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# THE UTILIZATION OF MEDIA IN THE LEARNING PROCESS OF ENVIRONMENTAL EDUCATION FOR BUILDING AWARENESS OF THE ELEMENTARY STUDENTS

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#### **Abstract**

Environment Education (or the Pendidikan Lingkungan Hidup-PLH) is expected to be one of the instruments that can raise the awareness of students in communicating with nature. Therefore, the teaching method is very important in delivering this material, so PLH will be interesting for students and achieving optimum results. This paper will demonstrate the results of Problem Based Learning by using certain media, including Story Telling Method, Role Play Method, Outdoor Learning Method, and Kamishibai Card Method in the learning process of PLH in 4 schools at Balikpapan, Bandung and Medan. The result shows that utilization of media as the methods in PLH will be more easily understood by the students.

Keywords: environmental education; multimedia; story telling method; role play method; outdoor learning method; kamishibi card method

#### Abstrak

Pendidikan Lingkungan (atau Pendidikan Lingkungan Hidup-PLH) diharapkan bisa menjadi salah satu instrumen yang dapat meningkatkan kesadaran siswa dalam berkomunikasi dengan alam. Oleh karena itu, metode pengajaran sangat penting dalam menyampaikan materi ini, sehingga PLH akan menarik bagi siswa dan mencapai hasil yang optimal. Makalah ini akan menunjukkan hasil Pembelajaran Berbasis Masalah dengan menggunakan media tertentu, termasuk Metode bercerita, Metode Bermain Peran, Metode Pembelajaran Luar Ruangan, dan Metode Kartu Kamishibai dalam proses pembelajaran PLH di 4 sekolah di Balikpapan, Bandung dan Medan. Hasil penelitian menunjukkan bahwa pemanfaatan media sebagai metode PLH akan lebih mudah dipahami oleh siswa.

Kata kunci: pendidikan lingkungan; multimedia; metode bercerita; metode bermain peran; metode pembelajaran luar ruangan; metode kartu kamishiba

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### Introduction

The environmental education has been promoted as one of tools in solving any problems related to the environment. As mentioned in a government regulation, the environmental education is mandatory to be taught at school either as local curriculum or integrated with any other related subjects, such as Science, Social Education, the Bahasa Indonesia, or Sport. Therefore, a method to deliver such material has to be developed as well, in all levels of study including elementary school.

Around 1996, the ministry of education and the ministry of environment have been agreed to promote the environmental education in Indonesia. The agreement has been revised in 2005 and 2010 (http://www.menlh.go.id). In realizing this agreement, the ministry of environment developes Adiwiyata Program to be introduced at elementary and junior hing school, by applying 8 education management standards.

The adiwiyata program is expected to create an environmentally friendly school parties that care about environment and culture, as well as supporting and realizing human resource with national character to the development of economic, social, and environment, to achieve sustainable development in the region. (Http://www.menlh.go.id).

One component in the achievement of the purpose of environmental education is a curriculum-based environment. The school as a creator of management should be responsible for the whole process of planning, implementation and evaluation of the implementation of environment-based curriculum. And activities must be carried out continuously in a comprehensive manner.

According to Soeriatmadja (1997), environmental education is a process that aims to develop an awareness of humanity to the living environment with all the problems contained therein. Based on the definition, we can withdraw the understanding of Environmental Education is a process to create a society that is aware of the environment by taking into account environmental problem and solution to overcome.

from Japanese school Learning in Kitakyushu, the environmental education is being integrated with other subjects, where the teacher bring up some familiar environmental problems to the class to be discussed among students on how to formulate solution. This is part of the Problem Based Learning, when the students are being invited to share their views, comments, and other responses pertaining to the questioned problems. On the other day, the teacher will ask the students to bring any kind of waste from their house, such as used cans, plastic bottles, packagings. Having collected all the wastes from students, they sort the wastes while get explanation from the teacher about the purpose of sorting and futher processing.

During the program, students will be using a handbook and worksheet. Japanese students are using a Midori Note and a handbook tittled an introduction to the environmental education.



