blue. "; Describe the pattern you see the children create." You make a pattern with square blocks, triangle, square, triangle. "The purpose of the creative curriculum: Viewing objects and events with curiosity; flexible approach to the problem; Classifying objects; Compares.

Geometry and Spatial Sense. Recognize, name, build, draw, explain, compare and form a sort of two-and three-dimensional; known and describe spatial relationships. What can teachers do?: Talk about the geometry of the children using the blocks; Provides empty boxes, tubes, and containers for children to use in creating and construction; Describe your spatial relationship watch-child play. "You put the horse in the fence that was made." Creative curriculum objectives: Viewing objects and events with curiosity; Flexible approach to the problem; Classify objects; Compare / measure; Shows awareness of position in space; Express themselves using words and expanded sentences.

Measurement. Used, non-standard and make comparisons. What to do ?: teacher explain to children how to use the object; Use timer sand or kitchen timer to let the children know that there are only five minutes left until the clean-up time; Ask open-ended questions during the time of measurement: "I want to know how many cups your jug of water."; Use words such as before, after, then, yesterday, today, tomorrow the whole day. Creative curriculum objectives: Viewing dress up event with curiosity; Flexible approach to the problem; Classify objects; Compare / measure; Arranging objects in series; Shows awareness of the concept of time; Use numbers and counting.

4. Conclusion

Creative curriculum provide the right solution in the development of mathematical abilities of children. Teachers will be on duty to observe, guide, and assess children’s learning is an ongoing process. Teachers gather facts, analyze and evaluate what they say about the development of mathematical abilities of children, and then use the information learned teachers to plan for each child and for a group of children. Teachers then implement teaching plans, continue to observe and document what the children, and the cycle goes.

References


This thesis generally discussed the social change and its relationship to the practice of Islamic inheritance. This study aims to investigate the impact of the social change in altering the inheritance law. Data for this study were gathered through various Islamic literatures, books, articles, seminar papers and other related materials. The findings of this study revealed that the social change has influence on the altering of the Islamic inheritance law within the community. However, the change was limited only for the law that was resulted from maslahah al-mursalah, as wasīyyat al-wajībah problems that have been legislated laws in Muslim countries, not the qat’i laws as it was originally coming from the divine source. As this study has several limitations, it was recommended that future studies need to examine this matter more comprehensively due to some deficiencies in its application such as the use of fiqh and ushul methods.

Keywords: Social change, Law change, Wasīyyat al-wajībah

1. Introduction

Social change is defined as the change within community which alters that particular society. However, some social scholars give different point of view in what aspect caused the alteration in society. In a dominated Muslim society, the social change has occurred in the way people split the inheritance. People divide their wealth or property based on the cultural background from generation to generation; somehow, it triggers the disappointment for some heirs. However, according to them, if the inheritance law is based on Islamic scholars in fiqh mazhab, there will be discrimination between heir and heiress.

The Islamic scholars acknowledged that the inheritance division has been settled in Al-Quran and the supplementary explanation has been delivered by our Prophet through hadith. In Islam, the heritage division has had a strong foundation. Some verses in Al-Quran have often mentioned by Islamic scholars as the basic rules in heritage sharing, they are found in Surah an-Nisa’ verses 7, 11, 12 and 176. Additionally, the source of inheritance has also explained by hadith. According to Ahmad Rafiq, Imam Bukhari explained about Islamic law of heritage in approximately 46 hadith while Imam Muslim had 20 hadith. (Ahmad Rafiq, 379) Islam, through Al-Quran and hadith, has provided detailed regulations in sharing the inheritance, therefore, most of Muslims believe that the rules have been settled and cannot be changed. Yet, the development in Muslim society and its relation to social change has limited the juristic resources of inheritance when they are only based on certain requirements. The Islamic scholars think about several requirements which are not opposed by Islamic. The requirements are made in order to give benefits for the humankind. It is due to the fact, most of Muslim society do not want to follow the Islamic law in heritage sharing when they deal with social behavior. They prefer sharing the property without looking at different sex. This reality has been found in some societies
who are considered to have a strong Islamic base such as South Sulawesi, South Borneo and Aceh. (Munawir Sjadzali, 1993)

It can be concluded that the cause of differences in splitting the inheritance is the social changes happened within society. This social change is caused by the equity factor between male and female. Somehow, this factor also becomes the issue of injustice between heir and heiress while the roles in acquiring social needs have been conducted together.

2. **Definition of Social Change**

Social change is defined as the alteration in community from one life phase to the next phase. This is a phenomenon often found in a society. Social change can be in found in modification, social institution or lifestyle. The change is important in social behavior. (Samuel Koening, 279). By the time, people change continuously and it occurs to provide the solutions for each of social needs. (Muhammad Khalid Mas’ud, 44). Therefore, it can be said that the social changes go along society-based problems such as demographic issues (the change in the number of population or the society movement from one place to another place), economic issue (poverty) or industrial issue (farmers shift to be labors).

Furthermore, some social researchers have given different notions in defining social change, such as Keoning who believed that social change refers to modifications in lifestyles which caused by both internal and external factors. (Samuel Koening). Additionally, Kingsley Davis said that social change is the change in community’s structure and functions. (Kingsley Davis, 1949). Social change is a part of cultural change. For example, if there is a labor organization in a capitalist society, it can influence the relationship between labors and owners where it causes the modification in political belief. (Elly, M Setidi and Usman, Kolip, 2011).

Social change is also understood as the change occurred in society from one life phase to the next phase. Generally speaking, social changes can be said as social movement to a better or worse life phase and the outcome of social change portrays the movement that has been taken by that particular society. At the end, the society is pushed to adapt the new life or they try to bring back the previous situation. It all depends on the society itself. (Rozalli Hashim, 2005). Hans Gerth and C. Wright Mills identified social change as the change in social structure: the roles, the institutions, and the growth of social community whether from the aspect of social institutions or social roles. (Hans Gerth and C. Wright Mills)

According to Robert M. Maclver, social change is “meant change in social relationship”. (Robert M. Maclver, and Charles H Page, 1969). Ronald Edari added that social change happens within social institution and it affects the social relationship from year to year. (Ishomuddin, 1996). The social change also refers to the change in new norms which are considered as resources for the unity of society. The change is seen as the solution for the new needs found within community where the norms are considered more appropriate in building and expanding the relationship with new community. (Ishomuddin, 1996)
Instead of those theories, there are more social science experts who define this concept. However, all of those definitions show how a society can be easily influenced by different factors which bring to the social change.

According to Steven Vago, different approaches are made to reach an ultimate unity. In short, it can be seen that the concept of social change is a social phenomenon on which occurs qualitatively or quantitatively and conscious or unconsciously as well. (Steven Vago, 1989). The quantitative change occurs in social structure which affects the roles and function within society. (Rozalli Hashim, 2005). Therefore, it can be sum up that the notion of social change is defined as every alternation happens in structure, function, lifestyle and behaviour of society which influence social system and this change will bring the outcomes for solving social problem by creating the new value, function and norms in society.

3. Social Change and Its Relation to Inheritance Division

History has shown that the socialization of inheritance division is not only based on Al-Quran and hadith. These two resources are the main references in Islam, particularly during the life of the Prophet Muhammad (Peace Be upon Him). After the death of Muhammad P.b.u.h, there has been increasing number in Al-Quran and hadith interpretation especially in understanding the Islamic law. The social change has happened in every place and country, consequently, the law system in some Muslim countries does not strongly follow the law anymore. There are some changes made in heritage sharing especially the rights which are related to fatherless grandchildren also known as the heir representative, also there is possibility to get a daughter block the family from one lineage.

Five countries have had the answer to the problem of heritage sharing to those fatherless grandchildren, they are Egypt, Iraq, Pakistan, Tunisia, and Syria. The law of heritage in Egypt (1946) is taken care by an institution called wasīyyat al-wajībah (obligatory testament); the heirs are considered to give testament directly to the fatherless grandchildren. The portion of the property is as much as the right that should be received by the father or –at least- a third of the heritage (a maximum number). In Tunisia law (1959), instead of applying the rules of this wasīyyat al-wajībah, the daughter also possible to prevent the heir from this line. (N. J. Coulson, 1971). Then, Pakistan law (1961) also accepts the substitute heir, but only those who are the lineal descendants; males or females. Yet, it is different from the laws in Syria; wasīyyat al-wajībah is only for heir and heiress not the ancestor from the female’s lineage. (N. J. Coulson, 1971).

The change of heritage division in Egypt is the right for the fatherless grandchildren, which are prevented to get the ancestor rights through the testament. The testament is legally called wasīyyat al-wajībah. Egypt law number 17/1946 manages this issue in its chapters: 76-79, (Sayyid Hasan al-Baggal, 1979) the translation is: The official description of the laws mentioned that the pressure to include those chapters are due to the complaint from the fatherless grandchildren who do not received their heritage portion as they are blocked by their father’ siblings.

Even though people usually make a will to the fatherless grandchildren, death is something that is unpredictable and sometimes people has not had time to tell their will.
Therefore, the laws accommodate this unspoken will and consider it as has been said or noted.

According to Abu Zahrah, it is often found that the fatherless grandchildren live in poverty while their father’s siblings usually have a good socio economic life. Those children are suffering as they lost their father as well as their rights in heritage division. Sometimes somebody is going to have a will for them but unfortunately he/she passed away before doing so. Consequently, the laws take over this will which is not known by 4 Mazhab (sects), but. It comes from some opinions of Islamic scholars. (Abū Zahrah, t.t). Based on 4 Mazhab, it has been decided that the law of family’s heir who do not get the heritage is sunnah. (T.M. Hasbi ash Shiddieqy, 1973). This is based on the verses in Al-Quran related to heritage division which has discussed the heritage rights for parents and other family members. Furthermore, looking at history, Prophet and most of his companions (sahabat) did not give the will for their family member.

Most of Islamic scholars reckoned that the obligation to give testament will remain especially in solving any duties that have not paid yet such as debts, Zakat or kafarat. This obligation has characteristics as ta’abudi and not qada’i, it means that the person will be sinful when he/she does not do it. Yet, the court or the family does not have rights to force the testator to speak his/her will.

According to Ibn Hazm, when somebody dies before giving the testament, the family of deceased should give some of heritage portion to charity and the portion is considered to be just right. Ibn Hazm, furthermore, stated that to the family members who do not have the share due to the difference belief, slavery or they are blocked. They do not have the provision in the amount of the property they will get. So, it refers to the family considerations as long as it still in a third of inheritance portion. However, Ibn Hazm limited the number of the deceased family who receive the share. If the excluded family members in inheritance sharing are a lot, so he should inherit to –at least – three people. (Ibn Hazm, t.t).

From the explanation above, it can be conclude that there are two kinds of testament: the obligatory testament and the sunat testament. The obligatory testament is for the family who are excluded in inheritance division, while the sunna testament is up to the wish of the testator. Moreover, the testator is free to choose the family member who will receive the will limited to three people only. When it is compared between the Egypt laws and Ibn Hazm’s opinions, it can be seen that the laws take Ibn Hazm’s point of view as the reference in relation to inheritance sharing. Yet, talking about who will get the inheritance or how much she/he get, it depends on the law decision. Ibn Hazm said that the heritage can be given to all the family or it can be limited to three people. On the contrary, according to laws, the heritage is only be given to those who tied by blood (have cognition relationship), there is no wasiyyat al-wajibah for the elders and the kins. Ibn Hazm stated that the minimum amount of wasiyyat al-wajibah is only two –thirds (2/3) of inheritance, while the laws only give less than the permitted heritage division or more than a third of inheritance. (Al-Yasa’ Abu Bakar, 2012).
From those reasons, the laws consider Ibn Hazm’s opinion based on the social need of Egyptians. Based the explanation above and also the laws in former years, there are no discussion and dalil that become the foundation of these laws. (Abu Zahrah, t.t).

Coulson named the Egypt law adoption as quasi ijtihad. The possibility to use the new term because the law is considered as the new issue which did not exist years ago (during the life or 4 Mazhab scholars). But, it doesn’t functioned as a full Ijtihad as it still relates to the previous Islamic scholars’ opinions. (N. J. Coulson) Yusuf Al- Qardawiy reflected wasiyyat al-wajibah in the Egyptian laws as the compilation of selected ijtihad and creative ijtihad. When we look at the name and its relation to prior Islamic scholars’ ideas, this refers to selected ijtihad. On the contrary, the content is considered as creative ijtihad by implementing mashalah al-mursalah.

There are distinctive aspects between the Egyptian laws and the Tunisian laws (1959). Wasiyyat al-wajibah is only applied to the grandchildren (second generation) and it is not for the lower generation. According to the Tunisian laws, it is decided that the granddaughters from male’s pedigree are entitled to block the pedigreed relatives and they receive the remaining wasiran from ar-radd.

Therefore, the laws implemented dalil called kalalah in taken from Mazhab Ja’fariyah. For example: among a daughter, granddaughter, mother and siblings (brothers or sisters), so the heritage division will be 3/6 for daughter, 1/6 for granddaughter, 1/6 for mother (total: 5/6). The siblings are blocked by children and the remaining portion (1/6) is given back to daughter and granddaughter based on the share ratio. If the father is still alive, so he becomes the ‘asabah, and automatically it doesn’t need to have ar-radd.

Iraq (1963) implemented the qarabah system from mazhab Ja’fariyah, it means that the clan block the relative from one lineage. However, in application it has two interpretations: when it uses Mazhab Ja’fariyah, so the rules are interpreted based on mazhab Ja’fariyah. On the other hand, when the rules are sided with former mazhab, so they will be adjusted based on Mazhab Hanafi. Somehow, they are different from those in Tunisia where the remaining part of heritage is ar-radd and given to the existing dzawil furud. (Noel J. Coulson, 1971). The more systematic rules are introduced in Pakistan through the Muslim family laws ordinance, 1961; ordinance VIII of 1961, (Tanzil al-Rahman, 1987) the fourth chapter of the laws mentioned:

When there is still a daughter or a son from the deceased, and he passes away when the heritage is intended to be given, so the children received the similar portion to the portion received by their parents.

According to these laws, in inheritance division practice, the grandchildren do not inherit the wealth from their grandfather as they get blocked by son/daughter. Based on the law makers, the blocking rules are based on the former Islamic era as the society tent to be collectively responsible. The eldest male in “family group” is not only responsible for his own son/daughter but also for other family members including the orphans. In the early Islam, they tend to live in one household.

Nowadays, the socio-economic condition is changed; every family tends to form their own households and the responsibility of the eldest males fade away compare to the early Islam. And the rules linked to the blocking family member become irrelevant. When we compare between the renewal laws and Hazairin’s opinion, it can be seen that the change
in laws caused by urgent needs by using *marsaliḥ al-mursalah* reasoning. And they are, however, not out of the existing *fiqh* scope and concept. This is different from Hazairin’s opinion where it is more systematic and fundamental. He tried to think this issue from comprehensive perspective without any bound to both the Fiqh and the Arabians’ framework. According to a theory, the dominant factor in *wasīyyat al-wajībah* is the validity of social change in Indonesia society, (Tom Cambell, 1994) it refers to the bilateral family system which is different from the *patrilineal* Arabian system.

The alteration in the specific practice of Islamic inheritance, show a clear example of a renewal aspects in sharia law. It is due to the fact that the Islamic law of inheritance comes from Al-Quran and hadith, also, the fatwa from Islamic scholars found in Fiqh treasury which is collected in a legally written law of a country. The renewal of sharia law is probably occurred from the dynamic Fiqh and *maslahat al-‘ammah* based on several fiqh mechanisms such as the principle of *siyāsah syar‘iyah*, *takhayyur*, *talfiq* and *hiyal*. (Jasni Sulong, 2011) Apart from the fiqh mechanism, the change of law is also rooted from certain social conditions, like the change of social customs, the alteration in social welfare, the urgent needs, the time development and the emersion of the new systems.

It can be concluded that the change in heritage laws is the *maslahah* of the social change at that particular time and it can guarantee a better inheritance sharing system to the heirs. The change of laws in several places has been modified such as in Syria (1945), Egypt (1946), Iraq (1951), Tunisia (1959), Pakistan (1961), Philippine (1977), and Indonesia (1991).

*Wasīyyatal-wajībah* is aimed to provide a legal system to the poor heirs but they are blocked to get the heritage. (Jasni Sulong, 2011). In one case between Nasir and his siblings (Makkah Grand Court, Case no. 91, vol 1 1380) (Abdul Aziz M. Zaid, 1986). it decided that a third of the wealth from the deceased family member is given to the grandchildren as they need that part compare to others. The change in heritage practice is based on the socioeconomic context. It can be proved that social change occurred by the time and different opinions from sunni, Ja’fariyah and other mazhab in Islamic inheritance practice are based on the intention to reach the justice which may be different from one place to other places. The socioeconomic change happened between husband-wife who works together to make a living also a causal factor of social change in order to fulfill the social needs.

The change in the practice of Islamic inheritance applied in one social structure has been accepted and influenced the social system. This change is not related to society’s growthor regression. The indicators of society development are determined by the social norms and values.

4. **Conclusion**

The change in the law of inheritance division for some Islamic countries in *wasīyyat al-wajībah* are caused by two social change factors: first of all, nowadays, after the socio economic alteration, every main family tends to have their own household and the sense of responsibility of the oldest male for the closest group becomes less compare to this during the first Islam existence. Then, the laws about the barrier become irrelevant.
Secondly, it is the poverty factor. The children who become fatherless often live in poverty while their fathers’ siblings live lavishly. The fatherless children are suffering from both losing their father and losing the rights in heritage sharing. Therefore, it is important for the president to consider these factors as it often becomes the complaint from the fatherless children who do not receive any share in the wealth as they are blocked by the father’s sibling.

It needs to be underline that only law resulted from al-maslahah al-mursalah of these Muslim countries which can be changed. This law is based on al-maslahah al-mursalah theory which alters by the time. Yet, the qat’i law in faraidh stay the same. The portions for the heirs in Islamic inheritance are $\frac{1}{2}$, $\frac{2}{3}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, and $\frac{1}{8}$, those called nasiban mafrudha which are constant and they do not exclude from the existing fiqh concept. To add or to fix some parts in heritage division practice is only the renewal context to keep pace with the change in society.

References


THE MODEL CITIZEN PROJECT TO IMPROVE THE CIVIC EDUCATION SKILL IN DEVELOPING NATIONALISTIC ATTITUDES

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ABSTRACT

One of the learning models to improve the skills of Civic Education in developing students' nationalistic attitudes is Model Citizen Project, which is a portfolio-based learning model. Through this model, students are not only encouraged to understand the concepts and principles of science, but also develop the ability to work cooperatively through learning activities and empirical practices. Thus, the learning will be more challenging, active and meaningful. This study aims to determine the difference between pre-test and post-test results of students adopting the Model Citizen Project in learning process with students who learn conventionally to improve the ability of civic education in developing nationalistic attitudes. The research is based on the theory that the instructional strategies used in this model, basically depart from the strategies of "inquiry, discovery, problem solving, research-oriented," which are packed in John Dewey’s style model "project." In this case, it was determined the following steps: identifying the problem, choosing issues to be studied by the class, gathering information, developing class portfolio, presenting a portfolio, and reflecting the learning experience. This study uses a quantitative approach. The method used is a quasi experimental design with "nonequivalent control group pre-test and post-test design.” In this design, the two groups are not chosen at random. Data was collected using the test questionnaire in pre-test and post-test. The analysis indicates a significant rise in intellectual abilities, an increase in the medium category of citizenship skill, and participatory skills situate between the experimental class and the control class. Analysis of the data shows that students respond positively to learning Civic Education using the Model Citizen Project. From the results above, this study recommends to teachers to practice the teaching Civic Education using the Model Citizen Project because it has been proven favored by students and can improve the skills of citizenship.

Keywords: Project Citizen, Skill of Civic Education and Nationalism

1. Introduction

The effect of long-standing conflict in Aceh has given rise to a new problem, namely the waning sense of nationalism. Those problems will eventually affect the national identity of the nation. If we look today in terms of the attitude of nationalism (as an important element in the growth of nationalism), we had a lot of setbacks. The Acehnese younger generation in particular and the Indonesian younger generation in general have been far from a span of ’45 heroism (nationalistic values or national spirit of our fighters in 1945). This then makes the young generation lost sense of concern for the national day. They need to recall the events of the past colonial.

In answering this question, the skills of civic education can be influential in solving the problems of nationalism, especially for students who live in conflict and post-conflict areas. National identity is closely associated with nationalism. Civic Education skills are believed to be one way to cultivate an attitude and a spirit of nationalism. This opinion seems to correspond to that proposed by Ernest Gelner as quoted by Tilaar (2007: 25) who states that:
Citizenship is a moral membership of a modern society. The membership is obtained through national education and usually uses the language selected as a mother tongue or national language.

Tilaar (2007: 25) argues that education is an important factor for growing nationalism in addition to language and culture. Citizenship education is closely related to the values of nationalism and patriotism. It is not a myth. Because it is substantive that civic education aims to form good citizens, which one of the characteristics is the strong shade of nationalism. Nationalism is an expression of a feeling of kinship within the scope of a nation in the form of awareness and sensitivity to the problems facing the nation, including issues related to the sense of solidarity with the fellow countrymen, and at this point needs to be developed. In this case, it can be stated that nationalism is a belief held by most of the individuals in which they express a sense of nationhood as a feeling that is shared in a nation. Nationalism today is certainly different from the nationalism during the struggle for Indonesian independence, as stated by Cohyo (1995: 30).

Indonesian nationalism is the integralistic nationalism, in the sense that does not discriminate against people or citizens on the basis of class or the other, but above all its diversity continues to be recognized. In short, Indonesian nationalism is unity in diversity (Bhineka Tunggal Ika).

Thus, it can be drawn a conclusion that the pride of the nation and the country itself as well as a love for the homeland needs to be owned, because it is a manifestation of the attitude of a citizen who is ready to fight, to sacrifice and uphold the nation and the country in various fields. Nationalism soul is very important to be owned by any individual, especially the younger generation. However, there is a presumption that says that the younger generation does not have the spirit of nationalism. In fact, some say that there is a spirit of nationalism, but no trigger that can make the spirit of nationalism to appear. Therefore, measures can be taken to stimulate the spirit of nationalism among the younger generation.

Students as younger generation as well as successor to the nation play an important role in cultivating attitude and spirit of nationalism. One of the things that can be done by the younger generation to realize the attitude and spirit of nationalism is to utilize the best possible education, because education is one of the important things in coaching nationalistic attitude.

According to Somantri (2001: 279), civic education has the goal of educating good citizens, who can be described as patriotic citizen of the country, tolerant, faithful to the nation and state, religion, democratic.

Intelligence possessed by citizens must be reflected in three aspects, namely civic knowledge, civic education skills, and civic disposition. In line with this, Wahab (2006: 62) argues that "... citizenship developed must contain knowledge, skills, values and dispositions that ideally owned by citizens". If a citizen has been formed in these aspects, the purpose of Civic Education has been relatively successful. School as a formal institution to provide education has a central role in this regard. Moreover, the school is an institution that is used to implement the objectives of the national education in accordance with the ideals contained in the laws.
Students who are younger generation and successor to the nation must have a strong knowledge of the dynamics of national life. School certainly has the responsibility to do so. In the eyes of citizenship, students are believed to be citizens of the new growth; the citizens who still have to be educated to become aware of their rights and obligations both as individuals and as members of society. Moreover, the attitude of nationalism must be owned by the younger generation who will run the country life in the future.

One of the learning models to improve the skills of Civic Education in developing students' nationalistic attitudes is Model Citizen Project, which is a portfolio-based learning model. Through this model, students are not only encouraged to understand the concepts and principles of science, but also develop the ability to work cooperatively through learning activities and empirical practices. Thus, the learning will be more challenging, active and meaningful.

According to Budimansyah (2009: 2), the model citizen project can improve students' understanding of what is being studied, especially concerning citizenship. The program encourages students to engage actively with government organizations and civil society to solve the problems in the school or community and to sharpen the social and intellectual acumen essential for responsible democratic citizenship.

Departing from the above explanation, the researcher is interested in conducting a study concerning the development of nationalistic attitudes of students. This is caused by the presence of a belief that education and schools are institutions that can form thoughts, attitudes, mental as well as the spirit of the students. On this basis, the title of this study is “The Model Project Citizen to improve the Civic Education skill toward the concept of development of students' nationalistic attitudes.”

2. Method

This study uses a quantitative approach with quasi experimental method. In the study, the focus is model project citizen to develop the skills of students' nationalistic attitudes. The method applied is a quasi-experimental research (Best, 1982). The method was used to obtain information that is approximate to the data that can be obtained with the real experiment, because circumstances do not allow for control or control all the variables.

To get a picture of the implementation of model project citizen to develop students’ nationalistic attitudes through civic education, methods of quasi experiment with the design of "randomized control group pre-test post-test design" (Fraenkel, 1993) have been used. With this design, the sample was divided into two groups: one group is experimental group and another is control group. The experimental group receives teaching of the nationalism concept with the model project citizen while the control groups receive instruction with conventional models.

3. Results and Discussion

3.1 Instruction of Civic Education with the Model Project Citizen significantly affects the intellectual skill of students

The Model Project Citizen to improve civic skills has a significant influence. Based on SPSS output, because the variances are not equal, then in viewing the results of the t test we must use the results of the second row (equal variances are not assumed). P-value
of 0.000 obtained, because the p-value <0.05, it can be seen that there are differences between the mean scores of intellectual skill with an indicator that identifies significant problems between control and experimental classes.

Significantly strong influence that exists between the model project citizen to improve intellectual skills can be analyzed from several sides: First: the model project citizen in the learning process, is associated with the context of the daily life of students, so as to form a life skills and broaden students insight in accordance with the real life in society. These life skills are what will be used by students when entering the real life in the community. In this case, students are required to be able to think more deeply by looking what problems occurred around their neighborhood. And in this process, then there is a learning process for the students themselves.

In line with that expressed by Surya in Sutrisno (1997): "learning can be defined as a process carried out by an individual to acquire new behavior changes as a whole, as a result of the individual's own experience in interacting with the environment". Based on these opinions, it can be explained that by studying, the overall behavior change will happen, and that it is derived from the interaction between humans and the environment in which students live. Thus, students may be able to think more critically and able to develop their intellectual skills.

Second, the use of Model Project Citizen to put more emphasis on better attitude and behavior in the learning process is closely related to intellectual skill. As stated by Andriyan (2007) that intellect, as we always understand is a set of attitudes and behaviors that are wiser, more directed to the brain and rational approach and always consider what will be taken based on the risks that will occur later. In short, the intellectual is a person who always puts the principles of prudence and rational consideration than emotional. Intellectual is always going to try to avoid anything that is violence and irrationality that would undermine the intellect. Therefore, the intellectual is always looking for ways and better solutions than just promote muscle and rude behavior alone.

As stated by Susanto (2008) that education is an important process in human life, because human beings are formed and born as human being and actual intact through this process. Education should be responsible for the intellectual process of the nation and has a strong implication in the process of empowerment. This needs to be reaffirmed, since the level of education does not always inherently increase with the level of empowerment, and therefore is not inherent with the level of independence.

4. Conclusion

Based on the analysis of data and findings obtained in the field around the implementation of model project citizen to improve the civic skill, it can be summed up as follows:

1. In the experimental class that received instruction using the model citizen project, it appears that the differences are not significant, but they increase in the medium category for civic skills. In the measurement of civic skills there was significant difference between students' civic skills that use the model project citizen with students who received conventional teaching. This is because at this stage of the measurement of the civic skills, students in the experimental class can do a little
better for indicators of intellectual skills and participatory skills as seen from the result of measurement through instrument for intellectual and participatory skills.

2. In the experiment class that receives instruction with the model project citizen, it is visible the significant changes to the intellectual skills. There are significant differences between the results of students using the model project citizen with the control class at the final measurement (post-test) for intellectual skills. This is because at this stage of the measurement of the intellectual skills, students in the experimental class can perform very well such as how to think critically about the issues of their study materials where students can think more effectively and accountable based on their knowledge. Thus, students can identify and create a description, explain and analyze the problems that exist around them.

3. In the experimental class that was taught with the model project citizen, it is visible that differences are not significant for participatory skills. But an increase in the medium category. In the measurement of participatory skills, there are significant differences of participatory skills among students who received instruction with the model citizen with the students who did not receive treatment. This is because at this stage of the skill measurement, the students in the experimental class can do a little better for the indicator participatory skills in measurement phase, the students in the experimental class can perform well and know how to participate in a responsible, effective and scientific environment, where students can communicate and cooperate with good and decent way. Then, at that stage the students can learn and interact with small groups in order to gather information, exchange ideas, and develop plans of action in accordance with the knowledge possessed by the students.

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Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem pendidikan nasional

FLAVONOID COMPOUNDS IDENTIFICATION OF THE METHANOL EXTRACT IN THE CACTUS PAKIS GIWANG FLOWER (Euphorbia mili Ch. des Moulins)

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ABSTRACT

We have been conducting a research on identification of flavonoid compounds from the methanol extract in the cactus pakis giwang flower (Euphorbia mili Ch. des Moulins), which taken from lambhuk. This research conducted in Chemistry Lab of Faculty of Tarbiyah UIN Ar-Raniry Darussalam Banda Aceh. The sample of this research is 20 grams of cactus pakis giwang flower, taken on 3rd March 2014 at 9:00 am (GMT+7), extracted by a maceration extraction method using methanol, extracting methanol liquid, then the examination of flavonoid compounds in methanol extract. Flavonoid examination performed by using Mg powder and HCl / p, will produce red color which mean the presence of flavonoid compounds.

Keywords: Flavonoid, Methanol Extract, and Cactus Pakis Giwang Flower.

1. Introduction

Indonesia is geographically located in tropical areas, rich in natural resources such as plants. Those natural resources play an important role in human survival. Therefore, each potentials that the plants have as well as the chemical content owned by the plant itself need to be explored in order to be utilized as much as possible. The use of herbs as medicine, is associated with chemical contents contained in these plants, especially bioactive substances. Without the presence of bioactive compounds in plants, the plants generally can not be used as a medicine. Bioactive compounds founds in plants, predominantly are secondary metabolites such as alkaloid, flavonoid, steroid, terpenoid, saponin, etc.

One of the plants which have a significant role in the problem of medicine is a Cactus Pakis Giwang Flower (Euphorbia mili Ch. des Moulins). Chemical content known in Cactus Pakis Giwang Flower include: the leaves contain saponins and tannins. On the stem contains saponins and tannins. And the flowers contains saponins, tannins and flavonoids (Setiawan, 2003: 36).

Flavonoids are secondary metabolites compound that was instrumental in maintaining the viability of an organism and it is a compound which frequently found in plants. Cactus Pakis Giwang Flower generally used by people as a medicine. All plants can be used as a medicine as far as it used in fresh condition. One of cactus pakis giwang’s importance are:

1. Flower can be used for treatment: stop uterine bleeding (hemostatis).
2. Stem can be used for treatment: eliminate swelling, anti-inflammatory, antiseptic, and hepatitis.
3. Leaves can be used for treatment: eliminate swelling, anti-inflammatory, antiseptic, ulcers, purulent inflammation of the skin (piodermi), scalded and burns (Setiawan, 2003: 37)
Chemical content contained on cactus pakis giwang are: the leaves contain saponins and tannins. On the stem contains saponins and tannins. And the flowers contains saponins, tannins and flavonoids (Setiawan, 2003: 36). In general, flavonoids are colored compound, also known as plant pigments. Flavonoids are generally colored ijas (violet) with UV light and becomes yellow or yellowish green when steamed with ammonia. Flavonoids are polar compounds that are soluble in polar solvents such as ethanol, methanol, butanol, acetone, water and others. Flavonoids may undergo degradation, methylation, acetylation and oxidation. Flavonoids indicate optical liveliness, bitter taste, and is slightly acidic so soluble in alkaline. This study aims to identify the flavonoid compound from the methanol extract of cactus Pakis Giwang flower (Euphorbia mili Ch. Des Moulins). The hypothesis in this study is the presence of flavonoid compound in cactus Pakis Giwang flower.

2. Material and Method

This research conducted in Chemistry Lab of Faculty of Tarbiyah UIN Ar-Raniry Darussalam Banda Aceh on 3rd-6th of March 2014. The sample being used in the research is 20 grams of cactus Pakis Giwang flower which taken randomly.

2.1 Tools

The tools used in this study are the glass tools commonly used in chemical laboratories, analytical scales, rack and test tubes and others.

2.2 Materials

The materials used in this study was 50 ml methanol, a little magnesium powder and 0.5 mL of concentrated hydrochloric acid.

2.3 Experimental Procedure

1. Sample Preparation

Cactus Pakis Giwang Flower (Euphorbia mili Ch. Des Moulins) was collected in a fresh condition, washed and then dried, after dried crushed and put into a beaker, then extracted by maceration using methanol for three days. The crushed sample purposes in order to enlarge the surface area so the solvent can more easily attract compounds contained in the sample.

2.4 Work Procedures

Cactus flower extract fern studs are added methanol and divided into two test tubes, one as a controller and another one is added little magnesium powder and 0.5 mL HCl / p and heated in a water bath, flavonoid positive when formed red color.

3. Results And Discussion

After the identification of flavonoid compounds from the methanol extract of cactus flower Pakis Giwang (Euphorbia mili Ch. Des Moulins) using powder reagent Mg and HCl / p obtained the results as in the following table:
### Table 1. Identification result Flavonoid Compounds

<table>
<thead>
<tr>
<th>Trial</th>
<th>Reagent name</th>
<th>Color</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flavonoid</td>
<td>Mg and HCl/p</td>
<td>Red solution</td>
<td>(+) Flavonoid</td>
</tr>
</tbody>
</table>

Based on the research that has been done on cactus pakis giwang flower (Euphorbia milli Ch. Des Moulins) obtain the extract liquid methanol, and then test the flavonoids by adding a little magnesium powder and 0.5 ml of HCl / p, and heated in a water bath will produce a red colored solution. It will show positive for the presence of flavonoids.

![Figure 1. Cactus Pakis Giwang Flower (Euphorbia mili Ch. desMoulins)](image)

According to the article Dr. Donny Hosea, flavonoids in the human body functions as antioxidants that is very good for cancer prevention. Also function as anti-virus, prevent and treat diseases such as asthma, cataracts, diabetes, arthritis / rheumatism, migraine, hemorrhoids, and periondritis (inflammation of the connective tissue supporting the roots of teeth). Another benefit of flavonoids is to protect the cell structure, improve the effectiveness of vitamin C, anti-inflammatory, prevents bone loss and as an antibiotic.

### 4. Conclusion

From the results of research conducted, it can be concluded that there is flavonoid which is one of secondary metabolit compound inside the cactus pakis giwang flower (Euphorbia mili Ch. des Moulins).

### References


ABSTRACT

Learning is an individual effort to get the changes that can be expressed in a new behavior based on the experience and practice. The purpose of learning implies that the process of teaching learning to get the optimal of results, in order that to get a good at learning achievement. So that, we need a method of learning to be measured by educators. One of the learning methods is called learning community method where talking and sharing experiences each others, working together to create a better learning than self-learning. Learning community method is one of the seven learning components contained in the model of Contextual Teaching and Learning (CTL). Learning community method in the process of teaching and learning activities are very significant for student and participation in the learning process and then the teacher's roles is also essential to be effective in the process teaching and learning activities. This is a model for teachers in teaching and learning activities to get satisfactory grades.

Keywords: Model Development, Learning Community Method

1. Introduction

The effectiveness of education is an education that allows learners to learn easily, fun and can be achieved of the goal. Therefore, teachers insist to be able to increase the efficiency of learning in order to easy the learning process. The teachers always prepare to create ideas for designing the new learning system that possible to support the learners to reach the learning achievement satisfactorily.

One of the goals learning English for students in junior high schools is to develop their ability in order they can learn English while continuing their studies to the higher level. However, their English ability is unpredictable. Based on the reality, it is needed a method to make effective in the learning English. One of the learning methods is learning community method. The keywords of learning community method is how to talk and share experiences each others, working together to create a better learning than self-learning.

According to Masnur (2007; 46), learning community method can occur if output of learning is gained from cooperation among them. This means that the output of study can be obtained with the cooperation among friends, groups, known and unknown, both outdoor and indoor of the classroom. Senge (1990) defines that learning community; "An organization whose members as continually to develop their capabilities to achieve of the target is preferred, to urge the new pattern and broad thinking, and continually how to learn together ".

In the other words, the method is carried out where the students can cooperate each others in order to understand the significance of the content and cooperate as actively in completing the task. Students interpret the content of the lessons as teamwork. They are more actively to complete the task as teamwork than individually. Learning community
method aimed to improve the performance in classroom by sharing with enabled friends, to solve problems, to be responsibility, and to develop students’ social life. Learning student’s activity accelerated through small groups in order to develop social skills, individual skills, and improve learning quality by teamwork or friends.

Learning achievement can’t be separated with learning activities, and as basically, the result depend on interaction among various factors in individually (internal and external factors). Intellectual students’ ability determines the success in gaining achievements. To determine a person’s success or failure in learning is necessary to do evaluation, in order to know that the achievements are obtained by the students after learning process.

In the process learning activities, we focused on the understanding interpretative where it is part of a high-level understanding. The understanding interpretative based on a literal and a basic understanding of critical and creative. It involves the understanding interpretative schemata. Students work in the teams and involve in activities, as discussions, predictions about the topics, making an overview of each other, writing the response of the topic, and practice of spelling and vocabulary. Students also work together to understand the main idea and understanding of each other skill.

The strategies used to emphasizes understanding and learning as collective in an flexibility situation, so that they can learn each other through teamwork with learning objectives in the real application in society. Therefore, one approach that can be used is the contextual teaching and learning (CTL) by using a model of learning community.

2. The Basic Concept of Contextual Teaching and Learning Strategies Learning based on Learning Community Method
2.1. Contextual Teaching and Learning

Contextual Teaching and Learning is a conception to help teachers in relating of the contents and the subject with real-world circumstances. And then, it also motivates students to connect knowledge that is acquired and its application in their life such as family, citizens and as workers.

Nowadays, there are many schools in the United States that adopt the principles of CTL. In fact, the concept of contextual teaching and learning is not a new concept. This concept was introduced in 1916 by John Dewey, who presented the curriculum and teaching methodology are closely relation between desire and students experiences. According to Johnson (2009: 67): "CTL system is an educational process that aims to help students to see the meaning in academic subject where they learn with correlation the academic subjects in the context of their daily lifes , ... "

Sa‘ud (2008 : 176 ), : "Contextual Teaching and Learning (CTL ) is a learning emphasizes for student to involve each steps of learning to be in real situations such an experience of students in daily, so that the understanding the subjects is applied in life " . Meanwhile, according to Sanjaya (2006: 272): "CTL is a learning model emphasizes the student in complete process activity, both physically and mentally".

Based on the description above, it can be explained that the CTL is a learning strategy aims to help students for seeing the meaning and correlating the subject where is being studying to implement in daily experience to solve the problems.
The process of teaching learning is more effective when a new knowledge based on experience or knowledge and there is a close relationship with the true experience (real experience). In the learning program is not only a lesson plan in order for learning to be effective but also the process teaching learning where teachers must explain and have the same view of some basic concepts such as the role of teachers.

There are some experts proposed definitions of CTL (contextual teaching and learning). According to Sanjaya (2006), CTL is a teaching and learning strategy that emphasizes the involvement of students in complete process to be able to find of the teaching-learning materials and relate them to real life situations that encourage students to be able to apply them in their life. CTL has three concepts that must be understood. First, CTL stressed to process the involvement of students to find materials, the meaning is the process of teaching learning is oriented on process experience directly. The learning processes in the context of CTL not only to expect receive subjects, but also the process how to search for and find self-knowledge Is more necessary.

Secondly, CTL urged the students to find of relationships between the subjects and in real life situations, the meaning that students are required to be able handled the relationship between learning and real life experiences.

Third, CTL urged students to be able implemented in their life, the meaning that CTL is not only expect students to understand in the learning subjects, but also the subjects are faced in various behavior in their daily life. The subject in the context of CTL is not to be stacked in the brain and then forgot, but as an equipment in their real life

2.2. The Principle of Contextual Teaching and Learning

Based on the discussion above, it can be seen that the CTL is a mix of some good teaching practice and some approaches before (Dewey’s concept, pragmatic, communicative and constructivist). CTL emphasizes on thinking, transfer of knowledge among other disciplines, collecting, and analyzing information data where came from various sources and the views (Nur, 2001)

Elaine B. Johnson (2002) in Sa'ud (2008) said: " In the CTL, there are three main principles are often used, namely: interdependence, differentiation and self-organization

2.2.1. Interdependence

Contextual learning emphasizes the relationship among learning subjects with other subjects, between theory and practice, the subject as a concept and the implementation in real life.

2.2.2. Differentiation

Contextual learning is centered from students, where emphasizing students’ activity and creativity collaborate with their friends to collect observations and to record the facts information, to find the principles and to solve problem.

2.2.3. Self-organization

Contextual learning is purposed to help students to achieve the excellence academic, standard skills, attitudes and moral development where appropriate with expectations of society.
2.3. CTL Approach By Using the Learning Community Method

Contextual learning and teaching involves seven components. Sa'ud (2008: 168): "The components of CTL are based for the implementation teaching and learning process which has seven components: 1) Constructivism, 2) inquiry, 3) questioning, 4) learning community, 5) modeling, 6) reflection and 7) the authentic assessment.

Learning activities can be effective if the purpose can be achieved. Thus, learning English can be said to be achieved if the learning have objectives (Based on Basic Competencies and Standards Competency) can been reached. The learning meaningful is meant to achieve the effectiveness, because of that’s possible occur to transfer through understanding.

The learning meaningful through CTL will be focused if it has a learning procedure or a good conceptual framework. The learning conceptual framework describe a systematic procedure in organizing based on learning experiences to achieve specific learning goals, Learning Model as known (Suherman & Winataputra; 1993), state that the learning process becomes purposeful, and then the learning model of learning community is a learning method that can increase the student’s activity. This model serves as a guide for learning designers in planning and implementing in learning activities, so that the learning activity is a real activity aims to arrange systematically.

2.4. Framework of Application in Learning Community Method

Leo Semenovich Vygotsky, a Russian psychologist, states that the knowledge and children understanding are supported by a lot of communication each others. The concepts of learning community in the CTL suggest that learning target obtained through cooperation with each others. The collaboration can be done in forms variety, in study groups formally and in environments where occur as naturally.

Learning in the classroom uses learning community method where learning activity is done in teamwork, High comprehend students will lead their teamwork in order to make all students get the same understanding. Learning community can be created if there are opponents’ communications. In learning community method, members as teamwork involve in the learning communication to learn from each others. Students who are involved in learning community activities provide the information are required by the interlocutor and also request the information with their friends.

Learning community method can be happened when among of the students and the teachers, or every students has interacted as effectively and communicative interaction. The significant learning process if they do in teamwork, as homogeneous and heterogeneous, so that they will occur many problems (sharing problems), much information (sharing information), much experiences (sharing experience), and much problem solving (problem sharing) which enables the increasing a lot of knowledge and skills are acquired (Nana : 2009).

In the classroom, using learning community method, teachers are advised always carry out learning in teamwork. Students are divided into heterogeneous groups, smart and slow students, different background status, life, religion, who had the idea immediately to give suggestions and so on.
3. **Application of Learning Community Method**

Application of learning community method where talking and sharing experiences with each other, working together to create a better learning than self-learning. Thus, the results of study can be obtained with sharing among friends, in the classroom. And then, the principles can be considered when the teacher applying in the learning community method components are as follows:

- a. Basically, learning results obtained from the cooperation or sharing each others.
- b. Sharing occurs if they will take and give information with each other.
- c. Sharing occurs if there are two or multidirectional communication.
- d. The teamwork occurs if all of them involve and aware that the knowledge, experience, and skills of its benefit to each others.
- e. Students involve in teamwork are essentially as a source of learning

Learning community method can occur if outcomes is required from cooperation each other. This means that the learning outcomes to be enquired by sharing among friends, among groups, between who they know and unknow information, inside and outside in the classroom. Basically, these below contain a learning community method as follows:

- a. There are teamwork which communicates to a variety of ideas and experiences.
- b. There are teamwork as together to solve the problems.
- c. In generally, the teamwork is better than individually.
- d. There is a sense of responsibility of the teamwork and all members of the teamwork have the same responsibility.
- e. There are efforts to build motivation forlearner who have not been able to work in teamwork.
- f. Creating the circumstances where a child enjoys learning each other.
- g. There is a responsibility and cooperation among members of teamwork to take and give.
- h. There are teachers who guide the learning process in a group.
- i. It should be feedback communication and multi-direction.
- j. There is a willingness to accept a better opinion.
- k. There is a willingness to respect the others opinions.
- l. Not only one the truth of the course/sharing.
- m. The dominance of the smart students needs to pay attention in order the slower students could also play a role.
- n. Students are asked to their friends that have implies learning community.

In the application of contextual teaching and learning approach in the development of communities learning method can be performed as:

- a. Forming a small or large groups
- b. Bringing to class expert
- c. Working in teamwork of the same age
- d. Working in teamwork of higher class
- e. Working in social community
4. Conclusions
Based on the description above, we can be drawn some conclusions as follows:

a) The model of learning community method is one model that can be applied by teachers in teaching and learning approach in schools not only on science in English but also other subject of science studies.

b) The learning process with a model of learning community method is collaborative learning among friends with the basic competencies that have been hold to help each other to solve problems and to understand the concepts that are difficult and complicated.

c) In the effective application of the model of learning community method, the role of the teacher's roles is also essential to be effective in the process teaching and learning.

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AN APPLIED MODEL OF TEACHING MATERIALS TO IMPROVE STUDENTS’ SPEAKING SKILL

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ABSTRACT

An Applied Model of Teaching Materials to Improve Students’ Speaking Skill has shown its ultimate aims, i.e. at finding out its pursuits of the research results to the subject matter applied to the students of English Study Program of Teacher Training and Educational Science Faculty of Serambi Mekkah University, Banda Aceh. In this case, the researcher would like to inform the reality of the students’ speaking skill which is referred to the principles of language teaching. According to Lado (1975:55), “The students must be engaged in practice most of the learning time.” Here, he continued to the language learning process of the students that should do the presentation practically. “The students are recommended to devoting 85% of the class time to practice and no more than 15% of the time to use in the explanation and commentary.” To support this statement, Byrne (1983:140) emphasizes that “In this way all the pupils will soon get thoroughly familiar with the language materials.” So, based on the opinions expressed by the two experts above, we can understand that in teaching-learning process, the students should be taught by applying the teaching materials practically. In order to gain the purpose of the study, the researcher focuses this subject in the experimental design as suggested by Ary (1979). Since the target of this study is to produce a teaching material in the form of a textbook, it takes two years of research. The first year it is concerning with the identification of the teaching materials provided, especially in terms of its validity and its reliability. While in the second year, the research will be focused on its revision for the whole body of the textbook, either the contents or its physical appearance, in order to make it as good as possible to be a practical handbook that has been printed with its label of a Book-ISBN branded.

Keywords: Applied Model, Teaching Materials, Speaking Skill

1. Introduction
1.1 Background of the Study

As a real fact that, the students’ ability in the English skill, especially in speaking is still low. Ironically, and frankly speaking, they are the students of the English department at private universities, not only in Kota Banda Aceh and Aceh Besar, but they are also the private university students in the Aceh province. Here, especially the English students of Teacher Training and Educational Science Faculty, Serambi Mekkah University, Banda Aceh. Regarding to the real fact, the researcher becomes enthusiastic to study it about how it occurs, and how to overcome its solution. This problematic case is very crucial to be searched in more focus, unless it would be worse if it is not cared seriously and there is no way out from lecturers, particularly those who teach the teaching subjects, i.e. the speaking skill, it can be certainly said that the educational quality will be getting left-behind sooner or later. It is like a nightmare when we try to imagine the students of English department do not speak English well. The problem could be raised by asking who is to blame when this fact happens. It must be referred and aimed to lecturers who directly hold the front line in teaching, particularly those who teach about the subject of teaching skill.
Another concern is about the lecturers’ efforts to improve the students’ skill in speaking English. They have to think and then create the proper way in teaching, therefore the students master the language that they are learning correctly and accurately. Such a kind of question can also come up together with the fact that the students’ English ability is still low in speaking English showed in the daily conversation. Therefore, the researcher wants to deal with the English teaching model in teaching and learning process. He believes that there is a proper English teaching model that could be developed for the need of problem solving in order to share some contribution for the students in the teaching-learning process, especially to the students of the English department at private Universities, specifically for the students of Serambi Mekkah University, Banda Aceh.

Based on the problems mentioned above, the researcher is interested in doing a research entitled: An Applied Model of Teaching Materials to Improve Students’ Speaking Skill.

1.2 The Problem of the Study

The writer would like to formulate the main problem of this study, i.e. “Is the applied model of teaching materials technique to improve students’ speaking skill used at teaching the TEAFL-I and TEAFL-II Subjects better than using other techniques or approaches to the Odd and Even Semester students of the English Study Program of Teacher Training and Educational Science Faculty, Serambi Mekkah University, Banda Aceh?”

1.3 The Hypothesis

Since the nature of its study is in the form of experimental design, it needs the hypothesis, in order to have a tentative answer, i.e. “the applied model of teaching materials technique to improve students’ speaking skill used at teaching the TEAFL-I and TEAFL-II Subjects better than using other techniques or approaches to the Odd and Even Semester students of the English Study Program of Teacher Training and Educational Science Faculty, Serambi Mekkah University, Banda Aceh”

1.4 Specific Purposes

Based on the above problem, the writer would like to formulate the specific purpose of this study, i.e. having a fairly good and reliable-valid research instrument in the form of teaching book materials that could be used to overcome the students’ problem in teaching English speaking skill of the TEAFL-I and TEAFL-II Subjects of the Odd and Even Semester students of the English Study Program of Teacher Training and Educational Science Faculty Serambi Mekkah University, Banda Aceh, in terms of improving the speaking skill.

1.5 The Significance of the Study

Because of this study is in the form of quantitative nature, that is done in experimental study, it is, of course, its results could be transferred to whole subjects and objects under the same condition as done at the experimental occasion within the same sample of the students in this research. Theoretically, whatever the output of this study is, it could be disseminated to wholes subject and objects under the same condition.
Furthermore, the output of this experimental research would have a double meaning and more value provided with it is being done in experimental design of study. This study is hopefully to be considered positively by the stakeholders for the sake of next generation that could be owned to be much better in the future.

1.6 The Scope of the Study

Since the expected output based on this research title is to find out a teaching materials, so the orientation of this study is about the needs of producing an applied model of teaching materials to improve students’ speaking skill. The basic reason to this scope of study is referred to the fact, generally the students who learn English, for instance, the students of the English department, especially at the Teacher Training and Educational Science – Serambi Mekkah University Banda Aceh could not sufficiently speak English well. Meanwhile, they have learned English for almost twelve years started from sixth grade of Elementary school until the third year in university. Considering about the real phenomena, the researcher assumes that there must be something wrong with the teaching method. Based on his assumption, the writer considers that the most important thing to do here is how to figure out the proper way that the lecturers should use the method in teaching application in terms of improving students’ speaking skill.

2. The Oretical Orientation

In accordance with the plan, this study would take three years and divided into three stages. Each stage is going to be lasting for one year. In stage one, the team deal with preparation such as preparing instrument, setting and the indicator system of success determination, included with several things related to this study.

In stage two, the team would be lasted in have a draft of a Book-ISBN branded. And the third stage is in the form of finishing towards its revision, based on the real data collected from the applied teaching-learning process-interaction of the Odd and Even Semester students of the English Study Department of Teacher Training and Educational Science Faculty, Serambi Mekkah University, Banda Aceh.

2.1 Teaching the Language Skills

As we know that, there are four skills in teaching the English language. They are listening, speaking, reading and writing skill. From the four skills, speaking is called the key of skill. Thus, the speaking skill should be the first priority that has to be focused in teaching and learning process. This skill would be successful when it is applied in every teaching and learning session. A good understanding of the speaking skill is something special that can be a model of language use. As a result of teaching, speaking can be influenced by the development and tendency in language learning process and psychology.

Dealing with the statement, Lado (1975) mentioned that, “The study of language has gone upward within language from phonology to syntax to semantics, and outward to study of language as part of cognition and finally to the study of language as part of the total communication system within society—what Halliday calls it as social semiotic.”

Halliday statement was also supported by Finn (1985) states that “It is important that speaking teachers be able to make intelligent choices concerning with method and
curriculum in light of progress in such fields and linguistics, psychology, and sociology.” From Halliday and Finn statement, it can be understood that language teaching is closely related to the method of teaching. The smart choice in teaching method plays an extremely important role. Therefore, the lecturers who teach language should be smart in using the proper method in teaching language.

Based on the above explanation, we finally understand that there are a lot of purposes from speaking skill that can be gained through the process of teaching and learning or dialogue. From all purposes of teaching speaking skill, there are two main dominant aspects that are related to it. They are the skill in dialogue and the skill in learning language.

2.2 Teaching Speaking for Dialogue

Talking about the efficient method in teaching English, in this case teaching speaking, it would be better to clarify about the model of teaching materials to improve students’ speaking skill. This kind of method development in teaching English toward the students who study the TEAFL-I and TEAFL-II subjects at the English Study Program of the teacher training and educational science, faculty, Serambi Mekkah University, Banda Aceh.

Byrne (1980) states that “in speaking, the students’ developing a considerable range of habitual responses to specific set of pattern of graphic shapes. When learning to speak his native language he has acquired essential space the direction habit, he can recognize the shapes of letters in his native language alphabet and has become skilled at speaking these in the direction his language prescribes”. Byrne then explains more that if a foreign language uses the same alphabet as in students’ mother tongue, that is the language equivalent (as in English to French or English to German). By having good practices in getting used to speaking English will avoid the students from the difficulties in learning foreign language.

Here, Byrne (1980) gives details in his explanation about the development of teaching speaking skill as follows: “Students need to be encouraged to speak for the content of the material as they do in their own language. Meaningful reading requires concentration upon the important element which conveys the message. Constant attention to each word presents such an overwhelming amount of information that the mind cannot process it all, even in the native language.”

Based on the above information, the writer would like to mention River (1971) opinion:

As we can see, we work together with students coming from the different field, talking with different text (stated in the survey, text book and theoretical analysis), and using different methodology approach as well. It can not be concluded that all are the same about the field of problem in certain text. The teachers had prepared text in years and if there are new thing that are being introduced about certain texts, then the text analysis will be confused toward the grammar such as in phrases from subject to object, the form of grammatical cohesion and non technical vocabulary.
Based on what was explained by River, we are aware that a lecturer must be paying full of attention to the teaching of speaking. In case a lecturer has to teach the students to understand texts, he still has to figure out how to make them understand it orally as well.

2.3 Teaching Speaking for Language Learning

The most important thing in language teaching process is teaching speaking for language learning. Therefore, there must be a measurement or what is called as criterion to understand the tasks given to the students. According to Weir (1990):

The criterion of efficient learning is that after a long interval the matter learnt can be applied as effectively as necessary to new tasks. Simple memorizing has very limited value is that it is no help in applying the knowledge to new tasks. The only learning worth name, in fact, is learning by understanding.

Dealing with Webster statement above, we understand that in teaching language skill (not only speaking, but also reading, listening or writing) is the main thing to make the students recognize and understand the text content that is being taught. Thus, a test is needed for the students to be able to understand the given text. In this case, the traditional way in teaching speaking is mainly focused.

2.4 Steps in Teaching Speaking Skill

To gain the purpose of teaching speaking skill, there are at least three steps that have to be followed by a lecturer, they are:

2.4.1 Pre-speaking Activity

Before teaching speaking skill, a lecturer has to know that there is a strategy that has to be applied to teach speaking skill, it is speaking itself. What is meant by “speaking itself” is speaking activity before the class begins. A lecturer has to give time to students in order to read a text before they start learning.

Concerning with this matter, Byrne (1983) stated that pre-speaking is an activity that aimed at initiating students to read before they are taught. Based on the Byrne statement above, we understand that the teaching of speaking skill is actually begun before the students pay attention and read the given text. Pre-teaching activity can be designed in such a way to let the students to review the information within the text in general, knowing what had happened and what would happen. Besides, pre-teaching is also aimed to invite the students to think about the possibility of the text contents.

2.4.2 While Speaking Activity

As we all know, during the speaking activity, a lecturer is in a position of silence while the students are reading text to understand the tasks given to them.

According to Harmer (1986), “speaking is a practice which is controlled by mouth and brain. Mouth concern with the activities related to uttering any message. Brain has to cooperate to receive and produce the message uttering by mouth. While eyes would see problems and send them to brain and is uttered by mouth. Therefore, there will be communication in teaching and learning process. In general, the students is willing to
participate in teaching and learning process, especially in language class where they want
to express their ideas to people.”

This statement is also supported by Byrne (1983): “A student might be looking for of
what is going to talk about, in the form of technical literature or may be he hopes to give a
speech in his home country. The different participation level will also affect the level of
receiving the message. They also apply some linguistic behaviors in different kind of
skills. In skill term, they are called: writing, speaking, dictation and reading a loud.

2.4.3 Post Speaking Activity

The third step in speaking skill teaching is “speaking”. In this case, speaking
becomes the main point as the conclusion of what have been done during teaching and
learning process.

At the time the teaching speaking skill is finished, there must be an evaluation by
several questions. Finn said “when speaking has been completed, it is time to put questions
of evaluation personally respond and to help students to relate all kinds of things with the
real world which is replaced”.

3. Methods

The output of this research is expected to be an applied model of teaching materials
to improve students’ speaking skill to the students of English Study Program of Teacher
Training and Educational Science Faculty, Serambi Mekkah University, Banda Aceh.

Besides, the output of this study can also be transferred to the same objects and
subjects. It means that if this research succeed, it would be useful for the students all over
Indonesia.

In accordance with the expected output, the researchers refer to the following ways:
1. Determine the research methodology (experimental research),
2. Population and sample ( all students of the English Study Program of Teacher
   Training and Educational Science Faculty Serambi Mekkah University, Banda Aceh),
3. The technique of data collection (experimental teaching),
4. The processing and analyzing the data (using panel procedures), and
5. Conclusion (the finding of an applied model of teaching materials to improve
   students’ speaking skill.

Since this research is quantitative in the form of experimental study, thus the
research design is done by referring to the pattern as suggested by Ary (1979) as seen in
the following chart.

Table 1. Independent and Dependent Variables

<table>
<thead>
<tr>
<th>Group</th>
<th>Independent variable</th>
<th>Dependent Variable</th>
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<tbody>
<tr>
<td>( R ) I</td>
<td>Kinescope Film</td>
<td>Achievement Test</td>
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<tr>
<td>( R ) II</td>
<td>Classroom discussion</td>
<td>Achievement Test</td>
</tr>
<tr>
<td>( R ) II</td>
<td>Programmed booklet</td>
<td>Achievement Test</td>
</tr>
</tbody>
</table>
By following the design as shown in table 2, we can see the main aspects of that experimental research, they are: (a) a useful question to a researcher to figure out the answer- that is a question about the correlation between two variables; (b) hypothesis as a characteristic of the correlation between two variables; (c) the introduction of experiment condition and measurement; (d) data analysis, by having this, the researcher will be able to determine the whether there is a correlation between two variable or not.

4. Result and Discussions

The results of teaching speaking skill by using an applied model of teaching materials to improve students’ speaking skill to the students of English Study Program of FKIP-USM Banda Aceh was done to TEAFL-I and TEAFL-II subjects of both Odd and Even Semesters.

There are only two classes of the odd and even semester students of English Study Program of FKIP-USM Banda Aceh. The total number of students is more than 800. But, for the need of this project, the writer just took 21 students as the controlled group and 21 students as the experimental group. After that, she then gave a pre-test and a post-test to both controlled group and experimental group. Prior to starting the teaching learning process, the writer gave them a pre-test that aimed at measuring their basic achievement about the speaking ability before they were taught and applied the theory and the way how to speak fluently and correctly using the realia methods and other methods. At the end of the experiment, they were provided with a pre-test and post-test in order to identify how far the teaching learning process affects the students’ achievement toward the subject matter.

The results of the pre-test and the post-test are processed and analyzed in two stages, namely:
1) Analyzing the achievement of the two groups of students who were taught by using an applied model of teaching materials method.
2) Proving the writer’s hypothesis as stated in the first chapter of this study.

To work with the data, the writer found the mean score of the two groups that obtained by each student. Then, the mean score of the two groups were analyzed by comparing the both mean scores of the two groups.

To prove the writer’s hypothesis, the writer used the formula t-test with significant level is 5% or level of validity (reliability) is 95%.

The students’ scores of pre-test and post-test achieved by the students in experimental group can be seen in the following table 2.

Table 2: The Students’ scores of Pre Test and Post Test in Speaking By Using An Applied Model of Teaching Materials Method (Experimental Group)

<table>
<thead>
<tr>
<th>Nos.</th>
<th>Students’ Codes</th>
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<td>Students’ Codes</td>
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<td>55</td>
<td>70</td>
</tr>
<tr>
<td>19</td>
<td>29</td>
<td>55</td>
<td>70</td>
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<tr>
<td>20</td>
<td>30</td>
<td>50</td>
<td>65</td>
</tr>
<tr>
<td>21</td>
<td>31</td>
<td>75</td>
<td>80</td>
</tr>
</tbody>
</table>

Table 3: The Students’ scores of Pre-Test and Post-Test in Speaking By Using Other Methods (Controlled Group)

<table>
<thead>
<tr>
<th>Nos.</th>
<th>Students’ Codes</th>
<th>Pre Test</th>
<th>Post Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>60</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>16</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>7</td>
<td>17</td>
<td>60</td>
<td>80</td>
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<tr>
<td>8</td>
<td>18</td>
<td>65</td>
<td>65</td>
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<tr>
<td>9</td>
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<td>65</td>
<td>70</td>
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<tr>
<td>10</td>
<td>20</td>
<td>70</td>
<td>70</td>
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<tr>
<td>11</td>
<td>21</td>
<td>65</td>
<td>70</td>
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<tr>
<td>12</td>
<td>22</td>
<td>60</td>
<td>70</td>
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<tr>
<td>13</td>
<td>23</td>
<td>55</td>
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<td>15</td>
<td>25</td>
<td>60</td>
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<td>16</td>
<td>26</td>
<td>60</td>
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<td>20</td>
<td>30</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>21</td>
<td>31</td>
<td>60</td>
<td>75</td>
</tr>
</tbody>
</table>

Below, the researcher just displayed the students’ scores into a table that describes about the results of pre-test and post-test that is easily compared between the two groups as shown in table 3.
Table 4: The Scores of Students’ Pre Test and Post Test by Using An Applied Model of Teaching Materials to Improve Students’ Speaking Skill

<table>
<thead>
<tr>
<th>Subject</th>
<th>X1</th>
<th>X2</th>
<th>X</th>
<th>Subject</th>
<th>Y1</th>
<th>Y2</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60</td>
<td>70</td>
<td>10</td>
<td>1</td>
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<td>80</td>
<td>10</td>
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<tr>
<td>2</td>
<td>70</td>
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<td>2</td>
<td>65</td>
<td>80</td>
<td>15</td>
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<tr>
<td>3</td>
<td>50</td>
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<td>10</td>
<td>3</td>
<td>70</td>
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<tr>
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<td>15</td>
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<td>80</td>
<td>5</td>
</tr>
<tr>
<td>21</td>
<td>1255</td>
<td>1540</td>
<td>410</td>
<td>21</td>
<td>1335</td>
<td>1550</td>
<td>485</td>
</tr>
</tbody>
</table>

With the parameters:

X1 = The pre test score of other method group
X2 = The post test score of other method group
X = Deviation of Score X1 and X2
Y1 = The pre test score of other method group
Y2 = The post test score of other method group
Y = Deviation of score Y1 and Y2
S = The Samples or subjects

Based on the data from all tables above, we can understand that both group students have different achievement, either in individual form or in group form. The data analyzed using the formula as suggested by Arikunto (1996:305) that is:

\[ M_x = \frac{\sum X}{N} \quad \text{and} \quad M_y = \frac{\sum X}{N} \]

As the results, the mean of each group is as follows:

1. The mean score of students treated the other method in teaching speaking using other methods (controlled group) is:

\[ M_x = \frac{\sum X}{N} \quad \text{and} \quad M_x = \frac{410}{21} \quad \text{Mx} = 1.9 \]
2. The mean score of students treated the model realia method in teaching Speaking skill (experimental group) is:

\[ My = \frac{\sum X}{N} \]

\[ My = \frac{485}{21} \quad My = 22 \]

4.1 The Results

As it has been mentioned above that the hypothesis of her study is that the result of teaching speaking by using applied model technique is better than teaching speaking by using other techniques or approaches.