Figure 1. Sample of handbook: an introduction to the environmental education

The above handbook is for the fifth grade, and each class have their own book, based on the substances being discussed. From the sample we can observe if during this year the students will learn about how the wastes will be managed indoor and outdoor. The wastes is not going to stop at plastic bag, but continued to another process by designated parties.

The class will be divided into certain group of 5-10, analyse within the groups and then share to others by a short presentation.



Figure 2. Sample of handbook

The midori noto will be used during winter and summer when students have to make an observation of any changes regarding the environment around their region by planting different flowers for each group, 6 months observation, and the result will be presented alternately in front of the class with question and answer session.

Another fifth grade student in Kitakyushu that close to a river learns about fireflies that flew only in the upper reach of the river, not in the middle area. No one knows the reason why until they went to a public library with the teacher for reading books of fireflies. After that they can understand how the life of firefly, and the environmental needs.

Basically, environmental activities can be initiated by other parties, such as Non Government Organization (NGO), urban education center, etc., but they will publish the information or inform the society in order to participate in the program (http://www.city.kitakyushu.lg.jp/kankyou/file\_0259.html)

#### **Problem**

With the inclusion of environmental education into the national curriculum of 2013 where environmental education is being integrated into other subjects, new problem was born, in term of paradigm shift of the current teachers in adjusting their understanding of environmental education.

As a matter of fact, for those who applied environmental education properly enough, significant development had been achieved after promoting environmental education at school during last decade. It is very limited number of schools. Therefore, attractive and simple method has to be implemented throughout Indonesia access http://www.menlh.go.id.

In some cities with environmental basis, the environmental education has been inserted as a local curriculum. It means all schools have to implement such subject. However, do teachers have knowledge and experiences in delivering new materials as part of their subject?

In promoting new awareness of environment, a teacher of PLH has to be more innovative in developing their teaching system to invite the student curiousity to explore and analyse, understanding the problem of environment and how to resolve it. The question

is what kind of model is most appropriate to deliver the PLH materials.

#### Method

This research used some media as a trial in decided object, questionnaire and interviews, distributed in 3 cities, namely: Medan, Bandung and Balikpapan. Samples were randomly assigned and class guardian's willingness to cooperate in this research. Questionnaire responses calculated by Excel. Bandung

Outdoor activity was used as a medium to learn mountain damage caused by human activities. Questionnaire distributed to all participated students before and after climbing program.

Location: Batu Kapur Mountain, Padalarang. Participants: 30 junior high school students

Time: 09.00-15.00

Theme: Recognizing mountain damage

## Balikpapan 1

It is an outdoor activity but focus on destruction of mangrove forest caused by human activities. Each participant will be made a report of their findings in mangrove forest, in a worksheet.

All participants went to the mangrove forest in the Sun Bear Conservation, Balikpapan, and conducted an observation there for 2 x 45 minutes.

Participants: 20 students from the SD Negeri 3 Time: 09.00-15.00

Theme: Role play in mangrove forest.

# Balikpapan 2

Teacher used telling story as a medium in this part, with the hope to encourage students to explore their imagination. Body languages were very important, including tone of voice, facial expression, etc.

Participants: 30 students of a Kindergarten

Time: 45 minutes Location: class room.

#### Medan

In this activity, we were using some picture cards as a medium to figure out river damage covered by wastes. All pictures shall be analyzed by each student, and explain the problem being faced and also proposed solutions.

Game name: Kamisibai cards.

Participants: 50 from elementary, junior, and senior high school in Medan.

# **Results and Discussion**

# Outdoor by climbing a mountain

As mentoned earlier, the envieonmental education mostly integrated with other subjects, one of them is science that agreed has a close relationship with environmental issues. Therefore, we have to develop the science with environmental culture or characteristic (M. Taufik, dkk. 2014).

Actually not only science, but all subjects in every level of study shall adopt environmental character, so the program are clear and the environmental care can be realized immediately.