In this case, to see whether or not the hypothesis is accepted or rejected, the writer used the hypothesis proving formula, namely the \( t \)-test as suggested by Arikunto (1996:301) as follows:

\[ t = \frac{Mx - My}{\sqrt{\frac{\sum x^2 + \sum y^2}{N(N - 1)}}} \]

\[ t = \frac{(1.9 - 2.2)}{\sqrt{410 + 485} \over 21(21 - 1)} \]

\[ t = \frac{-1.901}{\sqrt{895}} \]

\[ t = \frac{10.01}{3.19} \]

\[ t = 3.14 \]

\[ db = (Nx + Ny - 2) = 21 + 21 - 2 = 40 \]

The critical value of \( t \) (t-table) with significant level of 5% and degree of freedom 40 is 2.68. The criteria to accept or reject the hypothesis offered by Sudijono are:

1. Hypothesis null or Null hypothesis (Ho) is accepted if the \( t \)-count equal to t-table or \( t \)-count is greater than t-table.
2. Hypothesis alternative or Alternative hypothesis (Ha) is rejected if \( t \)-count is smaller than t-table.

The calculated value of \( t \)-count is 3.14. Since the result of \( t \)-count (t-test) is greater than t-table, the hypothesis is accepted. It means, the result of teaching speaking by using applied model technique is better than the result of teaching speaking skill by using other techniques or approaches.

4.2 Discussions

After doing the teaching in an experimental study to the Odd and Even Semester students of English Study Program of Teacher Training and Educational Science Faculty, Serambi Mekkah University, Banda Aceh from May 05, 2014 until June 06, 2015, the writer processed and analyzed the research results by using a simple calculation. In another words, after doing an experimental teaching at the Odd and Even Semester students of the mentioned class above, it can be understood clearly about the results of the research. Here, the writer applied the model of teaching materials in teaching speaking skill to the students of the students of the English Study Program of the mentioned faculty (Experimental Group), while the there was no use of the model to the second group (Controlled Group). Through these two different ways or methods, we could find out that, the students’ scores of the Odd and Even Semester students of the mentioned class, that is, teaching speaking
skill by using applied model of teaching materials technique get higher scores compared to the students who are taught speaking skill by using other techniques or approaches.

5. Conclusions And Suggestions

5.1 Conclusions

After having discussions as given above, the writer can conclude that teaching speaking skill to the Odd and Even Semester students of the English Study Program of Teacher Training and Educational Science Faculty, Serambi Mekkah University, Banda Aceh by using an applied model of teaching materials to improve students’ speaking skill technique or approach has shown a much better results compared to teaching speaking skill by using other techniques or approaches to the same subjects. Tentatively, the researcher can conclude that, at the level of the second stage, this research has been fairly successful to determine its academic pursuits. However, it is not yet absolutely having its final conclusion, because it is still waiting for the turn of final stage of having the third round of the research results.

5.2 Suggestions

Here, it is fairly suggested that those who want to teach speaking skill to the same subjects as done by the researcher, should apply the applied model of teaching materials to improve students’ speaking skill method as well as others under the same conditions.

References


SOLID GEOMETRY: PORTFOLIO ASSESSMENT FOR PRIMARY SCHOOL TEACHER TRAINING

(Burhanuddin AG)\(^1\), (Murni)\(^2\), (Erdi Surya)\(^3\)

(Serambi Mekkah University)\(^{1\&3}\), (Abulyatama University)\(^2\)

ABSTRACT

Understanding the concepts of Solid Geometry is considered difficult because it requires the ability to visualize clearly in three-dimensions. For Primary School Teacher Trainees [PSTT] to be able to understand the shapes in solid geometry, they should be able to interpret the solid objects that exist around them. It is expected that PSTT, as candidate primary school teachers, will be able to apply skills learnt for teaching solid geometry concepts in the classroom. Particular Targets in this study were to produce: (1) Portfolio assessment instruments for solid geometry with a contract course (SAP); (2) Student Handbooks; (3) Student Worksheets; (4) a Primary School Teachers Handbook for teaching Solid Geometry; (5) an International Journal article; (6) a National Journal article; (7) a Primary School Teachers Workshop for Mathematics. The sample for this research were Primary School Teachers in Training from the Faculty of Teacher Training at Serambi Mekkah University. They were chosen because it is expected that they will be able to directly practice what they have learnt with primary school pupils from the beginner classes when they start to teach geometry. In addition, assessment of lecturers previously only focused on cognitive aspects. Preferably an assessment is needed which will be able to assess multiple aspects overall, viz:cognitive, affective, psychomotor, and emotional and that will be an authentic assessment with portfolio. Long-Term Goals: This research was conducted following the 5 (five) stages of development, [Plomp (1997 and 2001)] which were modified to guide the material (product) development phase following Nieveen (200??) with attention to three aspects of quality, namely the aspects of validity, practicality and effectiveness of method. PSTT are expected to practise awareness and realize the importance of always improving the quality of critical thinking abilities to implement better teaching of geometry in their primary schools. It is intended that PSTT should have the ability to use these findings when they are teaching Solid Geometry in Primary Schools.

Keywords: assessment, portfolio, solid geometry, primary schools, mathematics teachers.

1. Introduction
1.1 Background

The purpose of including the teaching of mathematics in Primary School Teacher Training [Pendidikan Guru Sekolah Dasar or PGSD] is to prepare Primary School Teacher Trainees (PSTT) to teach mathematics as well as to meet the national education goals that are stated in the Garis-garis Besar Haluan Negara (GBHN). Because of the importance of mathematics and its role in science and technology, improvement in the quality of mathematics education in Primary Schools should always be sought. Efforts to improve the quality of mathematics education have been made by the government.

Solid geometry is an important part of mathematics to be taught in primary school because the applications of solid geometry concepts are needed in everyday life. Simple examples of the application of solid geometry are the making of food boxes, the making of pools and so forth. With full understanding of the concepts of solid geometry PSTT will
gain useful competencies to compete in this competitive world. Geometry is a branch of mathematics that studies plane and solid geometry. There are various types of solid shapes including: a) cubes, b) prisms, c) pyramids, d) cylinders, e) cones, f) spheres g) tubes and h) boxes.

In reality students generally have difficulty in recognizing and understanding the concepts of solid geometry. This is proven by the average mark that students get is very low. Some hypotheses for the poor results are: (1) The concepts of solid geometry are difficult to understand. (2) Learning at school is different from that at university. (3) Lecturers tends to assess more on cognitive concepts and less on affective and psycho-motor aspects. Therefore, a better system of assessment which may assess the whole of a students’ competencies is much needed and that assessment could be an authentic assessment with a portfolio. The implementation of authentic assessment is needed to develop overall assessment (cognitive, affective, psycho-motor, and emotional). Authentic assessment needs to be implemented to deep the primary school teacher trainees’ knowledge so that they will be able to recognize and understand solid geometry concepts and will later be able to demonstrate and implement them when teaching in primary schools. The main purpose of implementing this assessment model is to encourage these student teachers to leave behind the conventional assessments used by many teachers, because they are considered outdated for the real conditions faced in primary schools.

1.2 The Urgency of the Research

A solid is structured by several planes which form a closed space. Therefore, even a solid’s curved surface area can be opened and some structured planes are found. The composition of these planes is called a net. In general solid geometry is divided into three main types: prisms, pyramids and spheres. In order to evaluate the students’ learning progress, lecturers need to make assessments. The assessments are essential for the success of carrying out the main task, namely implementing learning. Assessment is done at the end of an educational teaching or training program. The aim is to determine whether the teaching or training educational program, has been mastered by the participants or not. The implementation of authentic assessment measures inputs, processes, outputs and learning (Permendikbud 81A 2013). Authentic Assessments are meaningful measurements which assess the student’s attitudes, skills and knowledge.

Authentic assessment should reflect the real world situation, using a variety of methods and criteria to measure competencies, knowledge, skills, and attitudes. Authentic assessment not only measures what is known by learners, but also measures what can be done by learners. These practical guidelines correspond to the results of the Jon Mueller analysis which can be seen in the table below.

<table>
<thead>
<tr>
<th>Traditional Assessment</th>
<th>Authentic Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose/Respond: pupils choose the answer, determine their choice, and answer with an explanation.</td>
<td>Conduct an activity: pupils do actual activities, so they obtain a learning experience.</td>
</tr>
</tbody>
</table>
Traditional Assessment | Authentic Assessment
---|---
**Condition setting**: pupil activity is settled based on the reviewer’s desires, such as choose the answers which are set by the teacher | **Real Life**: A teacher assesses the actual reality in real life which pupils do in short time

**Remember/State**: pupils remember and can state the information that they know. | **Construction/Application**: authentic assessment puts attention on how pupils analyse or implement their knowledge in the creation or innovation process.

**Constructed Structure**: pupils should be able to develop structures which the teacher asks for to meet the teachers’ targets. | **Behavior structure developed by pupils**: authentic assessment enables the pupils to develop constructions based on their wants

**Indirect evidence**: traditional assessments for example multiple choice tests indirectly measure the knowledge of the students | **Direct evidence**: in authentic assessments, teachers obtain direct evidence about the development of competencies that are directly shown by the students

Reference: Jon Mueller: [http://jfmueller.faculty.noctrl.edu/toolbox/whatisit.htm](http://jfmueller.faculty.noctrl.edu/toolbox/whatisit.htm)

The results of this study prioritized for their theoretical and practical interest, are as follows:

1) it is expected to contribute to the teaching of solid geometry
2) it is expected to increase the liveliness and creativity of PSTT when they are studying and when they are teaching solid geometry;
3) it could be an alternative assessment model to assist lecturers in encouraging student interest and motivation amongst PSTT in training to teach solid geometry.

**Innovations that are targeted in this study are:**

a) For lecturers: teaching strategies and assessment models that can raise interest, motivation and enthusiasm for teaching amongst PSTT to acquire quality teaching outcomes
b) For PSTT and for primary school teachers: it can be used as an alternative for teaching materials in solid geometry.

c) For institutions: it can be used as information that can be taken into consideration in implementing the primary curriculum in teacher training
d) For PSTT: it can be used to show that assessment should not only be cognitive but also psychomotor and affective.
e) For PSTT: portfolio assessment for use in teaching solid geometry can be used as a reference for teaching in primary schools later on.

2. **Methods**

Based on the problem formulation and research objectives mentioned earlier, this research is a developmental research project. According to Seels and Richey (in Richey & Nelson, 1996), developmental research is oriented in the development of products where
the development processes are described as accurately as possible and the final products are evaluated. This research will develop a learning model, learning tools, and instruments needed in the development process which are related to the activities at every stages of development. The final product(s) will be evaluated based on the quality aspects of the specified products. The Development Model follows the five (5) stages of developmental of educational design models from Plomp (1997 or 2001). The educational design model is still not final, so it is necessary to make some modifications at the mixing stage for material development (product) by Nieveen (20??) with attention to three aspects of quality, namely the validity, practicality, and effectiveness aspects.

3. Results And Discussions

3.1 Results of Preliminary Investigation Phase

At this phase, some investigations were done on (1) the problems of teaching solid geometry for PSTT, (2) some relevant theories of portfolio assessment, (3) the theory of the development learning model, (4) the student condition analysis, and (5) the curriculum analysis, The results of the preliminary investigation of portfolio assessment for teaching the development of solid geometry are described below.

Some problems were found in teaching solid geometry: (1) the average score obtained by students was very low, (2) students found the concepts of solid geometry difficult to understand, (3) the learning process in schools is different from that in universities so that most students were surprised by the learning system and (4) the lecturers tended to assess based on cognitive understanding, and less on affective and psychomotor aspects. These facts indicate that the teaching of solid geometry needs to be improved, in this case by the establishment and development of creative thinking abilities amongst the students. Thus, the teaching of solid geometry is expected to follow some paradigm changes, which will result in: (1) changes in teaching behavior, (2) reorienting the teaching of solid geometry to use portfolio assessment, and (3) making assessments not only based on cognitive aspects but also including psychomotor and affective aspects.

The paradigm changes will result in new scenarios for learning geometry viz: portfolio assessment which will lead to improve creative thinking abilities. A portfolio can be defined as a collection of learners' works or documents which are systematically arranged and organized and which are prepared during the teaching-learning process. It can be used by teachers and learners to assess and monitor the development of knowledge, skills and attitudes towards solid geometry. It is a form of authentic assessment, done thoroughly to assess inputs, processes and output of learning. Benefits of portfolio assessment include: (1) It is integrated with learning. (2) It assesses the readiness, processes, and learning outcomes of the students; (3) It covers the attitudes, skills, and knowledge of the students. (4) It is relevant to a scientific approach to learning. (5) It not only shows what students know, but also shows what they have done and what they can do.

3.2 Results from the Design Phase

The base of arranging SAP are learning components (especially the learning syntax), curriculum analysis, topic and task analysis which described based on the learning materials to achieve applied subcompetencies. Based on the curriculum analysis, one
competency is chosen, namely: "solid geometry". The basic competency and performance criteria are reformulated to suit the learning objectives. Based on the topic analysis, the time needed to teach these competencies is 7 meetings.

The student activity sheet (LKM) is designed referring to elements of the portfolio assessment, the LKM covers: perceptions, objectives, materials, conclusions and problems in solid geometry, plus exercises and weekly assignments. While the answers to the exercises in the LKM are given by the teachers to guide the students.

The activities of this research are to choose the needed format and type of instruments, assign some aspects and indicators for validity measurement, enforceability and effectiveness of portfolio assessment for each type of instrument, designing the rules and criteria for determining the validity and reliability of each type of instrument.

3.3 Results from the Realization Phase
3.3.1 Actual Results of the SAP

The learning instrument outputs are the Unit Guide (SAP) and the Student Worksheets (LKM). Operationally, portfolio assessment syntax is described in the unit guide. Learning activity contains a description of student and teacher activities based on learning steps and planned time allocations.

3.3.2 Actual Result of Students' Worksheets (LKM) and Student Handbooks (BPM)

Both the LKM and the BPM contain problem solving steps and activities that encourage students to communicate their ideas in writing. From the problem-solving process, students are encouraged to build their concepts and write them up in their own words on the LKM worksheets provided. The final activity in the LKM is a presentation with application to some problem to measure the students’ ability to correlate everyday life problems with the concepts of solid geometry.

3.4 Results from the Test, Evaluation, and Revision Phase
3.4.1 Feasibility Tests of Validation Sheets

All instruments in this study were first tested for their feasibility or validated by experts and practitioners, before they were used to measure the validity, practicality, and effectiveness of portfolio assessment. The feasibility of each instrument refers to five aspects, namely: (1) the instructions for usage, (2) the materials (content and purpose), (3) the construction, (4) the language, and (5) a general assessment. Validation provides a check list in two columns, yes (valid) or no (invalid). These 2 options are intended to give firmness to the validator to assess proper/not the use of the validation sheet, Thus, the decision is obtained: valid (can be used), invalid (discard or revise).

Four validators tested the feasibility of each document. Recapitulation and information about the revisions are presented below:

3.4.2 Validation Results

Validation was done for the Unit Guide {SAP}, Student Worksheet, Student Handbook, and the other research instruments. The results of the validation and subsequent revisions made to the SAP, LKM and BPM and other research instruments are presented below:
3.4.3 Unit Guide for Validation Result

Based on suggestions from validators, several revisions were made to improve the SAP viz.:
1) Revise the language, so that it is simpler and more easily understood by teachers and students,
2) Provide more explanations about the activities of students and teachers for the preparation of the solid geometry portfolio of exercises and homework,
3) Allocate more time for each stage of learning

3.4.4 Validation Results and Revision of Documents

Results from the validators' assessments of the student handbook and student worksheets were suggestions for revisions to improve the Student Worksheets (LKM), Student Handbooks (BPM) and Student Authenticity Assessment Books (B2AM) viz.:
1) Simplify the language used, so that the documents are more easily understood.
2) Set out more steps to help the students understand the final results asked for which itself should be further simplified to help them interpret the solids with clear examples from everyday life,

3.4.5 Validation Results by Experts and Revision of Tests

The validators recommended revising the achievement test, in particular to revise the language so that it is simpler and more easily understood by teachers and students, also
1) The questions should be more detailed, and
2) More guidance should be provided, as necessary

Based on the validator's input, several revisions were made to improve the achievement tests. In particular revisions were made directly to words or phrases that were unclear or ambiguous.

4. Conclusions

Based on the findings and the results from data analysis, it can be concluded that:
1. The implementation of portfolio assessment in the teaching of solid geometry can be applied practically and effectively for USM PSTT using the learning devices provided.
2. Some supporting learning instruments for portfolio assessment were needed that would meet the criteria of validity, practicality, and effectiveness. The learning instruments were Unit Guide, Student Handbook, Student Authenticity Assessment Book, Teachers’ Handbook, and other Instruments.
3. Getting competency in Solid Geometry aims to make PSTT students more aware and to realize that not only cognitive assessment aspects are needed but also the psychomotor and affective aspects in order to stimulate creativity.
4. For Students, Portfolio Assessment can be used in the initial stages of teaching solid geometry in primary schools.
5. For PSTT students, the Portfolio Assessment method for teaching solid geometry can be used as a reference for their future teaching in Primary Schools.
References


Meuller Jon 20?? [http://jfmueller.faculty.noctrl.edu/toolbox/whatisit.htm](http://jfmueller.faculty.noctrl.edu/toolbox/whatisit.htm), p 3


Nieveen 20?? p 1 reference not complete


The references below are not cited in the text: They should either be cited or if they are not cited they should be deleted:

**THE CONSTRUCTION OF AN ONLINE CURRICULUM-BASED MULTIDIMENSIONAL COMPUTERIZED ADAPTIVE TESTING**

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**ABSTRACT**

This study describes the construction of an online curriculum-based multidimensional computerized adaptive test. 300 items were constructed based on Indonesian curriculum and then administered to 2238 students of grade 9. A multidimensional random coefficients multinomial logit model was used to develop multidimensional scales. The scaled items were then integrated to the multidimensional computerized adaptive testing. After that, the procedures of the adaptive testing were set up for initialization, item selection, ability estimation, and the stopping rule. It found that item blueprint is useful in item bank development. It suggests that embedding the adaptive testing onto online can minimizes the leaking of test materials because online system does not require printing, photocopying, or transportation for the test material.

**Key words:** multidimensional computerized adaptive testing, science education, online assessment, computer education, item construction

1. **Introduction**

It is almost unavoidable the function of computers both in teaching and learning (Shih, Kuo, & Liu, 2012; Weiss, 2011) and in its assessment (Kuo & Daud, 2015; Osman & Kaur, 2014). Further, when the computer is connected to the internet, it can be used as a medium for forum discussions both in and out of the classroom. Similarly, the computer has been used as an essential assessment aid from the time of its invention. One of its important assessment tools is computerized adaptive testing (CAT). It is a computer-based test that has been programmed to tailor to the test takers’ abilities (Reckase, 2009; Wainer, 2000; Wu, Kuo, & Yang, 2012).

Most current advanced CATs are MCATs. Wainer (2000) explained that in addition to information regarding sub-scores, MCAT provides correlation estimations for item responses between domains. This information improves the measurement precision of sub-scores compared to UCAT. Examples of MCATs are the Math MCAT in the Netherlands (Meijer & Nering, 1999) and the Chinese CAT in Taiwan (Wang, Kuo, & Chao, 2011; Wang, Kuo, Tsai, & Liao, 2012).

For this study, the aim was to construct an online MCAT based on Indonesian curriculum for junior secondary school (JSS). To achieve this, it is significant to know the effective way to construct item bank? and what is MCAT procedures to be engaged?
1.1 Biology Curriculum, Item Bank Development and MCAT Procedures

1.1.1 Biology Curriculum

Summarizing from Ministry of Education guideline (2012), Sujiranto, Widianto, & Supriyana (2006a; 2006b; 2006c), Indonesian Biology curriculum for JSS is as follows:
1. Biology and research: introduction to biology, characteristics of creatures, and research.
2. Botany: types of plants, characteristics of plants, plant growth, photosynthesis, and plant cells.
3. Zoology: types of animals, characteristics of animals, animal growth and metabolism, and animal cells.
5. Anatomy functions of human body: pancreas system and diseases, breathing systems and diseases, blood systems and diseases, excretion and diseases, neuron systems, and eye functions.

1.1.2 Item Bank Development

Based on the curriculum, item bank is constructed. The bank is a prerequisite for CAT. To do this, item blue print is needed to ensure that the collection of items covers all dimensions of the subject to be tested (Osterlind, 2002; Saeed & Noor, 2011). This means that items covering a specific required topic should not be left out.

Table 1 shows the blueprint content area that covers four topics of learning to be tested (A, B, C, and D). Two major topics are covered at 40% (A and B) and at 10% each for C and D. As a result, topics A and B include 32 items each (64 in total), and topics C and D consist of 16 items in all. The total number of items is 80 items. Regarding the types of items, every topic has four types of questions (I, II, III, and IV), and every type of question has the same percentage of items (25%). Accordingly, all types of items consist of 20 items each, which is also 80 items in total.

| Table 1 Example of Item Blueprint |

1.1.3 MCAT Procedures

According to van der linden and Glas (2002) and Wainer (2000), there are four steps to set up adaptive testing: initialization, item selection, ability estimation and stopping rule.

In the initialization step, the test taker is estimated to have a score of 0 in its initialization in most CAT practices (Thomson & Weiss, 2012). Thomson and Weiss (2012) suggested that a randomization technique should be used, such as considering a scale from -0.5 to +0.5 of item difficulty as initialization. Another suggestion is to consider the background information of the students, which can be gathered from classroom tests or even pre-tests conducted prior to CAT initialization (Kustiyahningsih & Cahyani, 2013).
In the item selection procedure, Segall (1996) suggested that items can be administered on the basis of item information. This provisional ability estimate obtained from the response of the $j$-th item is used to evaluate the item information function. The discourse of item selection continues, and van der Linden and Glas (2002) suggested that the item selection procedure should rely on a maximum information criterion and Owen’s Approximate Bayes Procedure.

For ability estimation, joining MLE with the Bayesian estimation of expected a posteriori (EAP) is used, especially when only a small number of items is administered. The maximum expected posteriori (MAP) is much more appropriate for a large number of items (Babcock & Weiss, 2012; Reckase, 2009). Chen (2006) added that MAP is appropriate for MCAT systems that test a larger number of domains.

For the stopping rule, there are three types. The first is the criterion of SE, the second is the test length, and the third is the test time (van der Linden & Glas, 2002; Wainer, 2000; Wang, et al., 2012).

2. Material and Method
2.1 Participant
The number of participants was 2238 and their ages were between 13 to 14-years-old, and they were all in grade 9. Nearly 40% of the participants were boys (n=1019), and 60% of them were girls (n=1219).

2.2 Framework
There were six domains assessed: biology and introduction to biology, botany, zoology, human beings, anatomy functions, and ecosystems. Each domain had a different number of sub-domains. Domains two, four, and five had four sub-domains. Domains five and six had five sub-domains, and domain one had three sub-domains. The total number of sub-domains is 25. There were 12 items constructed for each sub-domain, so in total, there were 300 items in the assessment framework.

2.3 Assessment model
Assessment model used in this study is multidimensional random coefficients multinomial log it (MRCML). It is one of MIRT models developed by Adams, Wilson, and Wang (1997). With the MRCML, an item is viewed as one of two types: a between-item multidimensional test or a within-item multidimensional test. The difference between these two types of tests is the domain(s) of one item that is measured during the test. Every item in a between-item multidimensional test is measured in one domain only. On the contrary, for a within-item multidimensional test, each item is measured in more than one domain simultaneously (Wilson & Adams, 1995).

2.4 CAT Procedures
MCAT procedures used in this study in which in its initialization, the test taker’s ability ($\theta$) was set as 0. During item selection, the system selected an item from the bank with the maximum item information on the current estimated ability. After administering the selected item, MCAT will estimate examinees’ abilities based on all responses to
administered items. Then, MCAT checked whether the stopping rules were satisfied or not. If one of the stopping rules was satisfied, then the system stopped giving items and reported the examinees’ proficiencies.

3. Result and Discussions

3.1 Item bank

The first result of this study is item bank. It comprises of 294 (originally 300 items) item in six Biology domains. 4 items were deleted because they did not meet set criteria. The process of item bank construction was supported by item blue print. So, it covers all part of Biology curriculum. The constructed item bank was then input into MCAT system.

3.2 Online MCAT system

The constructed MCAT system was integrated to a server and it can be accessed online: The hyper-text mark up language (HTML) system was connected to a biology item bank. Figure 2 shows the webpage’s greeting in the Indonesian language, which explains that the webpage is an adaptive testing tool in a multidimensional biology domain for Indonesian junior secondary schools. The multi-dimensionality image is represented by pictures of laboratory tools, plantations, animals, humans, human anatomy, and ecosystem protection signs. ID and password columns were provided at the corner of the page and needed to be completed if the test taker were to take the test.

With this online system, hard copy of test material is not needed. Test taker can use computer mouse and keyboard to answer items on the monitor. Besides, the system is tailoring test takers ability which make his/her item differs from others.

Report card was provided at the end of the test. The report showed the test taker’s performance on the test. The result of the test could be used as feedback for remedial instruction. The feedback could be used by individuals as self-regulated learning with peers or in groups supported by teachers (Mok & Zhu, 2014; Wang, 2009).

4. Conclusion and Future Direction

4.1 Conclusion

It is important to use item blue print in item bank development because it provides guidelines for the topic within curriculum that will be covered. The blue print also frames the percentage of items per topic, and how many items there are per topic.

The online Biology MCAT System is a more convenient way to perform an examination than to deliver the P&P. The MCAT system minimizes the leaking of test materials which is commonly experienced by traditional P&P tests, such as the Indonesian NE. For P&P testing, the leaking could take place when test materials (items) are printed, photocopied, or transported to or from the central test center for grading. These issues would not occur with the MCAT examination, which needs no printing, photocopying, or transportation.
Furthermore, the MCAT system’s adaptive function is set to follow the progression of an individual test taker’s ability. In other words, all test takers will have different items, even though they may access the test at the same time and from the same place. Thus, the chance of cheating is lower, and, therefore, the test results will be more accurate.

4.2 Future direction

There are some issues that have not been discussed in this study, such as modules for the system and implementation strategies for Indonesia. Finally, there should be a study of how this adaptive system brings positive impact on improving students’ achievement.

References


**Notes**

Notes 1. Table and Figures
Notes 2. Figure MCAT Webpage

<table>
<thead>
<tr>
<th>Content areas</th>
<th>Type/percentage</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>No. of item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I 25%</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>II 25%</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>III 25%</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>IV 25%</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total items</strong></td>
<td></td>
<td><strong>32</strong></td>
<td><strong>32</strong></td>
<td><strong>8</strong></td>
<td><strong>8</strong></td>
<td><strong>80</strong></td>
</tr>
</tbody>
</table>

*Figure: MCAT Webpage*
DEVELOPING ENGLISH CLASSROOM LANGUAGE MODULE FOR ELEMENTARY TEACHERS IN THE PURPOSE OF IMPROVING COMMUNICATION USING ENGLISH

Darmawati¹, Tursinawati², SeptiaIrnanda³
¹,²&³Serambi Mekkah University

ABSTRACT

This study is aimed at developing a module for elementary teachers for the purpose of improving their skills in using English particularly kinds of instructive and routine language expression (English Classroom Language) during teaching learning process in classrooms. The study was approached by using Developmental Research Design, validating the module, trying out including training and implementing ECL in the classrooms. The sample of this study were 4 (four) Elementary Schools in Banda Aceh. The four samples were supervised to evaluate the ECL implementation in the classroom. The training was conducted for 3 (three) days. The module was validated by an English curriculum and material development trainer. The instruments of this study were questionnaire, interview questions, and observation check list. The questionnaire result showed that the teachers already acquired basic concepts and insights on the important of interaction, the teacher roles in providing example in English, and the role of first and second language in the classroom, the teachers did not understand the effective ways to use English, and ECL has not been effectively implemented in the classroom. Meanwhile the observation revealed that the teachers considered using ‘full English’ in the classroom is good, the use of first language was important in the classroom, the ineffective use of small talk, new vocabularies were only introduced in the lesson topic, the teachers did not take into account the students’ language level, the unvaried expression to show Praise, encouragement, teacher-student interaction individually, and lack of motivation from teachers, the incorrect spelling, and the unnatural English used in the classroom.

Keyword: ECL Module, Elementary Teachers, English Communication.

1. Introduction

English as an international language have to be mastered by people in order to be able to interact with international society. Nowadays, the demand urges people to widely interact in social life. English as the international language encourage Indonesian to learn English so that they can actively compete in the globalization era. It, thus, impacts to students at school.

However, teacher competences in using English are limited. Teachers do not have proper English competence (Astika & Wahyana, 2010). Nevertheless, teachers are one of among the second inputs in language learning environment.

In some of bilingual classesess, English is merely used for the purpose of content, not communicative purpose. Therefore, the use of English in the classrooms is still facing many issues. In general, English used in the classroom is still merely taught in lesson concepts. Therefore, it urges teachers to be able to master and adjust their vocabulary mastery to the content of all subjects.

Besides, there are some subjects are abstract and uncontextual, such as mathematics and science. It, thus, is hard for students should the subjects are taught in English. It not only will decrease the students motivation on learning the subjects but also the teachers are
not competent enough to use English teaching the subjects which later can lead to the misinterpretation of the concepts in the subjects.

English as the classroom language can be a means for teachers and students to be able to communicate using simple English in the learning the concepts of the subjects. It will not order the teachers and students to master a number of vocabularies, but the teaching learning process can occur in a bilingual interaction effectively. It will impact in the students daily communication because the teaching of other subject will use English as a classroom language which can mediate them to use English in their interactional activities in the classroom. Therefore, it will let students to globally interact in the international communication, in the technology, economic, social, culture and education.

Therefore, in order to improve teachers competence in using english as the classroom language in the elementary school, a modul of English Classroom Language (ECL) is introduced.

1.1 Objectives
The objectives of this study are:
2. Model and supervise the teachers in using ECL in the teaching learning process in the classroom.
3. Evaluate the teacher competence and capability in using EL in teaching learning process in the classrooms.
4. Find out the teachers perceptions on the using of ECL in the teaching learning process in the classrooms.
5. Revise and validate the concept and modul in order to produce a valid and reliable concept on using English Langage Classroom (ECL)

1.1.1 Literature Review
1.1.2 English as the Classroom Language in Elementary Schools.
How can English as a means of communication can be actively used by teachers by not interfere other subjects? The answer is by using English as a classroom language in any subject. The classroom language means that English is used only to open the lesson, to give simple command during the teaching learning process, as well to close the lesson. In other words, the teachers perform Code Switching in the classroom for the purpose of providing input in English for students step by step.

Code Switching is mixing a language with another language for certain purposes. Bertram (2006) defines code switching as an action changing a language to another particular language while speaking. Nilep (2006) also said that the forms of language are defined by settings, topics, and functions which people tend to switch the languages because of one of those factors. In the social science class, for example, though a teacher does not readily master the social science term, she has a change to use English in the classroom and switch from English to Bahasa when talking about concepts or topics in social science. In other words, the teachers with low proficiency in English still can use English as a means of communication with the students in the classroom by choosing
English as the classroom language, and the use of Bahasa as the language to deliver the concepts of the subjects. Following are several functions and examples of the classroom language:

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Greeting</td>
<td>“Good morning, how are you?”</td>
</tr>
<tr>
<td>2. Requests</td>
<td>“Can you repeat?” “Open you book page…”</td>
</tr>
<tr>
<td>3. Praise and Encouragement</td>
<td>“Good” “Try again” “It’s alright. Don’t worry”</td>
</tr>
<tr>
<td>4. Gratitude and Apology</td>
<td>“Sorry I’m late” “Sorry?” (not hearing) “Thank you”</td>
</tr>
<tr>
<td>5. Close the lesson</td>
<td>“That’s all for today” “Let’s stop now” “Goodbye”</td>
</tr>
</tbody>
</table>

In implementing the English Classroom Language, the teachers do not expect the students to give responses at first. The initial purpose is to give the comprehensive input for the students so that they get used to listen English which later can initiate and develop the students competence using English in the classroom (Block 2006). As mentioned by Knop (in his study on Increasing Use of the target Language in Classroom Interaction).

“it is hypothesized that the more students hear the target language in meaning-filled contexts and the more they use it in realistic interactions, the greater will be their linguistic growth”

“It was proved that the more often students listened to the target language, the higher chance for their language competence to develop” (Knop 1994)

2. Material and Method

2.1 Research Design

This study was approached by using developmental research. According to Seels and Richey (in Richey & Nelsn, 1996), the developmental research focusses on developing a product that the developmental process is describe in detail and the product is evaluated. In this study, the product that was developed is a concept, a teaching module which produce a new teaching system that was the using of English as a Classroom Language in elementary schools. The developmental process was closely related with the activities in the developmental steps. The final product was evaluated based on the quality designed.

2.2 Location and Subject of the Study

This study was conducted in Elementary Schools in Banda Aceh. The population of this study were students of Fifth Grade in Elementary Schools in Banda Aceh. By taking 4 school as the sample, the sample of this study were the students of Fifth Grade in SDN Baiturrahman Subdistrict, Sabang. The sample were chosen by using purposive sampling
technique where those schools chosen were perceived to use English more actively than other elementary schools in Banda Aceh.

2.3 **Technique of Data Collection**

a. **Interview and Questionnaire with the English tutor**
   The questionnaire was purposed to validate the content of the modul before presented to teachers.

b. **Questionnaire I (Presented after the ECL training)**
   This questionnaire was purpose to find out the teacher perception on the training of English Classroom Language that was already conducted. The questions were about quality and modul effectivity including the content, method, and time allocation as well the trainer performance formulated in closed questionaire.

c. **Evaluating and Supervising the Implementatation of ECL**
   The researcher chose 3 (three) teachers who joined the training. The teachers chosen was based on their performance and motivation during the training. The three teachers were supervised to implement the ECL skills in their classrooms. The supervision was firstly conducted in the first two week after the training. The purpose was that the teachers would have time to practice their new skill for several times before the discussion and supervision were conducted.

2.4 **The Procedure of Modul Revision**

Following is the framework to analyse the progress of ECL skill mastery starting from training to supervising:

<table>
<thead>
<tr>
<th>Modul Level I- Content Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposing questionaire questions to the curriculum expert→Input given by the curriculum expert→Proposing the questionaire to the trainer→Input given by the trainer→Input analysis from the curriculum expert and the trainer→Revising Modul</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modul Level II- Trial - Trainig</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECL training for teachers→Input from teachers →Supervising →Input for teacher consultation→Input analysis from questionaire and supervising I, II and III→Revising Modul</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modul Level III(Final)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Revision</td>
</tr>
</tbody>
</table>

2.5 **Technique of Data Analysis**

To analyse the data in the questionaire and observation, the write used the following formula:

\[ P = \frac{F}{N} \times 100\% \]
P = The percentage to be measured
F = The number of frequency of each aspect
N = The total of all final instrument
100% = constant number.

In the observation checklist, there were 4 (four) alternative answer with the following scale
Scale.
1. A = 76% - 100% very high
2. B = 56% - 75% high
3. C = 40% - 55% sufficient
4. D = ≤ 40% low

This percentage formula was used to analysed the classroom expression produced by the teachers while teaching in the classrooms and teacher perception on the use of classroom language in the elementary schools.

3. Result and Discussions
3.1 Result of Expert Recommendation
a. Consultation I
   The expert found that the division of chapter was not appropriate. She suggested to divide topics based on the steps of teaching learning process (opening/main activities/closing/teaching technique). In the first module draft, the writer placed the opening and closing as one chapter (Chapter 1/Modul 1) and named as routine language.
b. Consultation II
   The expert recommended to eliminate parts of tips and trick using ECL and changed it under the title of Techniques of Classroom Interaction.
c. Consultation III
   The expert revised the jargon language and suggested to eliminated long and complicated expressions.

3.2 The Scope of Classroom Language Module
The scopes of the classroom language module are:
a. Routine language to open the lesson

<table>
<thead>
<tr>
<th>Objectives</th>
<th>To introduce the definition and function of classroom language.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To provide examples on the use of routine expression that teachers can use to open the lessons.</td>
</tr>
<tr>
<td></td>
<td>To provide a correct example of language pronunciation of the routine language used to open the lessons.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Content</th>
<th>1. Greeting/Salam</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Introduction</td>
</tr>
<tr>
<td></td>
<td>3. Small Talk</td>
</tr>
<tr>
<td></td>
<td>4. Taking Attendance</td>
</tr>
<tr>
<td></td>
<td>5. Time to begin</td>
</tr>
<tr>
<td></td>
<td>6. Waiting to Start</td>
</tr>
<tr>
<td>7.</td>
<td>Put your things away</td>
</tr>
<tr>
<td>8.</td>
<td>Cleaning whiteboard</td>
</tr>
</tbody>
</table>

| **Method** | Slides Presentation  |
|           | Modeling            |
| **Resource** | Relevant videos  |
| **Time** | 2 x 45 minutes |
| **Source** | Youtube  |
|           | Relevant text books |

b. Classroom language in Main activities

| **Objectives** | To introduce the expression used as commands during main activities.  |
|               | To provide examples on kinds of expressions used in the classroom during the main interaction.  |
|               | To provide examples on the correct pronunciation of kinds of expressions used during the main interactions.  |

| **Content** | 1. Simple Instruction  |
|            | 2. Classroom management Organization  |
|            | Interrogation  |
|            | Explanation  |
|            | 3. Feedback  |
|            | 4. Spontaneous Language |

| **Method** | Slides Presentation  |
|           | Modeling            |
| **Resource** | Relevant text books  |
| **Time** | 2 x 45 minutes |
| **Source** | Youtube  |
|           | Relevant text books |

c. Closing the lesson

| **Objective** | To introduce kinds of language expression used to close the lessons.  |
|               | To provide examples on kinds of language expression used to close the lessons.  |
|               | To provide correct pronunciation on kinds of expressions used to close the lessons.  |

| **Content** | 1. Time to stop  |
|            | 2. Not Time to Stop  |
|            | 3. Wait a Minute  |
|            | 4. Next Time  |
|            | 5. Setting Homework  |
|            | 6. Goodbye  |
|            | 7. Leaving the Room  |

| **Method** | Slides Presentation  |
|           | Modeling            |
| **Resource** | Relevant videos  |
| **Time** | 2 x 45 minutes |
| **Source** | Youtube  |
|           | Relevant text books |
d. Supporting Techniques

| Objectives                      | 1. To introduce kinds of supporting techniques used in the classrooms.  
|                                | 2. To provide examples on how to use supporting techniques in the classrooms.  
|                                | 3. To practice using the supporting techniques in the classrooms.  

| Content   | 1. Tips  
|           | 2. Supporting Techniques  

| Method    | Slides Presentation  
|           | Modeling  
|           | Peer-Teaching  

| Resource  | Relevant videos  
|           | Flashcards  
|           | Pictures  
|           | Etc  

| Time      | 2 x 45 minute  

| Source    | Youtube  
|           | Relevant textbooks  

e. Designing the Implementation of ECL

| Objective | 1. To explain to teachers on the important of using ECL in the classrooms.  
|           | 2. To train teachers designing their lesson using ECL.  
|           | 3. To train teacher to be independent develop their lesson using ECL.  

| Content   | 1. ECL schedule  
|           | 2. ECL set implementation  

| Method    | Worksheet  

| Resource  | -  

| Time      | 2 x 45 minute  

| Source    | Youtube  
|           | Relevant textbooks  

From the questionnaire, the writer found that:

1. The module should be relevant to the curriculum.
2. The module should be improved in the aspects of language and content.

3.3 The Result Of Classroom Observation

The result of classroom observation showed that:

a. Using Full English is still considered as the best practice.
b. Still considered that using mother tongue can not be eliminated in the classroom.
c. Did not promote the use of *small talk*, new vocabularies were introduced in the lesson topics.
d. Using English neglecting the level of students language competence.
e. The teacher language were long and complicated. Moreover, the teacher speaking speed can not be adjusted by the students.
f. The unvaried forms of *Praise* expressions.
g. Less of *encouragement* from the teachers.
h. Less of individual interaction between teacher and student.
i. Less effort to encourage student motivation to use English.
j. The incorrect example
k. The incorrect pronunciation.
1. The unnatural English
m. The switching from English to Bahasa was done after the students can not understand to what the teacher said or the teachers can not find the relevant expression in English.

3.4 The Result of Questionaire
The result of Questionaire indicated that:
   a. The teachers possessed basic skills on how to interact in the classroom. They understand the teachers role in providing examples is important.
   b. The teachers possessed sufficient understanding on the role and function of mother tongue and English in the classroom. They understand that the using English needs interaction not all of them can fully understand how to actively use English that can initiate student interaction in the classrooms.
   c. The teachers already implemented their English skill to interact with the students as their classroom language as well their mother tongue in particular activities which are varied between one teacher and another.

4. Conclusion
The scope of English Classroom Language: the routine language used to open the teaching learning process, to direct the classroom in main activities, to end the teaching learning process, the supporting techniques, to develop the steps of implementing ECL.

The questionaire result showed that (1) the teachers already has a preliminary skill on using the ECL and the important of interaction in the classroom, the teacher role in providing examples, and the role of mother tongue and English in the classroom; (2) the teachers did not fully understand on how to use effective English in the classroom (3) the teachers did not effectively implement ECL in the classroom.

The observation result showed that: (1) the teacher perceived that using full English in the classroom was as the best practice (2) the mother tongue can not be eliminated in the teaching learning process (3) the small talk was not effectively used in the classroom (4) the new vocabulary was taught in the subject topics (5) the teachers used English neglecting the level of students English competences (6) the unvaried expression to show Praise, Encouragement (7) teacher-student interaction individually (8) and less motivation from the teacher; mospronunciation (9) unnatural English used in the classroom.

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DEVELOPING MODULE WITH CONTEXTUAL LEARNING AND MOTIVATION TO IMPROVE STUDENT’S LEARNING OUTCOMES ON THE SYSTEM OF COLLOID TOPIC

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ABSTRACT

Colloidal system module development with contextual learning aims to produce a product which improves motivation and students’ achievement. The method is an experimental (True experimental Design). The subjects were students in class XI IPA SMAN 1 DarulImarah. Source of data and samples were taken from IPA-1 and class XI IPA-4 with 68 students and 5 teachers. Technique of data collection used a pretest-posttest, the questionnaire module, and motivation questionnaire. The results reviews from the experts on systematic writing, language, content, and design modules said that colloid system module with contextual learning has compiled a decent meet eligibility aspects in terms of both theoretic and empiric. However, the instrument requires validation by experts and the stages of the test results at the same school with school studies. Data were analyzed by an independent engineering test sample t-test, namely \( t = -5.676 < t_{table} = -2.00 \).
And the Mann Witney increased with the difference that the mean of 24.50 (grade control) to 43.93 (class experiment). Motivation and student learning outcomes in experimental class using contextual learning module on topic colloidal system is higher than the control class motivation with use of conventional learning.

Keywords: module, contextual learning, motivation and learning outcomes, colloidal system

1. Introduction

Colloidal system is one of the materials contained in chemistry and often finds it difficult to understand the difference between colloids, mixtures and solutions. Then the students are also difficult to identify the types of colloid and explain the process of making colloid, so that students can not apply the colloidal system into everyday life.

In order to help students achieve of standard content and competency, it is necessary to improve in the development of teaching materials and learning innovations. The learning process needs to be sought to be interactive, inspiring, fun to be able to motivate students to participate actively in understanding and applying the material directly on a day-to-day environment (Sabri, A. 2010). Due to lack of time available then most teachers only give record material colloidal system briefly to the students or give assignments to students to summarize materials colloidal system of textbooks. And there are still many students who not passed with KKM under 75. So to enable students to understand the material colloidal system, the students must understand and actively to encourage their knowledge from the understanding of previously owned. Colloidal systems are also widely available in daily life, it can be developed through the development of efficient modules.

Ministry of Education (2008) describes the module is printed teaching materials are
designed to be studied independently by study participants. In this case, to facilitate use of the module in the learning needs for development.

Contextual learning is a concept that helps teachers to find connections between teaching materials with real-world situations and encourage students to make connections between the knowledge of the material that has the application in their lives as members of the family and society (Komalasari, 2010). Similarly, Sumiati and Asra (2008) suggested contextual learning is the teacher attempts to help students understand the relevance of learning material that he learned, by doing an approach by providing opportunities for students to apply what they learn in class. To facilitate learning and understanding the materials colloidal systems need to be used in the development of innovative learning modules using a contextual approach so that the material colloidal systems can interest, motivation, not boring thus improve student learning achievement as expected. The formulation of the problem is how the responses of teachers and students for the development of module colloidal system with contextual learning and how learning achievement relationship and the level of student motivation on the material colloidal systems using colloidal system modules through contextual learning.

Module is one of the teaching materials that assist and facilitate in the learning activities. Ministry of Education (2008) with the main purpose of this module is the development of systems to improve the effectiveness and efficiency of learning alongside students can learn to complete the level, can also enable students to learn through reading, doing undertake activities or solve problems with written materials, Russel (in Sumiati and Asra, 2008) describes the module is a package of teaching and learning with respect to one unit of learning materials, the students can learn complete module individually, if they are not able to master the material thoroughly, the student can not proceed to the other material.

Preparation of the module can also be customized based on contextual learning to include seven principles of learning, as follows: (1) inquiry, (2) questioning, (3) constructivism, (4) learning community, (5) authentic assessment, (6) reflection, and (7) modeling. (Sani, 2013). To further facilitate the study of chemistry, namely activities carried out by the teacher using the easier media for students to understand the chemical material such as colloidal systems modules developed by linking the chemical materials with the real world, it make interesting and motivated students to learn, and changes in knowledge, understanding, skills, and attitudes in chemistry. Sumiati and Asra (2008) suggested contextual learning is the teacher attempts to help students understand the relevance of learning materials were studied, by performing an approach that provides the opportunity for students to apply what they learn in class.

2. Research Methods

The study was conducted at SMAN 1 DarulImarah of Aceh Besar in the mid-semester from May to June 2014. The population in this study were all students of class XI Academic Year 2013-2014, amounting to 136 students and spread in four classes, namely, class XI-1, class XI-2 IPA, IPA-3 class XI and class XI-4 the sampling is done by using random sampling techniques were randomized class. This research was conducted with the experimental method (True Experimental Design) (Sugiyono, 2009). This method is used
to determine the increase in motivation and student learning achievement with the use of contextual learning module.

The processing of the data, it would require data collection techniques. The data collection technique in this research is using a tests and questionnaires in accordance with the Likert scale and the scale Guttman. And data collection needed a good test. A good test is usually meet the criteria of high validity, high reliability, good distinguishing, and a decent level of difficulty. Before tested to the sample, it was validated by experts and tested to other schools equivalent of 12 questions to 10 questions.

Then to measure students' motivation was also carried out the validation by experts who are experts in the fields where the psychological motivation questionnaire consists of 40 items using Likert scale. After validated by experts from 40 items to 28 items, the measured variables are translated into indicator variables, the indicator then used as a benchmark to develop a Likert scale which has gradations from positive to negative (Sugiyono, 2009)

3. Results And Discussion

To analyze the results of the data in this study were divided into three sections, the first analysis of data on the development of the colloidal system module, a second data analysis of student learning achievement on the colloidal systems, and third-analysis of data on student motivation with contextual learning. Based on the results of data validation by three experts or experts from the fields of chemistry lecturer 2 and 1 high school chemistry teacher can be concluded that the colloidal system module developed with contextual learning is feasible for use in teaching and learning. Then the response from the teacher module is obtained with an average of 86% of teachers responded positively to the development of the colloidal system module with contextual learning, while student responses obtained with an average of 88% of students gave positive responses to contextual learning modules colloidal system, after students learn module at home.

Assessment of learning achievement in colloidal systems in the control group and experimental groups were done in different ways. In the control group applied to conventional teaching methods, while the experimental group using colloidal system module with contextual learning. Average values obtained pretest students in the control group and experimental groups respectively, are 34.0 and 33.5 then when posttest acquisition value increased to 72.5 and 82.51. To find out improving student learning are achieved from the calculation of the average result of N-gain in the control group and experimental group respectively which is 0.5776 (medium category) and 0.7509 (high category). Then the normality test using Kolmogorov-Smirnov One Sample Test on Lilliefors methods that have a significant test criteria>0.05 and to determine to what differences in the mean values for each variable, or where there is no difference between the two distributions, or to determine whether a distributed two populations have similar forms (Nasir, 2011).

Because of this, the median difference can proceed with testing normality test using the Kolmogorov-Smirnov Lilliefors with significant value experimental group and the control group 0.200 greater than 0.05, then the data is normally distributed, then Ho is accepted Followed by a homogeneity test using Deciptive statistic Explore the SPSS
statistical applications 20.0. Because normal distributions it is followed by variant homogeneity test is obtained is by Sig 0.006 < 0.05 for values greater probability of 0.05, it can be concluded that the N-gain of the pre test, post test group the control and experimental groups have the same variance. Significant test on the N-Gain pretest and post test has a significant value is 0.006, then the homogeneous data. Then continued by using independent sample t test statistics Test. So to see the difference between the control and the experimental group was taken the value of the two samples. After done, it looks average values for the control group is 0.5776, while for the experimental group had an average value is 0.7509 has increased. By comparing F arithmetic with F table. For t = -5.751 < t table = -2.00 and sig = 0.05 then Ho is rejected, which means N-gain experimental classes differ significantly from the control class.

Motivation to learn the experimental group and the control group were measured using motivation questionnaire that has been validated by the validator. Once the motivation questionnaire filled out by students using a Likert scale questionnaire ranges 5. The data is intended to determine the difference between the students' motivation using modules with does not use module. Students’ motivation in the control group who did not use the module, with the conventional learning system used normality test and homogeneity test. Equals normality test data test learning achievement between experimental and control groups, it turns motivation and learning achievement not Normal distribution, because the number sig> 0.05, both Kolmogorov-Smirnov and Shapiri-Wilk test, which is significant for the motivation value 0.000 < 0.05 as well as to significant value to the learning outcomes ie 0.000 < 0.05. Then continue non parametric test using Two Independent Sample using the Mann Whitney. This test does not require the assumption of a normal distribution and homogeneity of variance. Rank Mean or average rating for each group. The unity group average of 24.50 ranks lower than the average of the second rank, namely 43.93. There is a second group mean difference between control and experimental. Results of the analysis showed differences Mean Mann Witney Rank on student motivation than the control group increased to 43.93 24.50 then the experimental group increased student motivation is pretty good from the control group.

4. CONCLUSION

Based on the results of data analysis and discussion, the results of this study can be concluded that the development of the module with contextual learning can increase student motivation and learning achievement in a colloidal system material SMAN 1 Darullmarah of Aceh Besar, as follows:
1. The results of the data obtained it can be concluded that the colloidal system module has compiled a decent meet eligibility aspect in terms of both theoretical and empirical terms.
2. The results of students' learning and motivation after using the following modules:
   a. Learning achievement of students of class XI IPA SMAN 1 Darullmarah school on colloidal material system that is taught using contextual learning module (experimental group) compared with conventional learning (control group), is N-average gain of 0.5776 on different control classes N-real with an average
gain of experimental class is 0.7509. Results of the t test with t = -5.676 < t table = 2.00, concludes that there is a significant difference between the N-gain experimental class than N-gain control class.
b. Motivation and learning achievement grade students experiment with using contextual learning module on material colloidal system is higher than the control class motivation with the use of conventional learning value Mann-Witney test showed a significant difference in Mean Rank are 24,50 (grade control) compared with 43,93 (class experiment).

Suggestions
Teacher that teach Chemicals learning by using contextual modules can apply all examples of chemical materials into daily life or to the real world so that it will increase the motivation, interests, and learning achievement of students about chemistry, in order to achieve learning objectives.

References
ASSESSING ACEHNESNE LANGUAGE CURRICULUM BASED ON CIPP MODEL

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ABSTRACT

In assessing the curriculum, many models offered by the evaluation expert. In this paper, the authors choose a model curriculum of quantitative assessment, particularly the model Context, Input, Process, Product (CIPP) developed by Daniel Stufflebeam. This model is used for the assessment of Local Content of Acehnese language curriculum in Banda Aceh. CIPP model are purely fundamental, comprehensive, and integrated. The main problem posed in this paper is "How do I apply the model CIPP in assessing the curriculum (esspecially in assessing the Acehnese language as Local Content Curriculum)?" CIPP model application in assessing the curriculum as follows: (A) Planning assessment, at this stage the planned matters related to the implementation of the assessment. The plan includes (1) a field, man, (2) money, (3) management, and (4) time. (B) Assessment of the curriculum is based on the model CIPP, namely: (1). Focusing on the phenomenon to be Assessed curriculum, (2). Information Collection (3). Organizing Information, (4) Analyzing Information. Based on data from the Acehnese language curriculum implementation at every educational unit was clearly SK and KD (Basic Competence) and indicators relating to the practice will not be realized. Therefore, the Regional Government of Banda Aceh need to design adequate local curriculum tailored to Unit Level Curriculum (SBC). This curriculum should be designed to be implemented with a professional. Therefore, the purpose of language learning Achenese is a skilled language, both orally and in writing, the curriculum is designed to charge a lot of practice and speaking practice of Acehnese.

Keywords: assess the Acehnese language curriculum, CIPP Model

1. Introduction

Education in Indonesia has undergone several changes in the curriculum, which is a change from 1974 to curriculum 1984 curriculum; from 1984 to 1994 curriculum; and from 1994 to 2004 curriculum (Ansyar, 2000: 2). The change was not based on the results of the evaluation of the curriculum in a professional manner, fundamental, comprehensive, integrated, and even more likely to be political (replace Minister Adressing curriculum). We cannot deny that the curriculum changes (including changes in language curriculum into the development of Aceh Local Content curriculum) it is absolutely necessary because of three main factors, namely: (1) sociological, (2) ideological, and (3) ontological (Nasution, 1994 : 5). But what happens in our country is that the change is more due to political factors than others.

Curriculum assessment is one of the core components of the curriculum. According to Zais (1976: 439) integral components of a curriculum are (1) the purpose, (2) the content, (3) learning activities, and (4) evaluation. With the rationality that the curriculum assessment activities is an activity that is very fundamental for curriculum development.

Many models offered by the evaluation expert in assessing the curriculum. According to Ornstein and Hunkins (1985: 261), there are two model of curriculum assessment in outline, namely: (1) the model curriculum qualitative assessment. This
model include a case studies model and illuminative model; (2) quantitative model as a model curriculum assessment ala Tyler, Taylor and Maguire theoretical model; a model system approach Alkin, Stake Countenance models, and CIPP models. In this paper, the authors simply choose a model curriculum quantitative assessment, particularly the Context, Input, Process, Product (CIPP) Model developed by Daniel Stufflebeam. The Reasons for selecting this model for the assessment of curriculum, (especially curriculum Local Content of Acehnese Language in Banda Aceh) is because this model are purely fundamental, comprehensive, and integrated. It Is fundamental, because include objects that core curriculum objectives, materials, learning process, and the evaluation itself. It is comprehensive because evaluation is also focused on all stakeholders in the educational practices and curriculum implementation. While integrated because the evaluation process involves all parties involved in the practice of education, especially students.

2. Problems
The main problem posed in this paper is "How do I apply the model CIPP in assessing the curriculum (including in assessing the language curriculum into the Aceh Local Content)?"

3. Discussion
1.1 Curriculum Design
Prayitno (2004: 52) considers the curriculum as an educational supporter. Meanwhile, Zais (1976: 7-9) reveals six curriculum nature, namely: (1) a course of study, (2) a matter of learning, (3) a series of planned learning experience, (4) experience that will be undertaken students in the school or educational institution, (5) a set of learning outcomes that are structured as serial, and (6) an action plan. In this paper, which is intended by the curriculum is a written action plan. Thus, the curriculum is seen as one of written document.

As a written document, the curriculum is not permanent or lasting. The advantages are document containing the draft act, it designs itself should always be adjusted to developments and changes associated with students, teachers, learning technology, the demands of society and science. To determine the characteristics, quantity, and quality of change that is needed assessment.

1.2 The nature of CIPP Model Curriculum Assessment
Core assessment is to take decisions about curriculum in a broad sense. Daniel Stufflebeam (in Ornstein and Hunkins, 1985: 252) defines assessment as a "... describes the process, gain, and develop useful information for establishing alternative-decision". This expert divides the three types of decisions which can be taken as a follow-up assessment. Such decisions are: (1) decisions related to the development of learning, (2) decisions relating to individuals such as teachers and students, and (3) decisions related to school administrative rules, such as how good school system, as well as how regulation of the school community.

In the CIPP model assessment, it will assess the effect of management decisions related to the curriculum. There are three main process of assessment, namely: (1) the
disclosure of information required, (2) gathering the data, and (3) the development of information on important matters. Based on the assessment, there are four types of decisions that can be formulated as follows: (1) decisions about planning, (2) decision on structural late, (3) a decision on implementation, and (4) a decision on the process of repetition.

In accordance to which type of decision taken, there are four assessments classified, e.i (1) context, (2) input, (3) process, and (4) product. Assessment of the context for the purpose of illustration obtained careful about students' learning environment. It can set a series of goals, including the purpose of the assessment. Assessment of input to develop information on how learning sources relevant to the program’s objectives is established. Assessment of the process intended to develop controlled and management of learning programs as a result of curriculum implementation. Assessment of the product is intended to determine whether output or the learning outcomes in accordance with what formulas outlined in the destination.

1.3 Steps in Assessing the Implementation of CIPP Model Curriculum

In evaluating the curriculum, the implementation of the CIPP model must be followed these steps, respectively:

1) Planning and Evaluation

At this stage the planned matters related to the implementation of the assessment. The plan includes a field (1) man or the people who will be involved in the assessment, (2) money, budget required and must be provided in the implementation of the assessment, (3) management, organizing implementation of assessment, both the determination of the organizational structure, space scope of duties and responsibilities and delegation of authority, and (4) time, i.e the time from planning and recommendation, into reporting of results.

2) Assessment

There are several steps involved in the implementation of the curriculum is based on the model CIPP assessment, namely:

(1) The curriculum focusing on the phenomenon to be Assessed

At this stage, the assessor establishes what will be assessed and what the design used. For that reason, the trial implementation of the curriculum in an educational institution or some schools designated as pilot-project. In this phase, the focus is evaluation set: whether the entire school, or a particular school. Whether school was a school master or core and the other is the impact of school.

(2) Information Collection

At this stage the assessors to identify sources of essential in formation and tools (instruments) used to bring together the information. After everything is prepared, assessors carry out information collection. Informants expected are parties especially directly related to the learning process, such as students, teachers, school leaders, administrators, school committee and community representatives who represent parents and certain professions that stand out. Informations also associated with the description of the content or learning
materials, especially input readiness and participation of input, process, mainly related to the suitability of the process to the material and inputs as well as other aspects of the infrastructure, as well as the product. If the product has not been produced, it is impossible implemented curriculum assessment.

(3) Organizing Information
The assessors organize information for easily interpreted and utilized by the audience (in this case the assessment group). Organizing information includes encoding, organizing, storing, and preparing for re-food information.

(4) Analyzing Information
At this stage, the assessor selecting and developing analysis techniques adequate information. Technical specifications depend on the focus of assessment and assessment tool used.

1.4 *Informations* Reporting the Assessment Results
At this stage, the evaluator establishes the best way to report-the result of assessment. At this stage set whether to use formal or informal way. In addition, the final report should include details of statistical data.

1.5 *Recycling* Information
Sustainability information and assessment is needed in the development of the curriculum. Although based on the assessment results hand out, the curriculum is already adequate, but providing feedback, pemodifipity, and adjustments are still needed because the various forces that affect school always calls for change.

4. **Conclusions**
Based on theoretical studies and application of which have been implemented CIPP can be concluded that the model is the best model of curriculum assessment because fundamentally, comprehensive, and integrated. It is fundamental, because include objects that core curriculum objectives, materials, learning, and assessment itself. It is comprehensive because it also focused on the evaluation of all relevant parties in the implementation of educational practices and curriculum. It is integrated as the assessment process involving all stakeholders in educational practice, especially students.

5. **Suggestions**
Results of the study of literature prove that the curriculum assessment using CIPP Model is very popular and implemented programmatically in the US. Therefore, it is time for the development and curriculum changes (including changes in the curriculum other subject areas) in Indonesia should also be based on an assessment of curriculum models CIPP.

The main drawback is the CIPP model application in terms of financing. CIPP model application requires a relative larger fund. However, if this model to be applied in a limited area (e.g Banda Aceh), then this weakness could be overcome. In addition, based on the application of curriculum assessment model of CIPP in a limited area, the assessment results can be used as a general source and consideration of the applicable curriculum.
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A Conflict of wild boar (Sus scrofa) as a widespread species was occurred in Meuraxa Banda Aceh. The experiment was conducted in two Meuraxa villages, namely Surien and Lamjabat. The purpose of this study was to (1) determine the extent and distribution ranges of wild boar in Meuraxa, (2) determine home range descriptions of wild boar and (3) identify potential diversion ranges as wild boar control solutions in Meuraxa. The method used was a survey and observation. Data analysis was done using quantitative analysis with ArcGIS 9.2 software. The results are: Home range of wild boar in Meuraxa Banda Aceh includes residential areas of Surien and Lamjabat. Extensive home range is 39.92 ha. Description of the home range areas explored include the wild boar with availability of food, mineral resources, wallowing place, the slope of the land and the vegetation that wild boar prefer to stay. Potential diversion of wild boar area can be done by keeping the environmental sanitation, rehabilitation of land and put the boar into a suitable relocation area ecologically.