At this outdoor learning method students can learn on how to live in a natural environment near the school. The School area, as a media, provides a natural environment and the environment damaged by the human condition. Students can see immediately and look for the causes and consequences of environmental problems faced. Guidance from teacher and group discussion will increase their understanding and awareness, and also invite

enthusiasm to solve the problems being faced by the natural surroundings.

Some identified damages are wild hole due to excavation and mining of limestone, and air pollution from limestone and marble factory that is using wood, used tyres and garment for burning process.

By direct observation to the field, students can see the surrounding areas, real problem being faced, how to resolve the problems, and lastly we will know their responses that written in the worksheet after visit. We can analyze their responses before and after, and these become good input for the next step of environmental education and other presentation as well (Mardiah, dkk, 2015).

Table 1 and 2. Response of Observation

	OPTION							
Pertanyaan	A (ya)		B (tidak)		C (ragu)			
	JMH	%	JH	%	JH	%		
Saya tidak pernah belajar di alam	5	11%	35	78%	5	11%		
Saya tidak tahu. Ada apa di alam yang akan kami kujungi	16	36%	21	47%	8	18%		
Saya sangat ingin mengujungi alam yang akan kami kunjungi	41	91%			4	9%		
Saya pernah mendengar alam yang akan kami kunjungi dari teman	38	84%	3	7%	4	9%		
Menurut saya mungkin alam ini merupakan tempat belajar yang menyenangkan	41	91%			4	9%		
Saya pernah mengujungi Stone garden dan gua pawon	20	44%	16	36%	9	20%		
Setelah mengujungi alam ini, saya berharap mendapatkan pengetahuan baru	44	98%			1	2%		
Saya merasa semangat igin mengunjungi alam ini	43	96%			1	2%		
Saya tidak begitu tertarik apa yang ada di alam yang akan kami kunjungi	2	4%	41	91%	2	4%		
Menurut saya, alam merupakan tempat belajar tumbuhan, hewan dan lingkungan	40	89%	2	4%	3	7%		

	OPTION							
Pertanyaan	A (Ya)		B (tidak)		C (ragu)			
	JH	%	JH	%	JH	%		
Saya merasa mendapat pengetahuan baru tentang alam dan lingkungan	45	100				-		
Bila ada kesempatan saya ingin mengunjungi alam yang lain	45	100				-		
Saya ingin memberitahuan kepada teman bahwa alam yang saya kunjungi ini menarik	45	100	-		-	-		
Banyak hal yan sebelumnya tidak saya ketahui menjadi tahu	43	96			2	4%		
Saya merasa beruntung dapat mengunjungi alam Gua Pawon dan Stone Garden	44	98	-		1	2%		
Saya merasa mengunjungi alam lebih berkesan daripada membaca buku	38	84	3	7%	4	9%		
Selama Penjalanan kunjungan ke alam, saya merasa sangat bahagia karena menyenangkan	40	89	1	2%	4	9%		
Saya ingin mengajak ayah, bu, kakak, adik dan saudara utuk mengunjungi gua pawon dan Stone Garden agar mereka dapat mengetahui alam dan lingkungan dan merasa bahagia perjalanan di alam	43	96	1	2%	1	2%		
Saya merasa beruntung dapat mempelajari alam dan pengrusakan lingkungan	43	96	1	2%	1	2%		
Temyata saya mendapat banyak pengetahuan setelah mengunjungi alam Stone Garden dan Gua Pawon	45	100				-		

# Outdoor method, Role play at manggrove forest

Similar to the previous outdoor method, this second activity was also visiting field, mangrove forest. This methodology was focused on life style changes of students after the game. Started with understanding the area, choosing the tree to be played, and then find out any information around the selected tree. They must gather as much information about the tree, starting from the selection, types, how to survive, things that might be threaten them, etc. They may interview the officer of mangrove forest office for collecting needed information.