Keywords: Wild Boar, Home Range, Diversion

1. Introduction

Wild boar (Sus scrofa) or pig are classified as mammals and wild animals with a very high rate of fecundity. The wild boar has adaptability and high deployment to different habitats. Wild boar could enter the area for nesting shelter residents and do all the daily activities in the natural habitat like pigs. If the forest as a habitat for native pig damaged by natural disasters, fire, and land conversion, the habitat disturbed and pig enters the settlement that close to the city of Banda Aceh. This happens in Meuraxa, in two villages namely Surien and Lamjabat. Wild boar is entering residential areas.

Research of Friebel and Jodice (2009:49) states that the home ranges of wild boar is associated with people's lives. Pigs have disrupted the ecosystem for plants and become pests. Gaston et al., (2008:1) reported that pig is an animal which is controversial because fecundities a very high level. Spread is very wide and can move to a place that is not their natural habitat, which could interfere with other animals and plantation habitats and ecosystem development.

Native habitat is the wild boar in the forest area moist or swampy areas. Habitat types preferred by wild boar are a sloping, low bush, and not tightly closed. This habitat type can make ends meet due to lack of boar human activity. The wild boar has adaptability and high deployment to different habitats. Wild boar can enter a residential area resident, nesting and doing all the daily activities like pigs in their natural habitat.

We examined the home range variation and habitat use of wild boar in Meuraxa, Banda Aceh. Wild boars are found abundant in Surien and Lamjabat was occurred in October 2012. Wild boar were stay in adjacent of village lands. Our objective were to (1)
determine the extent and distribution ranges of wild boar in Meuraxa, (2) determine home range descriptions wild boar and (3) identify potential diversion ranges as wild boar control solutions in Meuraxa.

Meuraxa is located in Banda Aceh district has an area of 725.8 ha. Surien and Lamjabat is the part of Meuraxa that has a 4-6 meter elevation above sea level. This area is close to the mountainous region to the vast stretches of protected areas to the direction of extension of the Bukit Barisan. Meuraxa open land in an area 398 acres or more than half the total area Meuraxa. Meuraxa open land in an area that consists of rice fields, open land, scrub, and swamps overgrown with Typha latifolia height of 3.5 meters, mangrove, plantation residents, ponds and bodies of water (irrigation) and sea. Residents that was filled by the settlements, is a land area. After the tsunami, many people move in and occupy other regions in Aceh even get out of town. Now, the only settlement in the region meet fraction Meuraxa.

2. Material and Methods

We conducted a field work from January 2013 until March 2013. From January till February the observations were made over four times in one month in each villages (Surien and Lamjabat). 8 plots number was divided into 2 parts, 4 plots in Surien and 4 plots in Lamjabat. Each plot is done by following the path (track) wild boar. Coordinate points boar tracks recorded with GPS and note the properties characteristic of the area found traces of wild boar.

Observation schedule is once a week to observe the differences in home range of wild boar. Indirect observation through interviews in general and literature studies of reading materials such as books, news, and the journal was also to obtain secondary data.

Analysis of the data used in the form of quantitative data analysis for calculating the boar home ranges using ArcGIS 9.2 software with the help of GIS (Geographic Information System) is used to describe or explain the home range pigs in the form of a map polygon, as well as a general assessment interviews with respondents, a society in Meuraxa who live nearby the area to be a place of research.

3. Result and Discussions

The results obtained are presented in the form of research data in the form of thematic maps depicting the distribution of home range wild boar (Sus scrofa pictus) in Banda Aceh Meuraxa. Extent and description of the habitat of the wild boar is also found and described in the Table in Appendices. It also analyzed the potential relocation areas corresponding wild boar with boar native habitat.

Traces of wild boar are found in various locations near the settlements. Boar home range polygon formed by several observation points are traced by the trail of wild boar is found then in track with GPS. Extensive home range of two Gampong overall is 39.92 Ha. Total plot of 8 units each plot 4 plots. Home range point in total is 60 points.

Home range (home range) Meuraxa boar in Banda Aceh is very diverse. Before the tsunami, wild boar home range is the area along the forest in Peukan Bada Aceh Besar that spread to secondary forest around Peukan Bada, Glee Geunteng, Glee Gurah and Ujong Pancu.
3.1 Description of Home Range Wild Boar (Suscrofavittatus)

Both habitat in the villages showed sign of Typha latifolia, which is already high with watery wetlands and highly favored by the wild boar. Boar allegedly not only passing and crossing both the village, but the boar had been lodged in the Villages of Lamjabat and Surien.

Bad habits was done by the local community, i.e. littering, becomes a big problem that affects the arrival of the wild boar to the region. The wild boar is often out at midnight to find food by looking for the scrap food in the trash discarded in plastic bags. Waste is to be around the area where the growth of Typha latifolia. In fact there are also piles of garbage around the house residents. Boar footprints found around houses besides their homes there is a pile of garbage that has been extended until 7 feet round.

In addition, the wide puddle in the center or outskirts of Typha latifolia and bushes near homes can lead to wild boar meet their needs and remain lodged in the region. Boar can acquire worm or snail found in mud or just serve as a place to wallow. The boar preferred Gampong Surien and Gampong Lamjabat because it has a quiet neighborhood residents and a wide space to be used to carry out the activity of wild boar living.

Based on field data obtained, trace amounts of wild boar (footprints, gusiran soil, feces and puddles of water) habitats found in the Villages Lamjabat and Surien can give an idea of the priority factors to choose the location for their activities.

3.2 The level of damage caused by Home Range of Wild Boars in Meuraxa

The level of damage caused by wild boars in Meuraxa included light and infrequent. Although wild pigs are a pest for crops, however, wild boar does not interfere with or injure humans. Wild boar in the Villages Lamjabat and Surien only looking for food from garbage dumped carelessly by people nearby their home. Although wild boar also been found damaging cages and garden residents, but the level of disturbances is still relatively mild.

3.3 Wild Boars Home Range Control Solutions in Meuraxa

Currently, local residents set a trap and put toxic materials into the food that is left outside the house where a boar crossed. However, both of these are not well managed because wild boars are not eating the food and traps also do not deliver results.

The correct solution to the conflict in Meuraxa boar is by ridding Typha latifolia, which became the new habitat that wild boar population is located in the residential area. Wetlands are overgrown with Thypha latifolia should be used for agriculture or as artificial ponds to raise fish or crab. In addition, it is necessary to promote sanitation or environmental care and socialization to the community for not littering.

By doing so, wild boar will move by itself to seek suitable habitat to survive. Boar habitat can also be transferred by using methods such as by way of expulsion, anesthesia, or snare wild boar pig to move into suitable habitat and life that support boar.
3.4 The potential Territory for Wild Boars

The existence of wild boar in the Villages of Lamjabat and Surien are not a natural thing. Wild boar habitat is in the forest, not in residential areas. Wild boar should be relocated to suitable habitat and do not interfere with the activity of local residents.

The suitable region for boar relocation has altitude 750 meters above sea level. This is consistent with the nature of the wild boar who loves his habitat with a height below 800 masl. Wild boar also like areas that have canopy cover is not tight; the availability of adequate feed and has a place for wallowing. They also liked the area with the availability of certain vegetation (e.g shrubs) that can be use as boar nest.

3.5 Sociology Conservation

The existence of wild pigs in residential areas in the city of Banda Aceh Meuraxa ever is a breaking news. Initially, many people who wonder why this could happen because Meuraxa is an area that is close to the urban areas of Banda Aceh. The news alleged emerged about factors to the declining the wild boar population in Meuraxa residential areas.

Wild boar who’s typically lives in forest habitats move to residential areas must be affected by certain factors. Wild pigs are considered as pests because its damaging crops and livestock community. And if they live in the woods, wild boar also has a function and can maintain the stability of the forest ecosystem.

3.6 Public Knowledge About Conservation

In general, the public has been aware of the existence boar in their village. From interviews with 18 respondents who constitute society and Gampong Surien and Lamjabat. There are 15 people or 83 % of the people who know the origin of wild boar. According to the authors who get the information from the interviews with the public, the boar should have come from a few hills (glee = achenese) that are not so far from Village of Lamjabat and Surien. The Glee nearby are Glee Goh and Glee Ujong Pencu Leumo. Based on interviewed with the head of the Surien Village, wild boar population down to a residential Surien area because the Village has a population of slightly sparse houses. More land that is not used anymore for development, after the tsunami. The land was left vacant until the overgrown with bak dah (Typha latifolia ). *Typha latifolia* wetland consists of land that is moist and watery. At the time of study the *Typha latifolia* as high as 3.5 meters.

A total of 50 % of the public knows that there are number of wild boars in their village. As in Gampong Surien, people say that there are about 8 boars are often crossed Gampong Surien. The boar was seen walking hand in hand from large to small size. The wild boars number in the Lamjabat Village only two.

The community also knows trajectory boar passed. As many as 55 % of respondents said that the wild boar is often traverse wetlands and aqueous *Typha latifolia* overgrown. Society suspect that the pigs down to the Village settlement Surien wont back up the hill, but the pigs settled or lodged in *Typha latifolia* and in the bushes vacant land vacant land near the houses located in their village.
While 45% of people suspect that the boar down to the settlement only to find food in a particular schedule, then return to the forest around the village, because the existence of such a pig sometimes disappear and not at all visible.

Communities also often hear the sound of wild boar running around the house residents to seek food from garbage dumped near the house. A total of 67% of the public never saw a wild boar out at 19:00 pm, there is also 11% of people who never saw a wild boar looking for food in a dumpster in the morning at 02.00 pm. There are 22% of the people who saw the wild boar at 04.00 ahead dawn.

3.7 Public Attitudes Against Existence Boar

The advent of the wild boar population in Meuraxa residential areas is a new thing for the community. The incident occurred shortly after the tsunami hit Banda Aceh in 2004. Initially people are often surprised by the presence of the boar down the village street, past the stalls even people in the morning. Villagers respond wary to the situation.

The behavior of wild boar is still considered relatively harmless. There are 56% of the public considers the presence of wild boar as a natural thing. According to the local village head, village boar enters consuming crops like potato plant owned by residents. Pigs also been damaging the enclosure containing livestock such as chickens and ducks are maintained by local residents. However, so far people are still being laid and have the view that the arrival of wild boar into their neighborhoods become commonplace and they are not bothered.

The existence of wild boar in the Village Surien and Lamjabat understood by a small community, that is 33% of the people understand that the decline in wild boar to the settlement was the result of the destruction of forests that are home or real boar habitat. But most people also consider this should not happen and people feel disadvantaged because now people cannot raise animals well or cannot plant potatoes to be harvested because of wild boar plagued.

3.8 Community Support Against Transfer of Home Range Boar

During these times, people in the District Meuraxa ask favor of government to eradicate wild pigs. Government assisted by the people in the Village of Lamjabat and Surien has undertaken various actions such as poisoning and shooting wild boar that conducted by a team of PERBAKIN shooter. But two things are useless because elusive wild boar and wild pigs also never eat food that has been poisoned.

As many as 72% of people agree that boar eradicated only by being shot. According to the society, this way is considered the most effective to kill boar that enter human settlements. As much as 89% of people agreed if the boar was poisoned to death. Poison administered in food and placed in areas that are often bypassed by a wild boar.

When asked about the transfer of wild boar roaming the area, many people are not convinced that it could be realized. Of the 18 respondents, only 8 people or 45% of people who feel they agreed that if the boar diverted to suitable habitat areas. People who agreed that boar transfer only to suitable habitat for wild pigs considered they are creatures who deserve to live, but in suitable habitat, not in residential areas.
There are several techniques that can be applied to transfer to a boar roaming the area of suitable habitat. Such techniques are starting to be used vacant land for pig will lose nesting place. In addition, the method of expulsion can also be done by using chili spray boar until fainted and then taken to a new habitat suitable for pigs.

DPRK Banda Aceh was the case stalled completion of land ownership caused by factors that are not clear. In fact, the city government plans to utilize the vacant land at Meuraxa for planting plants that will be utilized by the local community and society can boost economic growth.

**Conclusion**
This study concluded that:

1. Home range wild boar (*Sus scrofa vittatus*) in Banda Aceh Meuraxa includes residential areas and Gampong Lamjaban Gampong Surien the bush Typhalatifolia, wetlands and watery areas.
2. Description explored boar habitat includes areas with availability of food, mineral resource, wallowing place, the slope of the land and the presence of vegetation wild boar prefer.
3. Areas with the potential to be used as relocation is Goh Leumo but need to consultation with governement.

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Appendixes:

Table I: The Description of Wild Boar Home Range in Surien

<table>
<thead>
<tr>
<th>No</th>
<th>Plot</th>
<th>Home Range area</th>
<th>Point of Home Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Plot I (First Week)</td>
<td>6.65 Hectare</td>
<td>8 point</td>
<td>Found footprints, trash, water puddles and ground chopped by wild board</td>
</tr>
<tr>
<td>2</td>
<td>Plot II (Second Week)</td>
<td>2.28 Hectare</td>
<td>6 point</td>
<td>Found footprints and garbage</td>
</tr>
<tr>
<td>3</td>
<td>Plot III (Third week)</td>
<td>17.66 Hectare</td>
<td>9 point</td>
<td>Found footprints, trash and puddles</td>
</tr>
<tr>
<td>4</td>
<td>Plot IV (Fourth Week)</td>
<td>4.27 Hectare</td>
<td>5 point</td>
<td>Found footprints, trash and puddles</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30.86 Hectare</td>
<td>28 point</td>
<td>Traces of wild boar, among others, found footprints, trash, puddles of water and ground chopped by wild board</td>
</tr>
</tbody>
</table>

Table 2. The Description of Wild Boar Home Range in Lamjabat

<table>
<thead>
<tr>
<th>No</th>
<th>Plot</th>
<th>Home Range area</th>
<th>Point of Home Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Plot I (First Week)</td>
<td>1.59 Hectare</td>
<td>7 point</td>
<td>Found footprints, trash and ground chopped</td>
</tr>
<tr>
<td>2</td>
<td>Plot II (Second Week)</td>
<td>3.43 Hectare</td>
<td>8 point</td>
<td>Found footprints and garbage</td>
</tr>
<tr>
<td>3</td>
<td>Plot III (Third week)</td>
<td>0.36 Hectare</td>
<td>5 point</td>
<td>Found footprints and garbage</td>
</tr>
<tr>
<td>4</td>
<td>Plot IV (Fourth Week)</td>
<td>3.68 Hectare</td>
<td>12 point</td>
<td>Found footprints, trash and puddles</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>9.06 Hectare</td>
<td>32 point</td>
<td>Traces of wild boar is found footprints, trash, puddles of water and ground chopped by wild boar</td>
</tr>
</tbody>
</table>
ONE VARIABLE LINEAR EQUATION TEACHING BY QUANTUM TEACHING IN SEVENTH GRADE OF MTSN TUNGKOB ACEH BESAR

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ABSTRACT

One Variable Linear Equation is one of the subjects for seventh grade of junior high school. According to Kurikulum 2013, one of the teacher’s role on teaching is as a facilitator, means that teacher is supposed to serve facilities which enables students to learn easily. Because of that, a teaching model, Quantum Teaching, is needed. This model of teaching has some learning stages know as TANDUR; Tumbuhkan (grow), Alami (experience), Namai (call), Demonstrasikan (demonstrate), Ulangi (repeat), and Rayakan (celebrate). To know the effectiveness of teaching with Quantum Teaching model on One Variable Linear Equation, we need to do a research with the formulation of the problem about did by Quantum Teaching model in the teaching of One Variable Linear Equation students can achieve mastery of learning. The research is done by pre-experimental design with one-shot case study of quantitative approach. Population of this research is the entire students of the seventh grade of MTsN Tungkob Aceh Besar, with 26 students of VII-1 as the sample, taken by random sampling. Data collecting is done by using test. Data analysis is done by using t-test with the hypothesis, teaching One Variable Linear Equation with Quantum Teaching model in the seventh grade of MTsN Tungkob Aceh Besar helps students to achieve the mastery of learning. The result of data distribution normality test shows that the data distribution is normal, so the requirement of t-test is fulfilled. With significance level of α = 0,05, the result of hypothesis testing is teaching One Variable Linear Equation with Quantum Teaching model in the seventh grade of MTsN Tungkob Aceh Besar helps students to achieve the mastery of learning. In addition to the cognitive aspects, students show responsibility and commitment on the teaching.

Keywords: Mastery of Learning, Quantum Teaching, One Variable Linear Equation

1. Introduction

The purpose of Indonesian education system is to create human resources with competence and skills to compete in the stream of globalization, especially for the upcoming ASEAN Free Trade Area (AFTA). One of the education aspects is the implementation of learning activities at school. Guidance of the implementation of learning activities so the purpose of Indonesian education is accomplished, The Minister of Education and Culture Republic of Indonesia establishes Regulation No. 58 year 2014 about Kurikulum 2013 of junior high school/madrasah tsanawiyah. The implementation of Kurikulum 2013 intends to prepare Indonesian people for having the ability to live as a faithful person and citizens, productive, creative, innovative and affective, and contributing in social life, nationality, statehood, and world peace. Accomplishment of those purposes needs improvement of mindset, implementation of student-centered learning with individual learning styles, concurrently. (Lampiran Permendikbud No. 58 Tahun 2014.)

One Variable Linear Equation (Persamaan Linear Satu Variabel, shortened to PLSV) is one of the subject in mathematics for the seventh grade of madrasah tsanawiyah. According to Kurikulum 2013, PLSV is contained in Basic Competencies “3.3 Solving
Equation and Inequality of One Variable”. According to Cholik and Sugijono (2013), the scope of the subject is: open sentence, definition of PLSV, concept of PLSV, equivalent form of PLSV, and solving the PLSV problem.

Mathematics is universal knowledge that is useful for human’s living and underlies the development of modern technology, with important roles in many disciplines and advancing human’s power of thought. Students with good mathematics competency will be able to make the right decisions because of the ability to think logically, analytic, systematic, critical, innovative, creative, and cooperative.

Based on the object, mathematics is abstract. Soedjadi (2000) “mathematics has an abstract object of study”. Much of the problems the students facing in learning mathematics is lack of motivation caused by the difficulty they encounter. Teachers have a central role as the agents of change in education especially in teaching implementation. Teachers could apply meaningful teaching wich capable of escalating the students motivation so that students have enough curiosity to the subject they are learning. So that they are ready to face challenges of life confidently. Teachers should be able to perform the teaching wich could increase students’ potential and creating possessively, motivated students who can find their own styles of learning, have a creative thinking, confidence, and achievement. Implementation of mathematics teaching that would allow those things to happen needs certain strategies. One of them is by applying Quantum Teaching model.

Because of that author tries to apply Quantum Teaching model in the teaching of One Variable Linear Equation in seventh grade of MTsN Tungkob Aceh Besar with the formulation of the problem about did by Quantum Teaching model in the teaching of One Variable Linear Equation students can achieve mastery of learning. The purpose of this research is knowing the mastery of learning on students in the teaching of One Variable Linear Equation with Quantum Teaching model in seventh grade of MTsN Tungkob Aceh Besar.

2. **Theoretical Framework**

Mathematics is universal knowledge that is useful for human’s living and underlies the development of modern technology and have an important role in many disciplines and advancing human’s power of thought. Students with good mathematical competency will be able to make the right decisions because of the ability to think logically, analytic, systematic, critical, innovative, creative, and cooperative.

On the same path with statement above, the purpose of mathematics education as has been put forward by Soedjadi (2000) is:

1. Prepare students to be capable of facing the changing of conditions in a keep-developing world by training to take actions logically, rationally, critically, carefully, effectively and efficiently.
2. Prepare students to be capable of using mathematics and mathematical paradigm in daily life and in learning various sciences.

According to *Permendikbud* No. 58 year 2014 in attachment III, subjects of mathematics need to be given to all of learners since the elementary school, in order to
supply the learners with the ability of thinking logic, analytic, systematic, critical, innovative, creative and cooperative. Those competencies are necessary for the learners capability to gain, manage, and utilize informations for a better life in a dynamic, uncertain, and heavily competitive conditions. The implementation of mathematics learning should be giving the learners the awareness of the importance of learning mathematics.

Especially for the junior high school/madrasah tsanawiyah, according to Permendikbud No 58 year 2014 (2014), mathematics learning has purpose in order so the learners could understand mathematics concept, as a competency in describing the link between concepts and the using of concepts such as algorithm flexibly, accurately, efficient and properly, in problem solving. To achieve the purpose stated above, we need certain strategies. One of them is by applying Quantum Teaching model.

There are five principles of Quantum Teaching; 1) everyone speak, 2) everything has purpose, 3) experience before naming, 4) acknowledge every efforts, and 5) worth learning and worth celebrating. On the same path as the principles, the framework of the learning design with Quantum Teaching is following some steps: Tumbuhkan (grow), Alami (experience), Namai (call), Demeontrasikan (demonstrate), Ulangi (repeat), and Rayakan (celebrate), known with the acronym of TANDUR. Those steps are, (Deporter, 2011):

1) **Growth**
   In this step teacher stimulate the growth of students’ eager to learn by linking the subjects with the students’ daily life. By that, students will know the benefits of the subject they are learning, in Quantum Learning known with the acronym AMBAK, “Apa Manfaat BagiKu” (what is the benefit to me).

2) **Natural**
   Teacher gives experience to the students by utilizing students’ individual modality of learning. Teacher could provide mathematics problems that could increase students’ curiosity, and rising the students’ question.

3) **Name**
   After making the students curious, full of questions about their experience, naming can satisfy their curiosity. Naming satisfy the natural desire of the brain to give identity, sorting, and defining. Naming could be informations, facts, formula, thoughts or idea. Teacher could provide keywords, concepts, models, formula, and strategies as suggestion

4) **Demonstration**
   Teacher could provide opportunity to each students to show that they have understand and teacher should acknowledge every students’ efforts, even if a student is making a mistake, teacher should acknowledge the student’s efforts, with smile.

5) **Repeat**
   Students are asked to repeat the learned subjects by code 10, 24, 7. Means that students have repeated it “ten” minutes after learning, then repeat it again “twenty four” hours later, and once again “seven” days (a week) later, (Deporter, 2011: 171). Repetition could be done by asking students to teach the subject to their other friends. This repetition would allow the subjects to enter long-term memory, and
students would be able to really mastering the subjects, and grows the feeling of “I know that I know this”.

6) Celebrated
In this last step, it is time to give tribute for the efforts, achievements and perseverance of the students by a celebration. This could strengthen the success and give motivation to the students. Celebration could be done by giving praises, singing, clapping, partying, or saying “Alhamdulillah”.

3. Material and Method
This is experimental research. Sukardi (2009: 168) stated that “experimental research is a research in order to know if there is any result of something that is applied to the investigated subjects or not”. The population of this research is the entire students of the seventh grade of MTsN Tungkob Aceh Besar, with 26 students of VII-1 as the sample, taken by random sampling. Data collecting is done by using test. Data analysis is done by using t-test with the hypothesis, teaching One Variable Linear Equation with Quantum Teaching model in the seventh grade of MTsN Tungkob Aceh Besar helps students to achieve the mastery of learning.

4. Results and Discussion
The data in this research is the result of students’ learning which is obtained by test after the learning of PLSV with the Quantum Teaching model. The result of the learning is scores with mean $\bar{x} = 78.4$ and standard deviation $s = 12.09$. The result of data distribution normality test shows that the data distribution is normal, so the requirement of t-test is fulfilled and the result of hypothesis test with significance level of $\alpha = 0.05$ is teaching One Variable Linear Equation with Quantum Teaching model in the seventh grade of MTsN Tungkob Aceh Besar helps students to achieve the mastery of learning. In addition to the cognitive aspects, students show responsibility and commitment on the teaching.

Teacher’s role in Quantum Teaching model is really influential in determining the students’ success. Teacher is an important factor in learning environment and students’ life. So, the teacher’s role is not merely giving knowledge, but as a learning partner, model, guide, facilitator who will help students reaching success. The application of Quantum Teaching model can increase the students’ eager of learning so the learning result is increased as well. As the result of this research, students achieve the mastery of learning in PLSV with the Quantum Teaching model.

In Quantum Teaching model, teacher is the facilitator who provides learning facility, so the students in Tumbuhkan step get the chance to find the benefits of what they are learning. Through Alami step, students get the chance of experiencing by utilizing their own individual learning modality; visual, auditory or kinesthetic. Through Namai step students get the name of what they are learning, satisfying their brains’ natural desire. Through Demonstrasi step, students get the chance to show that they know what they are learning. Through Ulangi step students are given the chance to repeat what they have learned, by teaching their friends or doing exercise. Finally through rayakan step students get the honor for the efforts they have given and the success they have achieved. It could be praise from the teacher or clapping.
In Quantum Teaching, teachers lean their back on the concept of “Bring their world to our world, and deliver our world to their world”. Means that the teacher initially build intimacy with students before taking a step to the teaching activity. A teacher is supposed to understand students’ world, starting from the events, thoughts, and the feelings obtained in the students’ real life about social relations, art, recreations, or their knowledge. A teacher must be able to bridge the gap between teacher’s world and students’ world. This will help teacher to build a connection because the teacher is allowed to enter the students’ world, by linking what is taught with the events, thoughts, or feelings obtained from students’ daily life and environment. So that the students will be fulfilled with spirit, responsibility, and commitment in learning.

After the connections are built, teacher will flexibly bring students to the teacher’s world by giving teacher’s understanding of the subjects, here is where new vocabulary, formula and settlements are given. Finally by the extended understanding and deeper mastery, students would be able to bring what they have learned to their world and applicate them in new situations. In this chance not only the students will get new knowledge but the teachers will also expand their knowledge by the students suggestions.

5. Conclusion

Conclusions of this research are:
1. Teaching One Variable Linear Equation with Quantum Teaching model in the seventh grade of MTsN Tungkob Aceh Besar helps students to achieve the mastery of learning.
2. During the learning process, students also show responsibility and commitment in learning.

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ABSTRACT

One of the most important aspects in the development of the area is the inclusion of the concept of local economic development, so we need a policy based on the priorities of experts, stakeholders and government. Objective: (1) Analyze household-based creative industries that can be developed in the highlands, in the lowlands and beach in District of Deli Serdang. (2) Analyze the effect of household-based creative industries to the development of the region in accordance with the potential of the region in a sustainable of Deli Serdang. and (3). Based on point 1 to 2, can be built Program Prioritization of creative industries household-based. The experiment was conducted in 4 expert persons around the District Deli Serdang from April 2015 to May 2015 with certain criteria, namely: inexperienced, has the capacity and mastery of problems related creative industries and territories in the region's economy and social. Synthesis Analytical Hierarchy Process of Creative Industries Household for sustainable regional development of multi-criteria. The results show that the program occupies the first priority with priority weight is 0.155 qualified human resources program, followed Efficiency and Productivity program (0.151) and Creative Industry Attractiveness (0.136). Priority policies that facilitate the creative industries in particular an increase in skill and quality of Human Resources. Priority develop starting from the highlands, then the coast and lowlands.

Keyword: Creative Industries Household, Sustainable development.

1. Introduction

One of the most important aspects in the development of the area is the inclusion of the concept of local economic development where the concept is the development of local entrepreneurship followed by the growth of local companies, cooperation with local governments and private institutions in managing other sources of potential to boost economic activity. Based the concept is thought that the development of the region is largely determined by the growth of local industry, local entrepreneurs supported by existing institutions in the region, including the association of business, local government, local businesses including universities and others. The problem is how to mobilize the potential of these institutions and make it as a motivating factor for regional development.

In practice, implementation of the creative industries as mentioned above requires relatively small capital but has the flexibility and advantages in their work. But we realize that the growth of the creative industries that are part of small home appliances industry has not been significant. Arsyad (2011) says that the existence of small home-based
industries is still limited. For example in the area of Java and Bali as Provincial industrialization region is relatively high, there should be at least 40 small businesses every village, but its existence is only just around 3.7% for each village. Therefore, in the future in order to stimulate the development of creative industries will require policy measures in accordance with the potential of each region.

Household-based creative industries particularly its existence in Deli Serdang has not encouraging. Therefore, instruction of President no. 6 in 2009 that the creative industry development program needs the support of the local government as part of supporting the sustainable development of region. The other hand, the availability of local resources (human resources, natural resources, institutional and its cultural is good enough.

Why the problem deserves as new research for the basic research is the statement about importance might involve the need to resolve any inconsistency in results of past work and/or extend the reach of a theoretical formulation. For applied research, this might involve the need to solve a social problem or treat a psychological disorder. When research is driven by the desire to resolve controversial issues, all sides in the debate should be represented in balanced measure in the introduction. Avoid animosity and ad hominem arguments in presenting the controversy. Conclude the statement of the problem in the introduction with a brief but formal statement of the purpose of the research that summarizes the material preceding it. For literature reviews as well as theoretical and methodological articles, also clearly state the reasons that the reported content is important and how the article fits into the cumulative understanding of the field.

State Hypotheses and Their Correspondence to Research Design
a. Creative industries can be developed on the high plains region, plains and beaches.
   b. Creative industries based household positive effect on regional development in Deli Serdang.

2. Material and Method
2.1. Material, location and time research

The experiment was conducted in 4 expert persons around the District Deli Serdang from April 2015 to May 2015 with certain criteria, namely: inexperienced, has the capacity and mastery of problems related creative industries and territories in the region's economy and social. The respondents will be selected from academics, businessmen engaged in the creative industries (managers or business owners creative industries) and local governments (sub-district head). Sampling was conducted using purposive sampling. This exploratory study seeks ideas and relationships between the variables. Primary and secondary data collected by means of cross section.

2.2. The method of data analysis

To analyze the hypothesis 1 and 2 used the Analysis Hierarchy Process (AHP), which is a method that can be used by policy makers to understand the condition of a system and assisted in making prediction and for decision making was Analytic Hierarchy Process (Hierarchy Analytic Process).
2.2.1. Analytical Hierarchy Process (AHP)

Analysis Hierarchy Process (AHP) was first developed by Thomas L. Saaty, a mathematician from the University of Pittsburg, USA in 1970. AHP basically rationally designed to capture people’s perceptions strongly associated with certain problems through a procedure designed to comprehend a scale of preference among the various sets of alternatives. This analysis is intended to create a model of the problem that has no structure, usually set out to solve the problem by measurable (quantitative). The Problems which need the opinion (judgment) in a complex situation or has not arranged in.

AHP is the analysis used in decision-making with a system approaching, where decision-makers are trying to understand the condition of system and help to make predictions in decision-making. Some of the advantages of the use of AHP are:

i. To presented a system that can explain how changes in the higher levels have an influence on the elements at a lower level.
ii. To Assited facilitate analysis for solve the complex problems and were not structured by providing a clear measurement scale in order to get priority
iii. Able to got a logical consideration in determining priority by not forcing linear thinking.
iv. To Measured comprehensively the influence of elements that have a correlation with the problems and objectivity, by providing a clear measurement scale.

The substructure of AHP is the process of establishing numerical scores to compile the ranks. the alternative decision is based on what the alternative should it be matched with the criteria of decision-makers (Saaty, 1990).

Analysis Hierarchy Process (AHP) can be used to comprehend the public’s perception rationally strongly associated with the presence of household-based creative industries in Deli Serdang, North Sumatra. The perception will be arranged through a procedure that was designed to the scaled of preferences among the various sets of criteria and alternatives. By the AHP models of problem that usually responsive to stakeholders was able to solve the unstructured measurable (quantitative). The hierarchical structure of the AHP in this study consisted of:

1. Target / Goal: "The development of IKBRT accordance with the the potential of the region."
2. The criteria to achieve these goals are: a. highland region, b. lowland areas and c. coastal areas
3. Alternative program that can realize the third criteria above were namely (a) is Qualified SDA, (b) Qualified SDM, (c) is Attractiveness creative industries, (d) is Efficiency and productivity, (e) is Innovations local, (f) is Cooperation HKI and (h) is the role of government, private and cooperative, (g) is an increasing number of entrepreneurs.