At the end of the season, students have to submit a report in the form of pictures made of recycled materials (dry leaf, cartoon, etc.), students are given freedom in expressing their reasons for choosing a particular tree. After students understood the role of trees for humans and the environment, they are asked to reflect their love for nature, especially trees. One of the objectives of this method of learning is to increase student's self-awareness to the problems around them and analyzing them in the scale of elementary school, which then lead to forming a solution to the problem at a young age (Vergustina, dkk. 2015)

The Objectives of Role-playing. The four objective of role-playing are: (1) To gain new understanding and skill connected to the environment. (2) To Identify knowledge gaps among students. (3) To learn on review process, and (4) New relationship between the concept and principles.

The Characteristic of Role Play. Based on the role play method been conducted, we can withdraw the characteristics of the method, as followed: (1) The loyalty and validity, by bringing the students to the real situation of the environmental problems. (2) Define the role of each student, find the barriers and responsibilities. (3) Collect data dan information from the surrounding to execute any strategy for making decision. (4) Feed back as a response to the problem and situation being faced.

Two concepts are important in the analysis of games and simulations: surface structure and deep structure. Briefly, surface structure refers to the paraphernalia and observable mechanics of an exercise (van Ments, 1984).

Explicit teaching of these capabilities prior to engagement in a simulation is important for another reason. Specifically, it is that learners cannot develop advanced cognitive and selfregulatory capabilities unless they develop conscious awareness of their own thinking (Vygotsky, 1998a, 1998b)

This theory shown that the students were on methacognitive level during interactive with environment and then discuss the matters among them. However, this skill can not be recognized in the final test because their lack of awareness in making their experiences as a source of knowledge. Hence, teacher has to explore all simulation potentials in enhancing cognitive and methacognitive of students.

Role Play Method. About 110 students of forth grade played outdoor to observe directly the mangrove in Balikpapan area. They have to analyse everything around mangrove forest by themselves. The next step was bringing the students to the Honey Bear Conservation with the similar task. As additional task, they have to choose one of the trees around them with explanation (Malik, 2004).

Some weaknesess and strengths can be analysed in implementing the role play game, particulary during planning, implementation, and solving exist problems. However, this will be a good idea to analyse input and output of the game by identifying the strategy to find the answer (Vergustina, 2015)

Role play can be conducted either indoor or outdoor, depend on available instruments or equipments needed. We noticed outdoor more challenge, fund and attractive.

The benefits of the role play game are: (1) Explicit teaching, this capability prior to involvement in the simulation is important. Learners can develop advanced cognitive and self-regulatory (self-regulating). (2) The ability to develop their own ideas. (3)Direct attention, observe and interact with the environment. (4) Stimulate students' metacognitive thinking in discussions with their partners in the group.

# Story Telling Method

Story telling method needs some properties, and is also mixed with interviews and observations to 25 kindergarten students between the ages of 5-6 years.

The Story telling of "Love Your Environment" can influence the character of children aged 5-6 years. The development of the human brain is basically growing very rapidly when they were children, so the introduction of a variety of things (especially the surroundings) is indispensable for the formation of his personality in the future. All the information captured by the children will be included as a memory for future processed and expressed through all behavior (Gustina, dkk. 2015).

The story of "Love Your Environment" (manuscript attached) will be used as a stimulant, whereas the contents is to instill the importance of the environment that are passed from generation to generation, where human is very dependent on nature and the environment, damage to the environment will adversely affect human life, misfortune will come over as floods, landslides and others. So we should love the environment and care for sustainability to bring prosperity to the residents, as the slogan Green, Clean, and Health.

Some values arise from the story, such as honesty, curiosity, tolerance, discipline, love reading, communicative, social care, environmental care, responsibility, creative, independent, hard work and others.



Figure 3: sample of equipment: percussion



Figure 4: body movement



Figure 5: Expression

The brain cells possessed children from birth will not be able to be developed optimally if the stimulus provided is not appropriate and does not support its further development. One area that needs to be developed by parents and educators are cultural values and national character. Character education is not merely about right and wrong, but an effort to instill good habits (habituation).