3. Results and Discussions
3.1. Research Result
   Inter-Criteria Matrix Pair-wise
The results matrix geometric mean weights of criteria for assessment of the respondents can be seen in the following table.

Table 1. Pair-wise 3 x 3 matrix of the Inter-Criteria

<table>
<thead>
<tr>
<th></th>
<th>Highland Region</th>
<th>Lowland Region</th>
<th>Beach Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highland Region</td>
<td>1.00</td>
<td>6.3</td>
<td>1.179</td>
</tr>
<tr>
<td>Lowland Region</td>
<td>0.158</td>
<td>1.00</td>
<td>0.877</td>
</tr>
<tr>
<td>Beach Area</td>
<td>0.848</td>
<td>1.139</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Source: Primary data processed, 2015

From the table above can be seen upland area is more important lowland areas with 6.3 scale, and the lowlands is more important than the interests of the beach with the scale of 1,179. The coastal areas is more important than the low-lying region with the scale of 0877. Based on the assessment of the respondents, resulted the calculation of weighted priorities among these criteria, to determine the criteria that should be prioritized and developed IKBRT in realizing sustainable development of the region. The results of the analysis process with the Expert Choice software hierarchy is as follows.

From the figure above can be seen the results of the priority weighting of criteria creative industries household in realizing sustainable development of the region. Development of upland area occupies the first priority with priority weight 0,564. Followed coastal areas with 0.286 weight and final priority is a low-lying region with a weight of 0,150 With the level of inconsistency ratio of 0.26 (<0.5), then this result is acceptable.

Matrix Pairs Alternative Delivery Program Highland Region

The results matrix geometric mean weights of criteria for assessment of the respondents can be seen in the following table.Where, a is Qualified SDA, b is Qualified SDM, c is Attractiveness creative industries, d is Efficiency and productivity, e is Innovations local, f is Cooperation HKI and h is The role of government, private and cooperative, g is An increasing number of entrepreneurs.
Table 2. irwise 8 x 8 matrix of the Inter-Criteria Highland Region

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
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Source: Primary data processed, 2015

From the above table can be a couple of alternative programming that addresses the importance of a program than other programs from the perspective of the highlands. Thus, after the weight calculation expert choice of priority with software version 11, then alternate between existing programs obtained the following results.

![Figure 2](image)

From the above figure can be seen the results weighted creative industries household program priorities in realizing the sustainable development of the region from the standpoint of (criteria) the development of the highlands. The results show that the program occupies the first priority with priority weight is 0.296 IPR cooperation program, followed by the local content innovation program (0.150), an increase in the number of entrepreneurs (0.136), the role of government, private sector and cooperatives (0.112), and so on. With this level of inconsistency ratio of 0.15 <0:50, then this result is acceptable.

**Matrix Pairs Alternative Delivery Program Lowland Region**

The results matrix geometric mean weights of criteria for assessment of the respondents can be seen in the following table. Where, a is Qualified SDA, b is Qualified SDM, c is Attractiveness creative industries, d is Efficiency and productivity, e is Innovations local, f is Cooperation HKI and g is The role of government, private and cooperative, h is An increasing number of entrepreneurs.
Table 3. Pairwise 8 x 8 matrix of the Inter-Criteria Lowland Region

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</table>

Source: Primary data processed, 2015

From the above table can be a couple of alternative programming that addresses the importance of a program than other programs from the perspective of the lowlands. Thus, after the weight calculation expert choice of priority with software version 11, then alternate between existing programs obtained the following results.

![Priority with respect to the development of the KIBRT program in the lowland region](image)

**Figure 3, Output Expert Choice Program Alternative priority weight based on criteria Lowland Region**

The figure can be seen from the above results IKBRT program priority weighting in realizing sustainable development of the region from the standpoint of (criteria) lowland regions. The results show that the program occupies the first priority with priority weight is 0.196 HKI cooperation program, followed by an increase in the number of entrepreneurship (0.166), innovative local content (0.154), the role of government, private sector and cooperatives (0.132), and so on. With this level of inconsistency ratio of 0.10, then the result is acceptable.

**Matrix Pairs Alternative Delivery Program Beach Area**

The results matrix geometric mean weights of criteria for assessment of the respondents can be seen in the following table. Where, a is Qualified SDA, b is Qualified SDM, c is Attractiveness creative industries, d is Efficiency and productivity, e is Innovations local, f is Cooperation HKI and h is The role of government, private and cooperative, g is An increasing number of entrepreneurs.
Table 3. Pairwise 8 x 8 matrix of the Inter-Criteria Beach Area

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Source: Primary data processed, 2015

From the above table can be a couple of alternative programming that addresses the importance of a program than other programs from the perspective of the beach area. Thus, after the weight calculation expert choice of priority with software version 11, then alternate between existing programs obtained the following results.

Figure 4, Output Expert Choice Program Alternative priority weight based on criteria Beach Area

From the above figure can be seen the results weighted IKBRT program priorities in realizing the sustainable development of the region from the standpoint of (criteria) coastal region. The results show that the program occupies the first priority with priority weight is 0.258 IPR cooperation program, followed by the role of government, private sector and cooperatives (0.149), innovative local content (0.143), an increase in the number of entrepreneurs (0.109), and so on. With this level of inconsistency ratio of 0.10, then the result is acceptable.
3.2. Discussion

Figure 5. Output Expert Choice Program Alternative priority weight based on criteria to goal

Compared to the research of Huang et al., (2009) with the title of the evaluation criteria for the creative industries cultural creativity center in Taiwan, eventhough has equations with my research, but there was other things that was different. Referred to in the results of research there was 7 criterias: potential market has the highest weight followed by regional development and cultural improvement. Also within 6 creative lifestyle industries, crafts, and creative design are three of the most profitable industries chosen for the introduction and development in the new city center. Furthermore, according to Rini and czafra (2010) with the title of creative economic development based on local wisdom by youth in order to answer the challenges of the global economy with the result that the development of the creative economy is much needed to introduced cultural diversity.

From the above figure can be seen in the results of the synthesis of AHP in determining the program priorities creative industries household in realizing sustainable development of multi-criteria territory. The results show that the program occupies the first priority with priority weight is 0.155 qualified human resources program, followed Efficiency and Productivity program (0.151), Creative Industry Attractiveness (0.136), HKI Cooperation (0.127), the role of government, private sector and cooperatives (0.125), innovative local content (0.111), an increase in the number of wirausahwan (0.108), and the quality of natural resources (0.087). With this level of inconsistency ratio of 0.17, then the result is acceptable.

4. Conclusions
a. Synthesis AHP of creative industries household for sustainable regional development of multi-criteria. The results show that the program occupies the first priority with priority weight is 0.155 qualified human resources program, followed Efficiency and Productivity program (0.151) and Creative Industry Attractiveness (0.136).

b. Priority policies that facilitate the creative industries in particular an increase in skill and quality of Human Resources.

c. Priority develop starting from the highlands, then the coast and lowlands.
Acknowledgments

Thank you to the fellow academics, district government of Deli Serdang, and all actors of household based - creative industry that has support my research. following, thanks to colleagues who have assisted in conducting the research or criticize this research. thank you for the persons routinely involved in the review, help, and consulting this research in which was appear. Thanks for all people who has supported this researched.

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Instruksi Presiden Nomor 6 Tahun 2009 tentang Pengembangan Industri Kreatif.

Rini dan Czafrani 2010, Pengembangan Ekonomi Kreatif Berbasis Kearifan Lokal, Lokakarya Pemuda Dalam Rangka Menjawab Tantangan Ekonomi Global, Jakarta.


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THE INFLUENCE OF CREATIVITY EXERCISE AND PRINCIPAL OF LEADERSHIP IN THE PUBLIC ELEMENTARY SCHOOL TEACHERS PERFORMANCES IN PIDIE
(An Exploratory Study of Elementary School Teacher Performance in Pidie District)

Bansu Irianto Ansari
Jabal Ghafur University

ABSTRACT

This study aim to assess teachers’ creative attitude, principals’ of leadership and how they affect the teachers’ performance. This study took a sample of 194 people consisting of 97 elementary school mathematics teachers and 97 principals of suburb an public elementary schools. Results showed that the creative attitude of mathematics teachers and school leadership was relatively adequate and teachers’ performance was quite well. The influence of teachers creative attitude towards teachers performance by 16.6%, the influence of school leadership on the performance by 8% and the effect shared between school leadership and creative attitude of teachers towards teacher's performance by 21%. This study also reveals that the influence of other variables outside of school leadership and teacher of creative attitude towards the teacher’s performance by 79%.

Keyword: creative attitude; principals’ of leadership and teachers’ performance.

1. Introduction

Based on the reports of Pidie District Education Office, in the academic year 2013/2014, the national final exam scores of elementary school students in math is not too low. But there are still often heard complaints from junior high school (SMP/MTsN) math teachers that many primary school graduates have difficulties in learning mathematics and the result of learning mathematics in the first half in SMP / MTsN in general declined. The complaints are mainly aimed at the lack of primary school teachers’ ability in managing classes during the mathematics learning process.

There are several variables that affect the performance of elementary school teachers in managing learning, among others, are creative attitude of teachers, management capabilities of principals and colleges that carry out a responsibility for educating prospective teachers of mathematics.

Without neglecting the influence of other variables on the performance of primary school teachers in managing the learning, analysis of the problem will be reviewed from several perspectives, namely the leadership of principals and teachers’creative attitude. Referring to Minister of National Educational Regulation Number 28 Year 2010, a principal must have five competencies, namely the competence of personality, managerial, entrepreneurial, social and supervision. One of the principal tasks is academic supervision. An academic supervision is a series of activities to help teachers develop the ability to manage the learning process to achieve the goal of learning. According to Sujana (2008), the academic supervision defines assessment and development for teachers in order to improve the quality of the learning process that leads learners achieve optimal competency.

One dimension of the ability of teachers who are considered as the driving and the driving skills and performance is creativity. Creativity according to Ruindungan (1996) is
the ability to bring something new into existence. Munandar (1999) mentions creativity is the result of a process of interaction between individuals and their environment. Therefore the task of the teacher actually is to develop attitudes and abilities of students to be able to face future problems in a creative and innovative.

By reason of teachers are motivators and activators of students’ creativities, it is a necessity that cannot be avoided, even considered a strategic agenda to place the development of creativity as the center of attention. Therefore there is need for training in increases creativity for teachers so will result a creative behavior in the teaching. The creative behavior of Teacher is characteristic of the results of creative thinking to generate new ideas that are unique and beneficial to the smooth running of teaching and learning process. Munandar (1999) adds that creative behavior requires not only creative thinking skills (cognitive) but also creative attitude (affective). Exercise creativity has the objective to assist teachers in mastering and develop creative ways of learning that is applied through a contextual problem solving the problem in a systematic and innovative by integrating the divergent and convergent thinking process through the stages of finding the facts, issues, ideas and solutions to produce creative products.

Assumptions used in this approach are that the performance of teachers is not only derived from the supervision of principals, but also of the creative attitude of teachers in managing learning. Based on the descriptions are so in this study examined various factors that may affect the performance of teachers such as school leadership and teacher creativity (affective perspective). Considerations used in selecting the two variables is availability of supporting theory, not too broad and complex, can be measured, has not been much studied empirically, and can contribute in improving the performance of teachers in order to improve the quality of education.

2. Method

2.1 Formulation of Problems and Research Objectives

Based on the description on the background and identification of problems, the research to answer the main problem of how the ability of elementary school teacher’s creativity in organizing a class in Pidie District.

1. Is there a relationship between school leadership and teacher performance?
2. Is there a relationship between creative attitudes of teachers and a teacher’s performance?
3. Is there an equal relationship between school leadership and creative attitude of teachers to the teacher’s performance?

2.2 The objective of this study was conducted as follows:

1. To find out how creativity training affects the teachers creative attitude.
2. To find out how the teachers’ creative attitude affect the teachers performance.
3. To find out how school leadership affects the teachers performance.
4. To find out how school leadership and teachers creative attitude affect equally teachers performance.
3. Result and Discussions

3.1 Description of Theoretical and Research Hypotheses

Here are descriptions of the various that support of school leadership, creative attitudes of teachers and teacher performance:

3.2 Teacher creativity

Creativity or creative behavior is an ability to produce something new that is not made by someone else and provides efficiency. Matlin (2000) mentions Creativity is making something abstract into tangible, something that potential in to actual. Ruindungan (1996) mentions one's creativity lies in the ability of cognitive and affective in creative problem solving. Given a problem-solving process and learning outcomes, and learning is a change of behavior, experience and ability, the ability to solve problems is a creative behavior that involves cognitive elements, affective and psychomotor that can be improved and enhanced through mentoring activities. Creative behavior that involves affective elements called creative attitude.

Teachers’ creative behavior development can be created in two lines of activities, namely (1) line teaching and learning activities and (2) pathway specific training activities. Path ways and learning activities conducted in integrative teaching into some other training materials such as Science, Social Science and the Indonesian language. Special creativity training activities can be conducted through mathematics subject matter facilitated by research.

This study discusses the creative attitude of the teachers with the assumption that in terms of cognitive abilities are drawn from the creative attitude. Treffinger & Johnston (in Ruindungan; 1996) argued the importance of developing an affective dimension in the development of creativity. They found that students, who have characteristics of high affective, have high creative thinking score as well.

To find the attitude creative, researchers gave questionnaires to teachers after the training lasted for six working days. In Indonesia, the development of creativity tests have been conducted by the SC Utami Munandar (1999) with the name of Verbal Creativity Test(VCT) that measures the cognitive characteristic of creativity and Creative Attitudes Scale (CCAs) which measures non-cognitive traits of creativity. Creative attitude scale consists of (1) openness stone wand unusual experiences, (2) flexibility of thinking, (3) freedom of expression, (4) appreciation of fantasy, (5) interest in creative activities, (6) belief in the idea it self, (7) free of assessment. In this research, creative attitude scale procedure used is based on the model of Utami Munandar, but the characteristics of creative attitude which refers to the seven characteristics observed affective in creative learning process of Treffinger (1980).

Based on the above theoretical description, creative attitude of teachers is overall characteristic non-cognitive shown by the teachers regarding the various aspects of his work in providing education in schools which includes seven aspects: (1) curiosity, (2) willingness to respond, (3) openness to experience, (4) dare to take risks, (5) sensitivity to the problem, (6) tolerance to ambiguous circumstances, and (7) confidence.
3.3 Principal Leadership

Minister of national Education Regulation Number 28 Year 2010 mentions a Principal must have five competencies, namely the competence of personality, managerial, entrepreneurial, supervision and social. The school principal that had certainly been practicing these five capabilities is compiled into strategic management. Implementation of strategic management practices require that the democratic leadership of school principals concerned in the various aspects of activities, among others, (1) The Principal must be able to create a professional work culture that is "team work". This will create a work culture where leaders are open and transparent, involving many parties, and accommodate the various interests of all subordinates, unless, it would be difficult to lead an educational institution. Management is called the "participatory decision making process". With this democratic activity, all parties have a high responsibility in the implementation of the program in a professional. (2). The Principal must be able to build public confidence, communicative, empower people, foster a sense opportunity and kinship, utilizing the expertise of the staff and administration have a reliable management. (3)The school principal will be more effective management if public figures who are members of the school committee to provide support and participation to high school programs. Participation of the school committee and the community is a form of awareness and community responsibility towards the smooth process of learning. The high level of support the school committee and the community is seen in many different forms of activities, among others, participated in formulating the vision, mission and goals for the school, providing various forms of financial and nonfinancial assistance to support implementation of school programs, exercise control and supervision of implementation of various programs that have been agreed upon, and support for the improvement of the education budget from the government with various strategies in accordance with applicable regulations.

Shahril & Charil bin Hj. Marzuki (2009) defined that "The leaders of learning is a main responsibility performed by principals. A school principal should play a role as a leader to improve learning process in schools by continuing to direct, provide resources and the most important thing is to provide support and motivation to teachers". Assignment and function of a professional principal is: i. Stipulating the vision, mission and goals of school. ii. Implementing mission of school. iii. Monitoring and learning evaluation. iv. Coordinating curriculum program. v. Observing students’ achievements. vi. Monitoring teachers’ performance. vii. Providing allowance for teachers.

Furthermore, an essential principal competencies to carry out supervision for staffs. Academic supervision is a series of activities to help teachers to develop a management ability of a learning process in achieving the learning objectives. According to Sujana (2008, an academic supervision is an evaluation and development of teachers’ achievement in order to improve the quality of the learning process so that learners achieve an optimal competency. The development of teachers’ achievement is not simply limited on educational supervision, but it is also concerned with motivation for teachers after the course of supervision and attention from the principal and well-being. A motivation is an attempt to support teachers to dedicate their best and hold their responsibilities. An
attention means direction, guidance and command discipline so that they can do their duties properly.

From the description of the theory referred to the principal's leadership is overall capabilities of school principals with regard to his work situation in providing education in schools which includes eight standards are content standards, process, graduation, educational personnel, facilities and infrastructure, management, financing and evaluation.

3.4 Mindset

Based on the above several variables construction, a rational analysis is conducted on the relationship between independent variables that is school leadership and creative attitude of teachers with dependent variable is the performance of teachers.

3.5 Relations between Attitudes and Creative Teachers' Performance

Creative attitude of teachers is a reflection of the creativity of teachers' ability to generate new ideas that are unique and beneficial to the smooth running of teaching and learning process. Teachers should have a creative attitude in managing learning, but many teachers in schools come from different educational backgrounds and teaching experiences. In various studies reveal the influence of non-cognitive characteristics of teachers, such as motivation and creative attitude towards the growth of students' creative thinking. Students who are in foster care by teachers who have a creative attitude and high motivation has a higher creative thinking score than those who cared for by teachers whose creative motivation are low. This indicates that the higher the creative attitudes teachers do the better performance they will have.

Therefore, teachers need to be creative attitude drilled through the ability to think creatively. From the point of creativity, including the implementation of training curriculum to the Implemented Curriculum which is useful for the implementation of teaching and learning activities in class. Creativity training aims at (1). Helping teachers to improve and expand the creative dimension in cognitive abilities, affective and psychomotor. (2). Giving the internal drive (the willingness, motivation) and external (support) for the better. (3). Improving teacher innovation so as to increase students' interest towards the subjects.

Creative attitude of teachers is also determined by the style of a democratic school leadership. Democratic principals who seek to build communication with all teachers and staff so that the creation of a conducive working climate in schools. In these circumstances teachers have freedom in doing the activity. Teachers who obtain their free domain the move are likely to have creative and innovative attitude in managing learning. Based on the descriptions above it is alleged there is a positive relationship between creative attitudes of teachers with teacher performance. Creative attitudes of teachers obtained through questionnaires and expression profile of teacher performance is expressed in the form of quantitative and qualitative. Qualitative conducted to analyze and inter pre quantitative data. Quantitative analysis of teacher performance are observed in this study were obtained from two components, namely the lesson plans and teaching-learning process.
3.6 The relationship between the Principal Leadership with Teacher Performance

The teacher is the main actor in implementing education in schools. Psychologically teachers have a number of desires, needs and expectations of various issues related to his work. The teacher wants, students become smart, well-being cared for, want to be appreciated and given a motivation to move forward. By full filled various aspects are expected to cultivate a sense of responsibility of teachers to the job. Sense of responsibility towards work is largely determined by the extent to which aspect so far desire, teachers' needs and expectations can be met. More and more aspects of work that can be met, then teachers will be more responsible towards his job.

Supervision of education is a major task of school principals to teachers in an effort to optimize the quality of learning in the classroom. Principal task is to organize, design and control of education in schools. Therefore, the principal schedules with teacher supervision, checking the completeness of teachers’ learning device building and motivating so that teachers feel appreciated. Teachers will be more satisfied and proud when in the process of supervision can prepare learning tools such as lesson plans and instructional media well and able to teach in accordance with the RPP is because there is encouragement from the headmaster. The principal is also satisfied if the teacher who supervised to carry out their responsibilities properly. Principals also feel proud when there is a teacher at his school is able to achieve outside of school achievement.

Pride of the principal would encourage increased sense of responsibility to meet the wants and needs of teachers. This is a causal relationship, it means increasing the teacher's responsibility, it also increases the desire and needs are met by the head teachers of schools and will increase again the responsibility of teachers in carrying out the work in front of the class.

With the full fulfillment of desires and needs of teachers, it will be reduced by activities outside of school teachers. He still put his job as an educator in the classroom. This means the principal managed to become the manager at his school. Thus, if desired, needed and expected of teachers can be met, then the teacher will feel satisfied with his work so as to encourage the growth of students' motivation and finally on improving the quality of education.

Based on the above it can be expected there is a positive relationship between school leadership with teacher performance.

3.7 Research hypothesis

Based on the picture and frame of mind the theory, the hypothesis in this study as follows:

1. There is a positive relationship between creative attitudes of teachers with teacher performance.
2. There is a positive relationship between school leadership with teacher performance.
3. There is a positive relationship between school leadership and creative attitude of teachers together with the performance of teachers.
3.8 Research methodology

This study was to examine the relationship of two independent variables namely the leadership of principals and teachers with a creative attitude that is tied to teacher performance variables. The relationship between these variables is described as follows:

Where:
\( X_1 \) : Teachers’ creative attitude  
\( X_2 \) : Principal’s leadership  
\( Y \) : Teachers’ performance

This study is experimentally oriented. Data were analyzed with descriptive and inferential statistics. The subjects in this study sample was 97 principals and 97 teachers who teach in class IV to Class VI who are following the Science, Indonesian language and Mathematics training lessons in the entire of Pidie District in October 17 to October 22, 2014 in Sigli. The whole samples subject to were taken from out of town Sigli (sub urban). Teacher performance data obtained from observations of the RPP and the PBM that teachers do after the end of training. Data obtained through the creative attitude of the teacher questionnaire has been validated from the results of research Ruindungan (1996). Performance of principal collected through the performance of the principal documents that have been evaluated by the super intendent based on the eight principal competency standards.

Research Outcome:

Table 1: Teachers’ Performance Profile, Creative Attitude and Principal’s leadership

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</tr>
<tr>
<td>Sum of Squares and Cross-products</td>
<td>3.703</td>
<td>92.381</td>
<td>26.728</td>
</tr>
<tr>
<td>Covariance</td>
<td>0.039</td>
<td>0.962</td>
<td>0.278</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Creative Attitude Scale</th>
<th>Pearson Correlation</th>
<th>.407(**)</th>
<th>1</th>
<th>.219(*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sig. (2-tailed)</td>
<td>0</td>
<td>0.031</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of Squares and Cross-products</td>
<td>92.381</td>
<td>13925.913</td>
<td>1268.5</td>
<td></td>
</tr>
<tr>
<td>Covariance</td>
<td>0.962</td>
<td>145.062</td>
<td>13.214</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Principal</th>
<th>Pearson Correlation</th>
<th>.283(**), 0.219(*)</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sig. (2-tailed)</td>
<td>0.005</td>
<td>0.031</td>
<td></td>
</tr>
<tr>
<td>Sum of Squares and Cross-products</td>
<td>26.728</td>
<td>1268.5</td>
<td>2403.721</td>
</tr>
<tr>
<td>Covariance</td>
<td>0.278</td>
<td>13.214</td>
<td>25.039</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

a List wise N=97

To determine the influence of the creative attitude of teachers, school leadership on teacher performance in improving the quality of learning can be seen in Table 3 below.

Table 3: Magnitude of Direct and Indirect Effects between Variables

<table>
<thead>
<tr>
<th>Direct Effect</th>
<th>Correlation coefficient</th>
<th>Effect Magnitude (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X₁ to Y</td>
<td>0.407</td>
<td>16.6%</td>
</tr>
<tr>
<td>X₂ to Y</td>
<td>0.283</td>
<td>8%</td>
</tr>
<tr>
<td>X₁, X₂ to Y</td>
<td>0.45</td>
<td>21%</td>
</tr>
<tr>
<td>Variable other than X₁ X₂</td>
<td>79%</td>
<td></td>
</tr>
</tbody>
</table>

Based on data in Table 3 above are reviewed as a whole and to the two components of the less on plans and teaching and learning process, teachers' mathematics performance were quite good with an average score of 2.97, and their creative attitude average score is 61.6. In Table 2 and Table 3, using the SPSS facilities maybe noted that the strength of the relationship between creative attitudes of teachers (X₁) with the performance of teachers(Y) is indicated by coefficient correlation r= 0.47 and this relationship is
significant. This means the higher the creative attitude of teachers, the higher the performance of teachers. The amount is 16.6% coefficient terminated means the influence of teachers' creative attitude towards the teacher's performance of 16.6%.

Further strength of the relationship between school leadership (X2) with the performance of teachers (Y) is indicated by coefficient correlation of 0.283 and is significant. It can be concluded that the relationship between school leadership and teacher performance significantly. This means the better the school leadership will be better the performance of teachers in improving the quality of learning. Coefficient terminated magnitude is 8%, this means that the influence of school leadership on teacher performance by 8%.

Strength of the relationship between school leadership and creative attitude of teachers with a teacher's performance is shown by the magnitude of the correlation coefficient of 0.45, so it was concluded that the relationship is significant. The amount of the combined effect of variable school leadership and teacher of creative attitude towards the teacher's performance is 21%.

Based on the magnitude of partial correlation coefficients obtained, the relationship between creative attitudes of teachers and teacher performance is stronger than the relationship between school leadership with teacher performance.

4. Conclusions and Implications

4.1 Conclusions

Based on research data analysis, presented the following conclusions, implications and suggestions as follows:

1. It was found that the creative attitude of elementary school mathematics teachers in the district of Pidie are adequate.
2. It was found that the performance of elementary school mathematics teachers in the district of Pidie outside the city (sub urban) are quite good.
3. It was found that there is a significant relationship between creative attitudes of teachers with teacher performance. The amount of influence both the first variable to variable by 16.56%.
4. It was found that there is a significant relationship between school leadership with teacher performance. The amount of influence both the first variable to variable by 8%.
5. It was found that there is a significant relationship between school leadership and creative attitude of teachers together to teacher performance. Variable overall school leadership and teacher of creative attitude can influence 21% of teacher performance. Influence of other variables outside the school leadership and teacher of creative attitude to wards the teacher's performance by 69%.

4.2 Implications

Based on the above conclusion, this study implies that the improvement of teacher performance, in order to upgrade the quality of learning, can be implemented in two ways, namely, increasing creative attitudes of teachers and running a democratic principal
leadership. Various aspects related to this effort needs serious attention in the administration of education in primary schools.

References


ABSTRACT

This research is to increase the appreciation of the attitude motion through the pakem model Saman dance at an early age children in PAUD Rizky Lambaro, Aceh Besar. Dance learning in PAUD Rizky Lambaro Aceh Besar, teachers using impersonation and lecture that focuses on children dancing skills. This study aims to understand how the child motion appreciation in learning Saman dance, knowing PAKEM applications used on the Saman dance learning that can improve the ability of appreciation of early childhood, and learned the art of dance learning outcomes after using PAKEM. To observe the phenomenon of an increase in the appreciation of the attitude motion on early childhood learning through PAKEM dance, this study used a method action research with qualitative approach. While data collection techniques using observation, interviews, and documentation. Results are expected by the researchers of this study can produce motion appreciation of PAUD especially Ananda Rizky, creating motion that are used in Saman Dance, became the successor of the cultural heritage in Tanah Rencong, and Saman dance culture are able to apply to both national and world stage international.

Keyword: Motion Appreication, Saman Dance

1.1 PROBLEMS BACKGROUND

Early childhood education in Indonesia is currently in the spotlight of society, because education in early childhood as a starting place first child learn various basic capability as a preparation for life developing, both personal as members of society and as citizens. The role of teachers in teaching children tend to be more difficult and extensive. This is because the process of learning in preschool education is not emphasized in the achievement in terms of academic achievement, but rather is directed to develop attitudes and interest in learning and sharing potential and basic abilities of children (M. Sholehuddin 1997).

Learning the art in PAUD Rizky Lambaro, Aceh Besar district consists of fine arts and dance are given in extracurricular classes. Judging from the material provided, learning the art of dance in this kindergarten lack the ability to develop an appreciation of early childhood. Based on observations of researchers, then found some problems or weaknesses in learning in PAUD Rizky Lambaro, Aceh Besar district, among others: the art of dance education early childhood was less friendly in the ears of the community, especially for the traditional dance. In order to socialize the art of dance in early childhood, PAUD providers need to hold a child's art education program that concentrates traditional dance. Saman has met the criteria as the art of dance culture of the archipelago. Meanwhile, the focus of the election material being taught always consider related to the development and appreciation of the child in a way that is effective, and fun.

According to Bruce Joyce and Marsha Weil (2003) stated:
Another solution is to adapt the models to confirm to the characteristics of the learners. We identify the reasons why a given learner has trouble relating to a particular learning environment and then modulate the features of that environment to make it easier for the learner to fit in.

2.1 Early Childhood Meaning

Early childhood is children who are in the age range of 0-6 years (the National Education Act of 2003) and 0-8 years old children according to education experts. According to Mansur (2005), early childhood is a group of children who are in the process of growth and development and growth.

This period is golden age, because the child grew and developed very rapidly and not replaced in the future. According to various studies in neurology intelligence proved that 50% of children are formed within the first 4 years. After the 8-year-old child brain development reached 80% and at the age of 18 years to reach 100% (Slamet Suyanto, 2005).

2.2 Early Childhood Characteristic

Early childhood have different characteristics with adults, because young children grow and develop in many different ways. Kartini Kartono (1990) explains that early childhood has the characteristics of 1) egocentric naive, 2) have a social relationship with objects and people that are simple and primitive, 3) there is unity of body and spirit that is almost inseparable as one totality, 4) life attitude to fisiognomis, namely children directly proclaim the attributes / properties of the material outward or against any appreciation.

Opinions about the characteristics of early childhood expressed by Rusdinal (2005) adds that the characteristics of children aged 4-5 years are as follows: 1) a child during the preoperational, learning through concrete experience and with the orientation and objectives moment, 2) the child likes to name objects who are nearby and define words, 3) children learn through spoken language and the time is growing rapidly, 4) children need structure defined activities and specific. Age is also a sensitive time for children to learn the language.

2.3 Aspects of Early Childhood Development

a. Physical development/motoric

Physical development / motoric will affect the lives of children either directly or indirectly (Hurlock, 1978). Hurlock added that directly, physical development will determine the ability to move. Indirectly, growth and physical development will influence how children look at themselves and others. Gross motor development related to the basic movements coordinated with the brain such as running, walking, jumping, punching and interesting. Skills of motoric movement become more refined and gross motor movement skills become more agile and harmonious. At the age of a child 4-6 years, skills in using hand muscles and leg muscles have started functioning. Vygotsky believed that the child's mind develops through (Solso: 390): taking part in a cooperative dialogue with opponents who are skilled in tasks outside the zone proximal development and use what the educators say who are experts in what is done.
2.4 Saman Dance

Saman dance is a gayo traditional dance that is usually displayed to celebrate important events in custom. Saman dance poetry is in the Arabic language and the language Gayo. In general, Saman dance is played by a dozen or dozens of men, but the numbers must be odd. Others say the dance is danced less than 10 people, with details of 8 dancers and 2 people as the giver cue while singing. To set the various movements instituted a leader called Sheikh.

Saman dance is using two elements of movement that became basic elements in Saman Dance: Applause and pat his chest. Allegedly when spreading Islam, Sheikh Saman studying ancient Malay dances, then bring back through the motion are accompanied by poems preaching Islam to facilitate his message.

Saman dance is one of the dance that is quite unique and has been recognized by UNESCO on November 24, 2011 in Bali. Saman dance is played by 5-8 people because it only displays the motion clapping other movements, such as shaking motion, kirep, Lingang, surang-surang (all of this movement is the Gayo language). Saman Dance usually displayed not using accompaniment of musical instruments, but using sound of the dancers and the applause they are usually combined with beating their chest and groin as synchronization and threw the body into different directions. But sometimes, Tari Saman displayed using the accompaniment of musical instruments, such as drums and seurune Kalee. There are several ways to get sounds as follows: clap both hands, palms blow to the chest, side clap hands to the chest, thumb friction with the middle finger of the hand is called kertip and singing dancers add to the dynamism of the Saman dance. Singing in the Saman dance is divided into five kinds: rengum, which is preceded by a lifter roar, ringing, namely rengum which was soon followed by all the dancers, redet, which is a short song with a short sound sung by a dancer at the center of the dance, syek, namely song sung by a dancer with long high-pitched voice, usually as a sign of change in motion, and saur, which is the song that is repeated by all the dancers after sung by a solo dancer.

2.5 Motion Functions For Early Childhood

Characteristics of early childhood motor movement consists of two movements that fine motor and gross motor skills. This movement includes the entire body or any part of the body. These skills include: strength, speed, flexibility, agility, balance and strength. Gross motor skills can be divided into 3 groups:

Locomotor skills: running, jumping, gallop, slide, roll, and ride off, running after a pause, flopped and evasive. Non-locomotor skills: move the limbs with the body position motionless, swinging, turning, lifting, shaking, arching, hugging, twisting and pushing. Projecting skill: capturing, receiving, kicking, herding, bounced, hit and interesting. Coordination skills Smooth Motor movement.

How To Train The Motion For Early Childhood

The period of early childhood is the golden era or often called the Golden Age period, usually characterized by rapid changes in physical development, cognitive, social and emotional. Movement and song not only teach children musical intelligence, but at the
same time teach other intelligence, such as mathematical intelligence, linguistic, interpersonal and intrapersonal and Kinesthetic intelligence.

2.6 PAKEM
Definition of Pakem
Pakem which stands for Pembelajaran Active, Kreatif, Efektif and Menyenangkan (active learning, creative, effective and fun), is a model of contextual learning which involves at least four main principles in the learning process. First, the process of interaction (child interacts actively with teachers, fellow children, multi-media, references, environmental, etc.). Second, the process of Communication (children communicate their learning experiences with teachers and other children peer through the story, dialogue or through a simulated role-play). Third, the process of reflection, (son rethink about the meaningfulness of what they have learned, and what they have done). Fourth, the process of exploration (children experience involving all the senses directly with them through observation, experimentation, investigation and / or interviews).

The things that must be considered in carrying pakem is understanding the character of your child, know the child individually, utilizing the child's behavior in organizing learning, develop critical thinking skills, creativity, and problem-solving skills, and develop classroom as a learning environment that is attractive.

3.1 Research Method
This research uses descriptive method with qualitative data obtained through direct participation to the object of research to get the full data. Methods of data collection in this research process, namely: a field study.

3.2 Subject and Object of research
The subjects were PAUD Rizky Ananda Lambaro, Aceh Besar district in the academic year 2016/2017, amounting to 25 people. Male students numbered 14 people and women students numbered 14 people.

Place and Time Research
This study was conducted in PAUD Rizky Ananda Lambaro, Aceh Besar district of Aceh province. The reason for the selection of PAUD Rizky Ananda as a place of research is due to the lack of research on the culture of Saman dance as a world heritage for the children of Aceh.

3.3 Data Collection Techniques
Dance Learning in PAUD Rizky Ananda is given to extracurricular. Dance Learning held on every Saturday, for 1 x 60 minute lessons.

3.3.1 Preparation Phase
This phase is the preparation phase of data collection with the following steps. Make observations to PAUD Rizky Ananda Lambaro, Aceh Besar district, disseminating research concept to the principal, parents, and colleagues who will become teachers.
Researchers prepare interview guidelines and observation for principals, teachers and children.

3.3.2 Evaluation Phase

Assessment of Saman dance teaching and learning activities in early childhood include assessment process and learning outcomes. Assessment process is used in order to foster and establish appreciative attitude, while the assessment of learning outcomes seen from a child's ability to display students' work. Assessment is done in the form of individual assessment and group assessment. Assessment criteria based on the element of creativity that include motions which is based on the interpretation of the child through audio visual observation and appreciation in expressing movements in Saman Dance. Final assessment is an assessment of the affective aspects (attitude). Through Saman Dance for child is expected to be: A (Very Good), if the child is able to name all the motion in Saman Dance, B (Good), if the child can mention most of the motion in Saman Dance, C (Enough), if the child can mention fraction Saman Dance motion.

3.3.3 Data Collection

Guidelines for observation, interview Against Object Research

Observations carried out in two phases namely: the first phase is done that researchers conducted observations at the site of PAUD Rizky Ananda Lambaro, Aceh Besar district, where the school is choosing dance teachings materials. The second phase of the interview guide in this study consisted of three types, intended for teachers, children, and school principals. Guidelines for the teacher interview contains questions relating to: (a) how to select instructional materials; (b) prepare the instructional materials; (c) packing the instructional materials; (d) make about the phases of learning; (e) learning media; (f) evaluation of learning; and (g) the development of children's understanding and interest in learning to Tari Saman.
ABSTRACT

The purpose of this study is to determine the dominance of fish found in Lake lut bargaining. The object of this research is there are families of fish in the lake Fresh Sea. Data obtained through observations and interviews. The acquired data will be analyzed descriptively tabulated to be concluded. Based on the research that there are six families and 10 species which consist of Family Cichlidae Oreochromis niloticus (Tilapia / Gule manila) and Tilapia sp (Fish Mujair / Gule Jaher), Family Claridae consists of Claris batrachus (Catfish / Gule Mut), Chanidae family consists of Ophiocheilus gachua HB (Fish Cork / Gule Bado’), Family Synbranchidae consists of Fluta alba (eel), Family Cyprinidae consists of Rasbora leptasoma (Fish Depik / Gule Depik), Dangila sp (Gule Kawan), Cyprinus carpio (Goldfish), Dangila cuvieri CV Fish Kepras / Keperas), Family Characidae consists of Stromateus Sp (Fish pomfret). Dominance in the Danau lut tawar is from the family Cyprinidae, which consists of Rasbora leptasoma (Fish Depik / Gule Depik), Dangila sp (Gule Kawan), Cyprinus carpio (Goldfish), Dangila cuvieri CV Fish Kepras / Keperas) as much as 67,6%.

Keyword: Dominance, Family of fish, Danau Lut Tawar

1. Introduction

Danau Lut Tawar is a lake and tourist areas are located in the Gayo Highlands, Central Aceh district of Aceh province. The west side of the lake there is a town that is Takengon. Gayo tribe call this lake as Lake Lat Fresh. The extent of 5,472 hectares with a length of 17 km and a width of 3.219 km. 2,537,483,884 m³ water volume. (Alsa, 2011)

In the neighborhood there are components, both physical components (objects living / biotic and inanimate / abiotic) as well as non-physical component in the form of relationship the benefits of an object to another object (trophic). The environment also occurs a dynamic phenomenon involving the interaction between the physical group, or it can be said that in the neighborhood there is a dynamic system. (Alsa, 2011)

Fish is one of the group of vertebrates are animals that have a spine. The fish is also called the Pisces that live in the water. This fish is also called the animal poikilotherm because body temperature is not fixed (cold-blooded), which affected the surrounding temperature. Where the body is divided into head, body and tail. (Alumnus, 2011)

Most sedentary living organisms in the lake zone, but most can be classified based on their habitat. Organisms that live in the lake include plankton, fungi, viruses, nekton, neuston, pleuston, makrofit aquatic, periphyton, algae, benthic, epibentos, infauna, and psammon (Alsa, 2011)

Saleh at al (2000) Danau Lut Tawar marine found 46 species of plankton that can be classified into 11 classes. (Adopted from Saleh, at al, 2000) class Chlorophyceae dominate plankton species found in Lake Freshwater Sea, where there is 35%, which is an organism
autotrof. This shows in the food pyramid Fresh Sea Lake is still in equilibrium, where a greater proportion of producers from consumers.

There are three (3) Phylum fauna found in the waters of Danau Lut Tawar, ie molluscs (soft-bodied animals), annelids (segmented worms), and Pisces (fish). Saleh, et al (2000) suggested that the diversity index (H) molluscs ranged from 0.000 to 0.848, with a density of between 1-167 per 240 cm².

Based on observations while, many types of fish found in Danau Lut Tawar them are carp, tilapia, depik, catfish, tilapia, taro (pressed), grasscarp fish, eels, astringent, cork, white carp, shrimp, fish Kepras, crab, crisp fish, eel (Saleh, et al, 2000).

The number of fish species introduced to the Danau Lut Tawar until now thought to have been in excess of the above data. Because the known local Fisheries Department has also been a couple of times did the introduction of foreign fish Fresh Sea Lake. The introduction of alien fish action could be expected to threaten the sustainability of fish endemic, it is seen from the increasingly rare endemic fishes encountered certain types. The purpose of this study was to determine the "relative dominance contained in the lake fish freshwater sea".

Based on the background of the problem, It becomes the problem in this research is "The dominance of any fish families contained in Danau Lut Tawar?"

In accordance with the formulation of the problem, it is the purpose of this research is to "know what fish family dominance contained in Danau Lut Tawar"

2. Literature Review

Fish are vertebrates that live in water, breathe with gills, moving with fins, reproduce by laying eggs, and cold-blooded scaly skin. Name of fish in various areas Eungkot (Aceh), Dekke (Tapanuli), Bale (Bugis), Juku (Makassar), Juko (Madura), Ikang (Ambon), Ika (Flores), Be or side dish (Bali), Empah (Sasak, Lombok), Side dishes (Sunda), Pono (Lampung), Iwak (Java), (Alumnus, 2011: 152).

<table>
<thead>
<tr>
<th>No</th>
<th>Name (in Indonesia)</th>
<th>Latin</th>
<th>Name (in Gayo)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ikan Mas</td>
<td>Cyprinus carpio</td>
<td>Gule Bawal</td>
<td>Endemic</td>
</tr>
<tr>
<td>2</td>
<td>Ikan Talas</td>
<td>Cyprinus sp</td>
<td>Gule Peres</td>
<td>Introduction</td>
</tr>
<tr>
<td>3</td>
<td>Ikan Nila</td>
<td>Tilapia niltoica</td>
<td>Gule Manila</td>
<td>Endemic</td>
</tr>
<tr>
<td>4</td>
<td>Ikan Mujair</td>
<td>Tilapia sp</td>
<td>Gule Jaher</td>
<td>Introduction</td>
</tr>
<tr>
<td>5</td>
<td>Ikan Lele</td>
<td>Claris batrachus</td>
<td>Gule Mut</td>
<td>Introduction</td>
</tr>
<tr>
<td>6</td>
<td>Ikan grasscarp</td>
<td>---</td>
<td>Kerskap</td>
<td>Introduction</td>
</tr>
<tr>
<td>7</td>
<td>Ikan Belut</td>
<td>Fluta alba</td>
<td>Belut</td>
<td>Endemic</td>
</tr>
<tr>
<td>8</td>
<td>Ikan Gabus</td>
<td>Ophiocheopalus gachua HB</td>
<td>Gule Bado’</td>
<td>Endemic</td>
</tr>
<tr>
<td>9</td>
<td>Ikan Sepat</td>
<td>Polycanthus hasselti CV</td>
<td>Gule Kerup</td>
<td>Endemic</td>
</tr>
<tr>
<td>10</td>
<td>Ikan Mas Putih</td>
<td>Cyprinus sp</td>
<td>Iken Pedih</td>
<td>Endemic</td>
</tr>
<tr>
<td>11</td>
<td>Ikan Depik</td>
<td>Rasbora leptasoma</td>
<td>Gule Depik</td>
<td>Endemic</td>
</tr>
<tr>
<td>12</td>
<td>Dangila sp</td>
<td>---</td>
<td>Gule Kawan</td>
<td>Endemic</td>
</tr>
<tr>
<td>13</td>
<td>Rasbora sp</td>
<td>---</td>
<td>Yas</td>
<td>Endemic</td>
</tr>
</tbody>
</table>

Table 1: Types of fish found in the Danau Lut Tawar
### Definition Lake

Danau Lut Tawar is a lake and tourist areas are located in the Gayo highlands, Central Aceh district of Aceh province. The west side of the lake there is a town that is Takengon. Gayo tribe call this lake as Lake Lut Fresh. The extent of 5,472 hectares with a length of 17 km and a width of 3.219 km. 2,537,483,884 m³ water volume. (Alsa, 2011)

Danau Lut Tawar is located in Central Aceh District. The total area of Central Aceh district is 4318.39 km² is located at an altitude of 200-2600 asl with a capita of Takengon.

Administrative boundaries Aceh Central are:
- In the northern highlands denganb District,
- In the south with the district of Gayo Flexible,
- On the east by the East Aceh district,
- In the west with Nagan Raya and Pidie.

Marine Freshwater lakes can be divided into several constituent aspects, namely physical structure, chemical structure, biological structure, and the structure of the watershed.
Danau Lut Tawar is a lake formed from volcanic processes (Muchlisin, 2010). Physically, according to Saleh, et al (2000) Marine freshwater lake has an area of Central Aceh 5472 acres, 17 kilometers in length and width of 3.219 kilometers with an average depth of Lake Sea Fresh is 51.13 meters. Greater part of its territory lies in the region of Central Aceh district administration on the upstream side, the District highlands in the central portion and Bireuen on the downstream.

Danau Lut Tawar has water temperature ranges between 21.55°C - 19.35°C measured at noon with a depth of 1-50 meters. The temperature at each depth are presented in Table 2.

Table 2. The average temperature of the Danau Lut Tawar

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>The Average Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21.55</td>
</tr>
<tr>
<td>5</td>
<td>21.37</td>
</tr>
<tr>
<td>10</td>
<td>21.15</td>
</tr>
<tr>
<td>20</td>
<td>20.70</td>
</tr>
<tr>
<td>50</td>
<td>19.35</td>
</tr>
</tbody>
</table>

Source: Saleh, at al (2000)

Fresh marine ecosystem lake has a maximum temperature of 25°C and 13°C with a minimum average of 20°C (Ambar, et al, 1994). Average evaporation in Takengon range 3.9 mm / day up to 3.4 mm / day in the month of October to December and 4.7 mm / day in March-April. An average of 80.08% air humidity, air humidity wettest and driest 86.28% 74.25% (Alsa, 2008).

Distribution of chemical substances, particularly nutrients in lake water plays an important role, in which each parameter change in water chemistry will affect the aquatic biota, water plants and animals. The value of some chemical parameters of the waters of danau lut tawar is presented in Table 3.

Table 3. The value of some chemical parameters of the water of danau lut tawar

<table>
<thead>
<tr>
<th>Chemical Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph</td>
<td>8.22 – 8.41</td>
</tr>
<tr>
<td>Dissolved Oxygen (ppm)</td>
<td>5.0 – 7.0</td>
</tr>
<tr>
<td>Biological Oxygen Demand (BOD) (ppm)</td>
<td>0.62 – 1.11</td>
</tr>
<tr>
<td>Chemical Oxygen Demand (COD) (ppm)</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Nitrat (ppm)</td>
<td>0.00 – 0.13</td>
</tr>
<tr>
<td>Nitrit (ppm)</td>
<td>0.001 – 0.003</td>
</tr>
<tr>
<td>Fosfat (ppm)</td>
<td>0.12 – 1.31</td>
</tr>
<tr>
<td>Potassium (ppm)</td>
<td>1.93 – 2.15</td>
</tr>
<tr>
<td>Fats/oils</td>
<td>--</td>
</tr>
</tbody>
</table>


Most sedentary living organisms in the lake zone, but most can be classified based on their habitat. Organisms that live in the lake include plankton, fungi, viruses, nekton,
neuston, pleuston, makrofit aquatic, periphyton, algae, benthic, epibentos, infauna, and psammon. For Pisces (fish), danau lut tawar found as many as 22 species of fish, as presented in Table 3. Based on the data in Table 3 above is known there are 15 native fish species (endemic) danau lut tawar. Moreover, according to Muchlisin (2010) that there are two endemic species typical of danau lut tawar is not found in waters anywhere in the world, namely Rasbora tawarensis and Poropuntius tawarensis, known as the local curry and curry depik friend.

3. Materials And Methods
Collecting data in this study was conducted using a survey, to determine matters relating to the object of research, with a view, record and identify the dominance of fish in the danau lut tawar.

Data and information that has been collected analyzed descriptively tabulated to be concluded. Fill in the table on the order of fish, fish families, the types of fish, the name of Indonesian and local languages. Also describe and classify about the types of fish.

4. Results And Discussion
The results showed that the fish in Lake District of danau lut tawar Seafood Central Aceh district there are 6 order in which there are 6 family which consists of 10 species distributed according to their habitat. These species obtained from the research that the results of the response by the trawler fishermen in Lake District of danau lut tawar Seafood Central Aceh district.further more on the observation that the author would do the authors tabulated in table form. As seen in Table 4. below.

<table>
<thead>
<tr>
<th>No</th>
<th>Ordo</th>
<th>Family</th>
<th>Kind of fish</th>
<th>Amount</th>
<th>%</th>
<th>Indonesian name / Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Percomorphi</td>
<td>Cichlidae</td>
<td>Oreochromis niloticus</td>
<td>10</td>
<td>3,78%</td>
<td>Ikan Nila/Gule manila</td>
</tr>
<tr>
<td>2</td>
<td>Perciformes</td>
<td>Cichlidae</td>
<td>Tilapia sp</td>
<td>8</td>
<td>3,03%</td>
<td>Ikan Mujair/Gule Jaher</td>
</tr>
<tr>
<td>3</td>
<td>Siluriformes</td>
<td>Claridae</td>
<td>Claris batrachus</td>
<td>25</td>
<td>9,47%</td>
<td>Ikan Lele/Gule Mut</td>
</tr>
<tr>
<td>4</td>
<td>Perciformes</td>
<td>Channidae</td>
<td>Ophiochepalus gachua</td>
<td>4</td>
<td>1,45%</td>
<td>Ikan Gabus/Gule Bado'</td>
</tr>
<tr>
<td>5</td>
<td>Anguilliformes</td>
<td>Synbranchidae</td>
<td>Fluta alba</td>
<td>20</td>
<td>7,04%</td>
<td>Belut</td>
</tr>
<tr>
<td>6</td>
<td>Cypriniformes</td>
<td>Cyprinidae</td>
<td>Rasbora leptasoma</td>
<td>100</td>
<td>37,89%</td>
<td>Ikan Depik/Gule Depik</td>
</tr>
<tr>
<td>7</td>
<td>Cypriniformes</td>
<td>Cyprinidae</td>
<td>Dangila sp</td>
<td>75</td>
<td>28,40%</td>
<td>Gule Kawan</td>
</tr>
<tr>
<td>8</td>
<td>Cypriniformes</td>
<td>Cyprinidae</td>
<td>Dangila cuvieri CV</td>
<td>7</td>
<td>2,66%</td>
<td>Ikan Kepras/Keperas</td>
</tr>
<tr>
<td>9</td>
<td>Cypriniformes</td>
<td>Cyprinidae</td>
<td>Cyprinus carpio</td>
<td>10</td>
<td>3,79%</td>
<td>Ikan Mas</td>
</tr>
<tr>
<td>No</td>
<td>Ordo</td>
<td>Family</td>
<td>Kind of fish</td>
<td>Amount</td>
<td>%</td>
<td>Indonesian name / Region</td>
</tr>
<tr>
<td>----</td>
<td>-----------------</td>
<td>--------</td>
<td>--------------</td>
<td>--------</td>
<td>-----</td>
<td>--------------------------</td>
</tr>
<tr>
<td>10</td>
<td>Characiformes</td>
<td>Characidae</td>
<td>Stromateus Sp</td>
<td>5</td>
<td>1.89%</td>
<td>Ikan Bawal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>264</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Graph Percentage types of fish fresh seafood in lake district of Central Aceh District Lot Bid. From the table above it can be seen that there are 10 species of fish, namely Oreochromis niloticus (Tilapia / Gule manila), Claris batrachus (Catfish / Gule Mut), Ophiochepalus gachua HB (Fish Cork / Gule Bado’), Tilapia sp (Fish Mujair / Gule Jaher), Fluta alba (eel), Rasbora leptasoma (Fish Depik / Gule Depik), Dangila sp (Gule Kawan), Stromateus Sp (Fish pomfret), Cyprinus carpio (Goldfish), Dangila cuvieri CV Fish Kepras / Keperas). Of the types of fish consists of 6 order in which there are six families of fish found in the lake district of Lut fresh seafood Central Aceh district. This fish species is found from the results of the responses of fishermen using trawl catches tools and cages.

As the graph the percentage of families finding fish found in Lake Fresh Sea is as follows.

![Graph Percentage of Family danau lut tawar](image)

Based on the graph 1. Then, it can be explained that the Family Cichlidae gained as much as 6.3%, the family gained as much as 8.8% Clariidae, family Channidae gained as much as 1.45%, obtained Synbranchidae family as much as 7.04%, gained as much as 67 family Cyprinidae, 6%, the family Characidae gained as much as 1.8%.

Thus the fish species found in Danau Lut Tawar as 6 families and 10 species are Oreochromis niloticus species (Tilapia / Gule manila), Claris batrachus (Catfish / Gule Mut), Ophiochepalus gachua HB (Fish Cork / Gule Bado), Tilapia sp (Fish Mujair / Gule Jaher), Fluta alba (eel), Rasbora leptasoma (Fish Depik / Gule Depik), Dangila sp (Gule Kawan), Stromateus Sp (Fish pomfret), Cyprinus carpio (Goldfish), Dangila cuvieri CV Fish Kepras / Keperas).
5. Conclusion

Based on the research that has been done on the Danau Lut Tawar it can be concluded that: The types of fish in the lake Fresh Sea there are six families and 10 species which consist of Family Cichlidae Oreochromis niloticus (Tilapia / Gule manila) and Tilapia sp (Fish Mujair / Gule Jaher), Family Claridae consists of Claris batrachus (Catfish / Gule Mut), Family Channidae consists of Ophiochepalus gachua HB (Fish Cork / Gule Bado), Family Synbranchidae consists of Fluta alba (eel), Family Cyprinidae consists of Rasbora leptasoma (Fish Depik / Gule Depik), Dangila sp (Gule Friend ), Cyprinus carpio (Goldfish), Dangila cuvieri CV Fish Kepras / Keperas), Family Characidae consists of Stromateus Sp (Fish pomfret).

References


INTEGRATIVE CHARACTER IN THE IMPLEMENTATION OF CURRICULUM

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ABSTRACT:

Integrative approach in teaching and learning can bersepadu to the interests of students in accordance with the circumstances at hand. Implementation of the integration of cultural values and character of students in the school curriculum to give sense to combine science and IMTAQ proficiency in learning or may also combine the various branches of science in teaching materials are studied by students. In line with the implementation of the national character curriculum integration is very large role to help students look for the character (character) good character and positive based on the basic values of religion and local culture can be developed more widely. Model curriculum in the teaching and learning Integrative Biology IPA developed by integrating cultural values, values of Islamic law that can support students who berahklakul karimah character. The values of Islamic law which is integrated not just a concept or knowledge, but also through ordinances talk, hang out, dress and behavior in interacting at school and in the community. By using a model of integrative curriculum and Islamic approach through the process of identifying the needs of students, teachers and support capabilities of all components of education so it is easy to be implemented by teachers and students.

Keywords: approach, integrative, character, curriculum

1. Introduction

Integrative or integration which has a dual meaning unity or unification of some other part of the union to be strong and easy to implement. The theme integrated means to unite, join, cooperation, consensus and shared the concept can be realized with the ability of individual students according to their environmental conditions. According Ulil Amri (2012) in mapping the concept of integrative education is education integrating science, technology, which includes the concept of Islamic economics to be taught to students and the general public. Advances in information technology and is now a necessity in human life it is necessary to methods and rational approach to national identity is not lost. "Gadooh anuek to meupat j ratt Gadoh customary pat tanak mita" maja hadih above indicates that the progress of science and technology must be addressed wisely to maintain the quality of life of mankind in accordance with the local culture to the basic.

Approach to integrative in education emphasize the development of individuals in a holistic and integrated to produce a good direction based on trust, confidence and devotion to God. For example, integration in the curriculum can provide understanding of the integration of a variety of skills in a teaching or maybe even coherence to the various branches of knowledge in a particular subject teaching materials tailored to the needs and interests of district students (Masnur Muslich, 2011). Part of the integrated character must come from the student environment and community discernment or the religion of Islam in Aceh is support for the government in the implementation of education based on Islamic law. In the past two years various natural phenomenon and change the values in our society in terms of social or cultural crisis of confidence to keep moving umara scholars and in
accordance with nature. The government hopes to teachers and schools are many things that can be integrated into teaching and learning in schools such as disaster, drug problems, moral, nutrition and health with the Islamic Aceh culture to fortify students from negative influences (Sofyan Gani 2014; Ibrahim & Mohd Isha, 2015 dan Zaini Abdullah, 2015).

2. Discussion.

2.1. How Curriculum Concept Characters

The curriculum now being implemented in Indonesia is the Character Education Curriculum (Curriculum 2013) raises the pros and cons to teachers and school readiness, especially against them. Indonesian Education Minister Parties to stop the conduct of Curriculum 2013 disenaraikan need further evaluation but for schools that are ready to be allowed to implement (Tempo News, 2015). When in law National Education System chapter 1 verse 11, that is, a set of plans and arrangements regarding the content of teaching aids and materials and methods used as guidelines for the implementation of teaching and learning (Syafuddin Sabda, 2006). Curriculum 2013 call on them that the curriculum is based on appearance as outcomes-based curriculum, therefore developing a model of Biological Science curriculum directed at achieving proficiency formulated than the minimum passing standards (Kementrian Pendidikan & Kebudayaan, 2013).

Information at the education process is not solely directed to print human beings are capable of mastering science and technology or have the intelligence stage alone, but should be balanced in the development of the age, character, values, religion and culture in the interaction of student life. Opportunities to advance personal student is not solely determined by the stage of proficiency, interest, discipline, competence and change the mindset and character appropriate to the culture and religious education (Saminan, 2013; & Jalaluddin, 2015). In line with the above exposure to run the model curriculum at bernuasa integratif to the character (watak, tabiat) students in public schools must necessarily relying on the basic values of religion and local culture that can dikembang be more in a spacious environment (Cut Morina, 2014).

The various definitions or the term "character" that is characteristic of a lady teacher, student or ordinary citizens can be seen in two characters such as: Insaniah values and manners. Characters that appear on a student sesesorang personal identity which may be marked in everyday life, especially in their interaction with other students. Manners or good value shared by society suata area is usually influenced by the role of religion and local culture (HarrellP, 2010 & Ulil Amri, 2012). In character education provides a business change and practice the values of religion, culture and environment that can nurture nature / habits dents act in life. Character teachers and principals will be a real example for the students of this issue has changed in this time where the teacher is no longer digugu and emulated, or "digugu dan ditiru, atau” ka meubalek cak ka meutuka cok”. So that the identity of the principal, teachers, parents become faded in the eyes of the students because they do not fit anymore between words with actions implemented in real life.
2.2. Integration Patterns in the teaching and learning process

In order to integrate the concept of curriculum teaching materials follow the character as a portion rather than the conduct of an integrative curriculum model to follow preliminary information, learning strategies, objectives to be achieved and continuous evaluation (Syaifuddin Sabda, 2006 and Saminan, 2013). Line of sight then Drake, S. M., & Burns, R. (2004) explains that:

_During the progressive education era, several educators proposed that curriculum was more than a separated or union of conceptual and organizational arrangements. Rather they considered it in relation to essential question of knowledge and meaning that were believed relevant and essential to the learner._

Then the integration model of learning science developed in a way menyepadukan Biology cultural values, values of Islamic law that can support students' character. The values of Islamic law which is integrated not just a concept or knowledge, but also through ordinances talk, hang out, dress and behavior in interacting at school. Then further Syaifuddin Sabda interpret the integration sciences as follows:

1) that all science is seen as a unity of knowledge with universal laws, common conceptual structures and enquiry process in which the unifying elements are stronger than the differences between distinct scientific disciplines; or

2) that for teaching purposes the various disciplines of science are taught in an integrated way. (Syaifuddin Sabda, 2006)

From the above note he found in the learning process needs to be emphasized to the moral values, ethics, individual character, the value of persona, can disepadukan in education. From the development of science and technology today, the students need to be given to the balance between technological advancement of religion, culture and tradition of a strip. Islamization process can be seen in the following chart.
2.3. Approach Karacter Education and integration model

Education experts such as (Adsit, IK 2002), Brown, D. (2007), Wiggins, G., & McTighe, J. (2005) and Reeves, D. (2009), said that the concept of curriculum characters can integrated a good values namely that combine some of the concepts, themes and topics systematically. Had run approach in teaching and learning in Islamic it should be noted, among others, (i) to integrate science and religion in the common curriculum implemented in schools, (ii) integrated Science and Technology (IPTEK) and Imtaq(Iman dan Taqwa) and (iii) the integration of cultural problems with the school environment (Mohd Isha Awang & Ibrahim, 2014).

Model curriculum integration is seen as a process to make the national character and identity of the nation for the better. The first aspect that must be considered in establishing an Islamic curriculum integration models by Oliva and Gordon (2013) that is the goal and objective of teaching materials, the content of teaching materials and students’ experience commensurate basis. So on the second aspect is the teaching material that needs to be arranged and performed on a regular and ongoing supervision. With due regard to the purposes of the area and the ability of teachers, Traffic students should expect goals to be
achieved during the learning process. So do the analysis of the cultural order and the interests of local communities nationwide.

Then the approach to education and learning model that can support the planned curriculum that will menghuraikan character typology approach to character education as a process that is reserved Oliva & Gordon (2013) in the chart 2.2 the following.

![Diagram](image)

**Figure 2.2 Approach Curriculum for Tyler**  
( Oliva & Gordon, 2013)

Indiagnosis purposes, approach character and model of curriculum begin the process by identifying the needs of students, teachers and support capabilities area. Namely: a) formulation of objectives, b) Determination of content, should be aligned with the objectives, content must also be valid, c) the type of the order, with due regard to the achievement of student achievement, d) learning experiences rather than in accordance with the strategy content, e) assessment procedures need to be considered by students and teachers personality.

3. **Conclusion**

   Based on the existing information it can be concluded that the character curriculum integration model can be implemented with respect to: the objective of education as a
moral change targets and manners would be better for the character of the nation. Opportunities to advance personal student is not solely determined by the stage of proficiency, interest, discipline, competence in changing the mindset and character in accordance with the culture, society and religious orders were implemented. Shari'a value will be appear through how to talk, how to get along, dress and behavior in interacting sebagia citizens. Therefore, it should be noted the ability of the teacher personality (character) is an example for the students so that it becomes an idol, friends, and parents in schools. Hopefully ..!

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Linking Teacher Knowledge and Teaching Assignments. *Issues in Teacher Education*, 19(1) 145-165


CHARACTER ANALYSIS OF STUDENTS OF ACEH REAL MADRID SPORT
SOCIAL SCHOOL YEAR 2014

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ABSTRACT

The achievement in every types of sport is strongly supported by the maturity of an athlete both physically and psychologically, which in this case is the human character building character (personality) is the learning about behavior through the values transmission, which are socially accepted. The football achievement of the Real Madrid Foundation Social School year 2014 is was very good; this good achievement is not inseparable from the factors of character building, which was resulting into actions. The aim of this research was to analyze students’ character of Aceh Real Madrid Sport Social School year 2014. This research is a descriptive research with the quantitative approach related to the human behaviors. The population of this research was the students of Juvenil class of Real Sport Social School totaling 20 students and all of them were used as a sample for this research. The instruments used in this research were the analysis guidelines (questionnaire), interview and document study, which was developed by the researcher and was validated by the experts.

Keywords: Character, Students, Football Sports

1. Introduction

Achievement in any sport is strongly supported a student maturity, both physically and psychologically. Both of these can not be separated from one another, and the fix should continue at an early age. Most people just assume that the most dominant fisiklah factor in determining achievement sport. Basically psychological factors in this case that the mental and character be the final touch needed in the modern game of football as it is today. Mental formation and character of a student is not to be enforced, because it was just given stimulus and stabilize formulations character of a student. Character can be shaped in such a way in accordance with what is expected, depending on the purpose and objectives of the purpose of the formation of character. Each student has a different character and a different habit that character is determined by the state of the environment factor family and the community where it is located. As concrete evidence of a change in the character of the state of Bosnia is that before fought by Serbia, according to Al Jazeera Sadli on the site, he changes character oriented Bosnians years 1992 - 1995: Character, behavior and obedience Muslim it is, it all led to the end of a true Muslim character, but war, violence, or rather carnage that befell the country bosnia very influential on changes in the character of the Muslim world, the Muslim Army of Serbia regard as those which are the object deviant and must be addressed, which is the reflection of a small proportion of the existing character changes. The opinions above clearly explains that a person's character can be changed by the state of environmental factors, this also applies to all persons, including a person's capacity as an athlete. Habits and the atmosphere is suppose to be a place where students practice and strengthening container
character of students, in addition to factors other determinants such as family, culture and society. Problems build and form the character of students and in general in the province of Aceh was minimal attention from the various elements of society and government. It should not be allowed to linger long, all parties must work together in the process of forming the character of the group and School of Real Madrid Foundation Social Sports Aceh will be small to form a character.

Character formation of students at dasarnyan started from the family and where he practiced. Various sports available all offer their students the process of character formation that is different with the other branches, this is in accordance with the characteristics and the type of sport in tekuninya. If a student has memantapakan character in accordance with the characteristics tekuninya kecabangan that in the process of achievement for these students will increase, this is useful when Playing the opponent in a match. Sometimes trainer should also be able to read the characters on the student, it serves as a training system for determining appropriate and effective for their students.

The character of a football player is a belief and habits of the players while playing football and pour while in the performance of the students showed any game and act in accordance with the wishes of that needed in a football club that leads to achievement. The game of football is a characteristic branch team game or a team game, to achieve good teamwork needed players who can master all the parts and all kinds of basic techniques and skills to play football and also a variety of criteria that the player character is needed in the face of a game that can play the ball in any position and in a situation that demands mental maturity. The character of a footballer would be more useful when a student is under pressure in a game. This situation no longer plays a major role but mental maturity, typical and influential karakterlah that time. For example, many students who have a basic technique that mempuni during practice but when the game during practice good habits go away, this is because the character of the students have not been established and may not correspond to the position of play.

Map of strength in a football team is determined by four positions to play in general are: goalkeeper, defender, and striker midfield, this play four positions must be filled by a player who does have typical pemaian sesuai character with the demands of his position. All of it is a personal character that is required in a football team. Collection of various kinds of characters such students will lead to the formation of a character of a football team that reflects their power and become a club identity of the other party for viewing. This is useful when the football team played in an atmosphere stressed by opponents.

Seen from the point of understanding, it turns out the character and the character does not have a significant difference. Both are defined as an action that occurs without any more thought again because it is embedded in the mind, and in other words, both can be called a habit. School of Real Madrid Foundation Social Sports Aceh have trainers and training programs that support the development of character among students is a certified trainer of trainers coaching Real Madrid in the Spanish and English language education programs and Diniyah education and education outside the field that became routine agenda very useful in order character formation of students. After the students undergoing the training program in the School of Real Madrid Foundation Social Sports Acehnese
students are expected to have the good character when completed later. Running the program is not absolute exercise program to run smoothly, it is influenced by innate factors of each student. Evaluation of measured and lead to the character of students should be done gradually and sustainably in order to know the point of the weaknesses of the program being run.

Estuary end of the process of character formation of students School of Real Madrid Foundation Social Sports Aceh is that the attitude of unity, the unity and cohesiveness of a football team that can always be intertwined starting goalkeeper, defender, pemain midfielder and forward. They merepakan a whole with a team. Issues of character school students the Real Madrid Foundation Social Sports Aceh deserved to be investigated because this is the first School of Social Sports in Aceh which combines elements of education with elements of training for all students.

School caretaker coach and Real Madrid Foundation Social Sports Aceh strongly believe that the psychological element, especially the character of their students play a huge role in the development of student achievement. Coach is very that students will achieve stability character in adolescence and will continue to run well over time and the training provided by coaches. According to my observations now there is no one or an evaluation method to analyze how the character of the students in the School of Real Madrid Foundation Social Sports Aceh who have gained training and character education programs in schools. Given the importance of the formation of the character of a student, the authors are interested in conducting research on "Character Analysis Of Students Of Aceh Real Madrid Sport Social School Year 2014"

1.1 The purpose of research

Based on the background issues that have been discussed and the scope of training and educational programs are provided to each student who practiced in Aceh SSO Real Madrid, The basic objectives of this study are to: Analyze the character of the student School of Real Madrid Foundation Social Sports Aceh year 2014.

2. Materials And Method

2.1 Research Design

Attention to the problems and research objectives, it is necessary to study design. The research design used in this study is analisais character with the implementation of research procedures as shown in the figure below. According Arikunto (1991: 41) that "The design of the study or research design is a design created by the researcher, as anancr activities to be implemented by the object and the subject to be studied. The study design can be seen from the following picture
2.2 Population and Sample

The population in this study were all students who practice in school social sports Real Madrid Foundation totaling 100 students ... This sampling technique in the studies are purposive sampling or sample taken due to certain considerations. This is in accordance with the opinion Isparjadi (1989: 68) that: "purposive sampling is done by taking the correct selected by consideration of the ability of researchers and research in accordance with the specification of the characteristics possessed by the sample, such as people who have a certain education level, height, age who are active in certain activities and so on ". Based on this reference number of the sample into subjects in this study were all students in the class of juvenile age from 16 to 17 years, amounting to 20 students, based on the maturity of the characters are determined by the level of maturity.

2.3 Instrument

The instrument is a tool or a research facility used by researchers in collecting data to work easier and produces better results in terms of rapid, complete, systematic, and thus more easily processed Arikunto (1998:91). In qualitative research, which became the instrument or tool is the researcher's own research so that researchers should be "validated". Validation of the research include: understanding of quantitative research methods, mastery of knowledge in the field accurately, researchers readiness to enter both akademik research object and logic. Qualitative research as an instrument of human function sets the focus of research, select, informants as a source of data, collecting data, assessing data quality, data analysis, interpret data and make conclusions on the findings, Sugiono (2009:206). The instrument used in this quantitative study is the questionnaire.

The data obtained from the instrument the character of students in the form of characters athlete questionnaire distributed to a sample of research to be filled. Before preparing the instrument character student authors first compiled grating instrument to reveal the character of the students are developed by thesed on the operational definition of the character of the students. in this study is more memfokouskan on analysis of the character of a football player who is the implementation of the various types of characters that form their environment and will be connected with the nature or character of students SSO while practicing in the Real Madrid Foundation Aceh. The process of developing the research instrument developed by the researcher are as follows:
This is expected to reveal the inherent character of all students, especially for SSO Real Madrid Juvenil group with ages ranging from levels 16-17 years. Based on the above conclusions prior opinion validated by experts in this case is Dr.. Hajidin, and Dr. M. Pd. Saifuddin, M.Pd. More specifically, the researcher will formulate some indicators and sub-indicators relating to student character SSO school.

3. **Conclusion**

   Based on the research and analysis of the data, the conclusions have been obtained as set out in the conclusion, therefore, the author gives some suggestions as follows:

1. Hoped to coach football in order to improve the achievement of psychological aspects that need to be put forward in this regard is the character of students.
2. Expected parents to form the character of students ranging from an early age, and familiarize students perform custom actions and positive actions that lead to the realization of the inherent character in adulthood.
3. Expected to teachers penjas always monitoring the growth and development of student character and psychological aspects that need to be put forward before or during daily activity in the school environment in order to improve performance.
4. In an effort to get a good football achievements, there should be more research on aspects of the character. It is expected that after the introduction of this study, further research to prove the existence of the importance of psychological aspects of the characters and other elements on the football branch.

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ABSTRACT

Children ECD ROGATE is early childhood with social behavioral patterns that look like co-operation, competition, generosity, desire for social acceptance, sympathy, empathy, dependability, friendly attitude, the attitude of unselfishness, imitate, attachment behavior. Being a person who is able to society requires processes and each process separately and distinct from each other, but are interrelated, so that a failure in a process will reduce levels of socialization of the individual. Through children's early childhood education association Rogate Pematangsiantar social relationships, either with parents, family members, adults, and other peers, children begin to develop forms of social behavior. Childhood social behavior is behavior against, strike back physically, quarrel, occurred when the child feels offended or annoyed by the attitude and behavior of other children, teasing and competition. Rogate Pematangsiantar social education early childhood is the development in achieving maturity in social relations with instilling social values religious. Can also be defined as the process of learning to adapt to the norms of religion in the group, morals, and traditions, merged into a unit which communicate and cooperate with each other is taught.

Keywords: early childhood, social relations, processes, behaviors

1. Introduction

The development of technology and rapid information greatly affects the mental development of children and provide a great stimulus. This situation with the contradictions of life that brings value, sometimes arise negative effects for the development of children. This is very important to be noticed by parents, educators, community, and government in order to prevent children from negative influences, then with the education of children is very important and religion as the main base, because with education will greatly help shape the attitude and personality of the child in society, ECD learn about social measures through interaction with others. Social development is an ongoing process in human life. Social values should be imparted to learners as social values serve as a reference behaves in interacting with others so that its presence can be accepted in society.

The development of the social nature of children is the nature of nature that is brought by the child since birth, first developed limited in the family, that the longer expanding. With time against, children from less satisfied with just hanging out with family and want to expand it by members of the nearby community. He began to look for peers to group together in the game, the longer the increasingly widespread social environment space.

Education is carried out by the family, his great sense in shaping a child's behavior, child behavior patterns formed in a family environment. Upbringing given to children of parents give the child's behavior patterns, such as children who want to win their own, want to always be considered, spoiled child who always, always obeyed his wishes.
Children who are always pessimistic about the ability of himself, no confidence can be raised by way of an over active or disapproval on the ability of children by parents or the surrounding environment.

2. The Social Development factors Affecting Paud Rogate At Pematangsiantar

Factors affecting the social development of children early childhood PematangsiantarRogate first is the family: a) the relationship of children with parents or relatives will be interwoven affection, which children will be more open to interaction because good relations are in tunjang by proper communication. b) The order of the child in the family, c) the number of families, d) treatment of the family of the child e) expectations of parents of children. Both are factors beyond the family: a) interaction with peers, b) relationships with adults outside the home

The ability to be accepted grouped children who feel safe in the group will be more free in expressing their discrepancies with the opinion of the other members. Conversely, those who feel insecure will adjust as best as possible and mengukuti other members. The personality of children who feel unable or low self-esteem is more influenced by the group in comparison with those who have confidence in yourself that big and are more accepting of yourself. The stronger motive children to join (affiliation motive), namely, the desire to be accepted, the more susceptible they are to influence other members, especially the influence of those who have a high status in the group.

According to Gesell and Ames (1940) and Illingsworth (1983), motor development in children follows the general pattern of eight as follows: a). is continuous, the pattern of the same stages, b). maturity c). general to the particular, ie at the start of the motion of a general nature to the motion of a special nature. d). starting from an innate reflex toward coordinated motion. e). Ischepalo caudal direction, meaning that part of growing closer to the head than the first part closer to the tail. Developing muscles in the neck, before the leg muscles. f). Proximo-distal nature, meaning that parts closer to the body axis (spine) develops first of more jauh.otot and developing nerves of the arm, before the finger muscles.

3. The Development Of Emotional Socio Early Childhood Ecd Rogate Ematangsiantar

Rogate early childhood social development Pematangsiantar include social competence and social responsibility. Social competence describes the ability of children to adapt to their social environment effectively this can be seen when a friend wants a toy he was using, he would alternately. As for social responsibility, among others, the commitment shown by children towards their duties, respect individual differences, and pay attention to their surroundings.

Emotions are feelings or efeksi which involves a combination of physiological and behavioral upheavals seen. In the first two years of parents in the family, has a very important role and is dominant in developing socio-emotional aspects of the child. Along with the increasing age of the child, then the socio-emotional development is influenced by environmental conditions in which children socialize. Emotional development for children is something that is important, even more important than cognitive development.
Experts already believe that IQ (intelligence) apparently only contributed 20%, while the other is emotional intelligence (EQ), according to Goleman intellectual can not work with the best without emotional intelligence. People who have high emotional intelligence will have a steady social skills, sociable, friendly, not easily scared or anxious and be assertive in expressing their feelings.

There are several aspects of socio-emotional development that need to be developed in early childhood. Bersosialisisself learning, is the effort to develop self-confidence and a sense of satisfaction that he received dikelompokeya. Learn to express themselves, learn to express their talents, thoughts and abilities without having to be influenced by the presence of an adult. Self-learning and self-pengawasaaan separated from their parents or caregivers. Social learning, adjusting to the group and develop openness. Learn how to participate in groups, working together, sharing, taking turns, and willing to accept the rules of the group. Children learn to develop leadership power.

Socio-emotional capabilities that must be mastered children aged 3-4 years is the child can demonstrate a reasonable expression of anger, sadness, fear, and so on, can be a good listener and speaker, put toys away after play is complete, and queued patiently wait their turn, recognize regulations and follow the rules, understand the consequences of making a mistake, has a regular habit. Ability to be achieved in the development of socio-emotional aspect is the ability to recognize the natural environment, social environment the role of community, social and cultural values diversity, and able to develop the concept of self, a positive attitude toward learning, self-control, and a sense of belonging.

4. The Problem Of Education And Development Ecd Rogate At Pematangsiantar

Educators in developing and directing the child learner must already have the provision and ways of telling in their memmbimbing. For example, to play the students can learn how to cooperate with their peers, learn to appreciate friends. In everyday life, students must have a problem that we can not guess. For example, one of the students before departing before breakfast. That can be a problem on students, because he felt hungry and could not indulge in either the absence of energy in the body. There are many other problems faced by the students of other:

4.1 Students do not want to be regulated

Students who do not want to set up, does not want to listen to and follow the lessons well, busy themselves when the learning process is ongoing, do not do what we ask. Handling we do, namely: appoint another student to accompany students who can not learn to discipline, setting up a special book to perform tasks in which there is a signature of parents, do not put pressure on the students, and provide mentoring, direction, motivation and enthusiasm to her

4.2 The taunted

Which makes students become artisans mocked among others received less attention, less confident, become victims of teasing his friends and trying to do the same in return and self-defense, has a hidden problem. Handling is done yitu: look for as many reasons that make it a pleasure to mock others, provide an explanation that can mock hurt the other
person, do not give threats to resolve this issue, teach and guide students to become an optimist facing problems

4.3 The damage of School Property

Often we see students who like to doodle on the school wall, damaging the benches, tore the picture or painting class, even ripping the textbooks themselves. A number of possibilities that perhaps should we know before taking action settlement to the problem include: The destruction was carried out because of anger or revenge, showed his prowess, roughness or sense rule, look for opportunities so that he can dominate the classroom. Handling is done is emphasized to the students that: all forms of destruction can never be tolerated, any intentional destruction will bear the consequences of the obligation to replace the damaged object, member motivation for students to be able to appreciate objects belonging to themselves and others

4.4 The Fighting

There are several possibilities that could cause students have a tendency to scrappy, among others: it took the attention of people around, it took recognition of his abilities, especially if the confrontation was done deliberately in order to be known by teachers and friends that he did not like, indicating strength he had, done in order to improve confidence, as impingement on another problem at hand. How to handle it: to talk in person, listen to all the reasons that he gave that he feels must fight, meniskusikan the problem by not cornered, teach them skills to suss out the problem, supervision, care and assistance to the maximum.

5. Creativity, Activities, Facilities And Media Intelligence For Spark Early Childhood Rogate Pematangsiantar

5.1 Creativity ECD Rogate

Early childhood patterns of thinking that they are symbolic of this needs to be sharpened and stimulated. If the early childhood often get stimuli or stimulus right then synapse synapses in the brain stem that they will be increasingly connected and they will more quickly process a new information they get.

Creativity is also often associated with how a person solves a problem with his own way of thinking and can produce a good solution. Creative thinking pattern is also owned early childhood. Creative thinking pattern can be honed through events and activities that are served and provided by the surrounding environment. In this case that contribute significantly to the development of early childhood creativity is parents and teachers.

According to Prather and Gundry in Suharnan (2011), creativity is often called creative thinking (creative thinking) or innovative thinking (innovative thinking). When linked with a person's ability, the creativity can also be associated with creativity. According to Buzan in Suharnan (2011), creativity may also be referred to as creative intelligence (creative intelligence); the ability to generate ideas and exciting new ideas for solving a problem worth. The resulting product can be innovative creations.
5.2 Activities And Media That Do PaudRogate

5.2.1 Finger Painting (Painting Finger)

Finger painting activity is very exciting. Children will develop their creativity and can also develop fine motor skills. Materials which need to be prepared include: starch, wheat flour, powdered food coloring, water and paper drawings. The activities are as follows: 1). Children and teachers to prepare the necessary materials, 2). Teachers guide the children to make the dough in advance before making a finger painting 3). How to make dough ingredients: starch and flour stirring until blended. Enter stir until smooth water so the dough looks watery. The next step batter is cooked until boiling, stirring continuously until the mixture thickens like glue. After that, remove and let cool. Once cool, the teacher can help the child to divide the dough in several places to be colored in accordance with the needs of children. 4). Teachers prepare large drawing paper, 5). Child color image using finger painting dough material that has been provided

5.2.2 Painting Foliage

This activity increases the ability to think creatively. Tools and materials are used among others: five kinds of dried leaves, drawing paper, glue and pencils. Steps activity are as follows: 1). Teachers and children prepare necessary materials2). Teachers prepare a paper drawing, 3). Children provide glue on the part of the image as well as decorate the image using the corresponding leaves the creativity of children (student activities are being pressed leaf on paper drawing)

5.2.3 Activity Play And Miscellaneous Games For Kids

Selecting, preparing, arranging the tools needed to play, guide, master, answer the child's questions and observations are part of the duties of teachers. Playing activities. Plaything and play (toys) which was prepared in early childhood PematangsiantarRogate serve to educate, give understanding and skills training and habituation to consider: every game should highlight the tool functions in accordance with the child's age and level of development, size and shape according to the age of the child, safe and harmless, attractive color and shape, not easily broken and easy maintenance, inexpensive and easy to obtain, the amount sufficient for children, a toy encourages children to perform new discoveries and conduct various experiments. Plaything / manipulatikyaitu an activity associated with the movement are to be developed on the basis of a kindergarten with a game to adjust the shape and color, the relationship between the shape, size, and color, opening and closing, memsang, rearrange, organize sets of toys

The task of teachers in pengaadaan tools to play select, prepare, organize the tools needed to play, guide, master, answering questions and observations child.

6. Efforts To Improve Social Intelligence Ecd Rogate Pematangsiantar

Application of the method of learning to play a very important role in natural intelligence can be carried out properly in accordance with planning to use, more perpusat in children, appear to be active and creative learning, children's understanding of the concept of preserving the environment and enjoyable learning atmosphere impressed.
Application of learning activities to enhance the natural intelligence, such as the implementation of children's ability to preserve the environment, children's ability to plumb the various media.

ECD students and teachers need to develop the ability of emotion or emotional intelligence to be able to do something with the right and successful. The things to consider in an effort to improve early childhood social intelligence is the parents give love to his own son, his friends and teachers who educated him, the opportunity for achievement and satisfaction for a job well done, the opportunity to make their own decisions to be able to be independent, to have a sense of security in a relationship with the group and comfortable in the school environment, educated in order to have confidence, provide education and learning in accordance with a range of early childhood schools, provide a good stimulus emotional on the positive outcome of the results they karyakan.

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TIM ARYA DUTA, Air UdaraApiUsia 4-5 Tahun, Arya Duta
UmiKayvan, Buku PAUD, 57 PermainanKreatifuntukMencerdaskanAnak, Media Kita
IMPLEMENTATION OF SCHOOL BASED MANAGEMENT (MBS) SMA DISTRICT IN NORTH ACEH

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ABSTRACT

School-Based Management is a management model that provides broad authority for the school to school management in accordance with the potential, the demands and needs of the school. To improve the performance of educators in a professional manner, and to increase participation. This study aims: 1) To empower schools in the field of human resources such as school principals, board of teachers, employees, students, parents and the surrounding community, 2) To create a model of school management which is based on the three pillars of management transparency and accountability, participation communities and stakeholders, and active learning, creative, effective and fun, 3) To provide an understanding and knowledge in the management of curriculum management, student management, personnel management, management of facilities / infrastructure, financial management and management of relations with the community. The method used in this research is descriptive method with qualitative approach. Data collected by using observation, interviews, and documentation. Subjects were principals, deputy head teachers and school committees. Results to be achieved in the third year that the School-Based Management Seminar, Book School-Based Management and Dissemination pelaksanaan to school School berbasis Remote Management. School-Based Quality Improvement Management issued by the Directorate General of Education Medium, revealed some indicators that were characteristic of the concept Mpbs sekalugus reflect on the role and responsibilities of each party are as follows: (1) safe school environment and tertip; (2) The school has a mission and ibgin quality targets are achieved; (3) Schools have the strong leadership; (4) The existence of high expectations from school personnel (principals, teachers, and other staff, including students) to excel; (5) The development of school staff who continuously according to the demands of science and technology; (6) The implementation of the ongoing evaluation of the various academic and administrative aspects, and use the results to refine and or quality improvement; (7) The existence of communication and intensive support from parents and the community. MBS has a great potential in creating the principal, teachers and business education system (administrator) in a professional manner. Therefore, success in achieving superior performance will be largely determined by factors of information, knowledge, skills and incentives (prizes) are oriented on quality, efficiency and independence of the school.

Keywords: Quality of Education, Administration and Leadership Principal

Introduction

Education has an important role in advancing the quality of Human Resources (HR) Indonesia. Correspondingly, the government established the National Education vision is to realize the educational system as a social institution that is strong and authoritative to empower all citizens of Indonesia to develop into a quality human being so capable and proactive answer the ever-changing challenges of the times. National Education Standards contain the minimum criteria of the educational component that allows all levels and educational pathways to develop maximally education according to the characteristics and peculiarities of the program. Higher education national standards set minimum to give
freedom to each unit of education at higher education level in developing quality educational services in accordance with the program of study and expertise within the framework of university autonomy. (Source: Ministry of National Education Strategic Plan 2010-2014)

School Based Management conceptually will bring changes to improve the performance of the school in improving the quality and efficiency of the financial management, equal opportunities and the achievement of political goals (democracy) of a nation through the decentralization policy changes in various aspects of both political, educational, administrative, and budgetary financing of education. School-Based Management in addition will improve the quality of learning and operational efficiency of education, also political objectives especially democracy in school.

**Literature Review**

**A. School-Based Management**

Education is a process of training and development of knowledge, skills, mind and character. Pengenai understanding of education refers to the concept that describes that education has a human nature and the goal is (Sagala, 2007: 1). Efforts to foster the autonomy of education, one of which can be done through community initiatives and community involvement. It is time for decisions relating to the management of education were taken and relies on the school and community. This is according to a new paradigm in the management of the school is through the School Based Management (SBM).

School-based management (SBM) can be interpreted as a model of autonomy (authority and greater responsibility to the school), giving fleksibilitas / flexibility to schools, encouraging direct participation of the school community (teachers, students, principals, employees) and society (parents, community leaders, scientists, entrepreneurs) and improve the quality of schools based on national education policy and legislation applicable. MBS is a form of educational reform in principle, schools obtain liability (responsibility), authority (authority) and high accountability in improving the performance against each stakeholder (Zainuddin, 2008: 125).

Improved performance of the school is an open system to achieve a goal, which is superior, will succeed if the school is empowered to recognize the change and has the power in the maximization of resources. Thus, the school is expected to be able to increase capacity in the service of students.

Through MBS, schools can effectively be developed independently, because the school was given the authority and greater responsibility (autonomy) to manage the potential of available resources, both human resources, and other resources (money, equipment and time). As stated by Rohiat (2008: 48), MBS aims to improve school performance through the provision of authority and greater responsibility to schools that implemented based on the principles of good governance of schools, namely participation, transparency and accountability. MBS has a great potential in creating the principal, teachers and business education system (administrator) in a professional manner. Therefore, success in achieving superior performance will be largely determined by factors of information, knowledge, skills and incentives (prizes) are oriented on quality, efficiency and independence of the school.
B. Advantages of MBS generated in Schools

MBS is seen as a whole unit management and require treatment (treatment) is specialized in the development effort. Treatment or special treatment it will be for each school (Fattah, 2000: 39). The statement is an underlying belief that the decision-making by managers at the school level. However, the school does not have the capacity to run itself without menghirukan policies, priorities and standards mandated by the government which has been determined in a democratic or political. Formation of the school committee itself is regulated by Decree Minister of Education No. 044 / U / 2002 on the establishment of the Board of Education level, District / Municipal and School Committee at the school level by adopting a system of transparency, accountability, and democracy (Soewartoyo in Zainuddin 2008: 46).

Referring to the above description, it can be stated that the implementation of the MBS can be divided into two, namely the implementation guidelines (guidelines) and technical guidelines (guidelines), why contained in Government Regulation No. 44 of 2002 on the establishment of the Board of Education and the School Committee. Technical Instructions MBS include 1) the achievement of learning and effective school management; 2) visionary school leadership and entrepreneurial spirit; 3) placing authority rests on the school and community; 4) always make a change towards the better; 5) conduct a needs analysis, planning, development and evaluation of performance in accordance with the vision and mission to achieve the goals and objectives of the school; 6) Welfare enough school personnel; 7) the management and use of budget targeted and accountable.

Research Methods

The stages are carried out in the implementation of school-based management sebagaimana berikut:

a. Location Research
This study will be conducted at the secondary school (high school) in North Aceh district consisting of five schools.

b. Respondents / Population Research
As for the respondents in this study is the principal, teacher council and school committee in the school district of North Aceh. In North Aceh Regency in 5 high school, the number of heads school 10 persons, 52 persons subject teachers, and school committee of 10 people.

c. Data Collection Technique
1. In the field implementation of the authors use data collection techniques as follows:
2. The interview was conducted with the interview data collection is wawacara structured and unstructured. The interview is a conversation with the aim to obtain information from sources which happen now neighbor people, events, activities, organizations, feelings, recognition, anxiety and so on, which is the subject of a research study.
3. Questionnaire
The questionnaire used in this study was a questionnaire response Likert model. The scale used is Likert scale with four choices of SS, S, TS and STS (Arikunto, 2002). Weighting is used in a qualitative scale transfer into a quantitative scale is:

4. Documentation is collecting data through document review or archives in connection with school berbasisi management plan, the implementation of school-based management and management evktifitas berbasisi school.

In addition to the interviews to sharpen and deepen the methods adopted in the data networking, it will be well with seminars and discussions to obtain accurate data on the implementation of the school berbasisi management.

d. Processing and Data Analysis

Data and information that has been obtained by researchers then analyzed and interpreted started baseline to end of study, with reference to the basic theory related to the problem under study. Analysis is the process of preparing the data to be interpreted.

Data analysis in qualitative research carried out by following the procedures or steps, namely:

1. Data reduction

Once the data necessary researchers collected, so it does not rely piling and facilitate the grouping as well as the need dilakuukan menyimpulkanya data reduction. Huberman (1992: 12) defines the data as a selection process, focusing on simplification, pengabtrakan and transpormsasi raw data / rough arising from the remarks that appeared in the field. Data reduction is a form of analysis that sharpens, mengungkapakan, things that are important, classify, direct, dispose of unneeded and organize data in a systematic way so that it can be made a meaningful kesimpulanyang. done by summarizing the data, choose the subject matter focused on matters relating to the issues that have been studied.

2. Presentation of the data

Presentation of data is done after the reduction process. According to Huberman (1992: 12) the presentation of the data is the process of providing a set of information that has been prepared which allows for drawing conclusions. This presentation is mengungkapakan process as a whole from a group of data obtained for easy reading. Presentation of data can be matrices, graphs, and other networks. With the presentation of the data, the researchers were able to understand what is going on in the background of the research and what to do research.

Research Result

After doing research on the implementation of school-based management in North Aceh District State High School

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Discussion

1. Teacher Performance

According Bernardin (2007: 173), the performance is a record output in a particular job function or activity during a specific time period. According Colquitt, Lepine and Wesson (2009: 37), the performance is the value of a set of employee behaviors that contribute to both positive and negative towards the achievement of organizational goals. According to Mathis and Jackson (2009: 378), that the performance is essentially what is done or not done by the employees. According Irham Fahmi (2010: 2), the performance is the result obtained by a good organization and a for-profit organization non profit generated over a period of time. Performance is more emphasis on the results of one's work. The results obtained performance is measured by looking at the standard rules that have been set in an organization. Standards organizations working set is the basis for assessing a person's performance. Each organization has its own standards, in accordance with the object of the work done. Standards of teachers working in schools can be set based on the amount of material being taught in a given period, hours of teaching, and student learning outcomes obtained.

Performance is closely linked with the issue of productivity as an indicator in determining how the effort to achieve a high level of productivity in an organization that respect, it is an attempt to conduct an assessment of the performance in an organization is important. Size performance by Byars and Rue (2003: 293) is the quality of work, quantity of work, job knowledge, initiative, planning, price controls, relationships with colleagues, working relationship with the work that can be achieved. Without the discipline of a good teacher, it is difficult for the organization to achieve optimal results. It fit Hasibuan opinion (2002: 193), discipline is awareness and willingness to comply with all regulations someone enterprise and social norms that apply. Awareness is the attitude of someone who voluntarily obey the rules and be aware of the duties and responsibilities.

2. Principal

Teacher performance due to the impact of school leadership. Understanding the leadership of Gary Yulk (1994) in Sagala (2011: 115) "Leadership is a process of influence, he Government is persuasive, give examples, and guidance to others to achieve its intended purpose". School leadership has an influence on the performance of teachers.

The role and functions to be performed by the principal as a leader as described by the Department of Education in Mulyasa (2004: 97) such as an educator, manager, administrator, supervisor, leader, innovator and motivator. Role or the indicator to improve and enhance the teaching and learning situation. The main priority is to improve and enhance the quality of learning by improving the performance of teachers who handle. Teachers have a great potential in him respectively.
**Conclusion**
Conclusions drawn after reduction through some fairly mature findings, these studies strongly upholds objectivity, so that the results can bermamfaat for all people. (1) The principal has a strong role in coordinating, harmonizing all the moving and educational resources available. Kepemimpinanana principal is one of the factors that can encourage schools to be able to meujudkan vision, mission, goals and objectives of the school through the programs implemented in a planned and phased. (2) Teachers and school committees jointly participate preparation of management to enhance the learning potential of students in preparing planning program activities. The weakness seen from the capabilities of the teacher and committees in serving use of school resources.

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