Early education is aimed at children under six years old, accomplished by providing stimulation of education to help the growth and development of the physical and spiritual child to be ready in entering further education (Act No. 20 of 2003 Chapter I article 1 Paragraph 14). An early age is an age which is crucial in the formation of character and personality of the child (Yuliani Nurani Sujiona, 2009: 7). Children experience rapid growth and development. Early age is called the golden age.

Fairy tales or stories have wide significance if viewed in terms of form and content of the story. It usually contains about the incident somewhere, the life of an animal as a symbol of human life, human life in society, and the story of the myth that living in the community when and where the story was going.

Here are some benefits of storytelling for early childhood development: (1) Gain new language develop vocabulary to communication skills of kids, in a good structure. They will absorb and stored in the memory of children. (2) Listening concentration will be increasing. (3) Encourage kids to ask or comment. (4) Train the imagination and creativity. (5) Mental relaxation in managing emotions and strengthening the emotional bond with parents. (6) Optimizing their intelligence. (7) Brain function and thinking skills are getting better

The materials of storytelling for children should be made varied so that children can learn many things through storytelling. We can adjust the messages we convey, and also develop a story or a fairy tale from any sources. In addition we also can make up their own stories or processing in accordance with the development and imagination of children (Departemen Pendidikan dan Kebudayaan, 1984).

In the line of this teachers have to be more creative by: (a) Combining the ability of singing, pantomime, poem, etc. (b) Mimicked the movement of animals or a variety of sounds (the wind, the sound of the door was shut, yelling, crying, or moans with expressions of fear, etc.).

(c) Using properties or any tools (dolls, puppets, handkerchiefs, drawings, origami paper or picture books, etc) (Buletin PAUD, 2010)

#### Kamishibai Card Method

Initially, Kamishiba was called Nozokikarakuri (Orbaugh, 2015), a picture with a length of 1.8 meters which equipped with a lens and a box. This game has been started since the Edo period, a modified storytelling picture from the Netherlands.

During that period, many peddlers use this box with the goal to attract the kids to buy merchandise. When children have gathered, the sellers began to tell interesting stories about heroism, human values, and so on, by using this box as a media.

The sellers were not only having salesmanship, but they also have to hold another expertise to deliver an interesting story. Otherwise the kids will just step away. Therefore, the sellers have to be innovative in finding and delivering new interesting stories, such as history of war, the kingdom, the city's history, etc. So, Kamishibai Card Method becomes one of the media to continue the legend of course laden with moral values conveyed to children. Tough knight story, the emperor and the samurai who defend the kingdom dominates kamishibai card stories.

In a research study, a figure "home childcare" named Kurahasi Sosan (1882-1955) conducted research kamishibai card (Orbaugh, 2015). He piloted pictures tell the kids at home, and revealed that kamishibai card can be used as an effective medium to deliver a story to a child. The images being used will be imprinted in the minds of the children until they become adults. Furthermore, the results of a recent study conducted by Imai Yone Christ (1897-1968) (Orbaugh, 2015), that use kamishibai card to deliver learning in education will be showing

positive results as an information medium. (Buletin PAUD, 2010)

Currently, most Japanese schools are using kamishibai card as part of a medium of learning, especially in the elementary school level and kindergarten, with one of the pavorite stories is about the Japanese warrior. Some creative students usually make their own drawings kamishibai card with a story which deals with specific issues.

We can see that the teacher is really required to be creatively participate as well so as to compensate for children's creativity.

We realize the Environment Education is often a boring subject. Students are sometimes very difficult to imagine about the destruction of nature, pollution of air, water and soil, because those conditions are common.

The game was piloted in a five cities, namely Medan, Bandung and Batu, Malang, Bandar Lampung. The trial was performed in children 5th grade at a public school. Students in groups of 5 people, making the story of the cards that have been provided, free pick and sort the cards according to the agreement of the group, create a story, and present it to the class. Audience may ask. Then interview the students and teachers who participated observed.

In this study, we distributed a picture card which contains the story of each pictures, Students freely compose the picture image based on the opinion of their own or by agreement of the group. In kamishibai card activity, usually an image sequence has been determined according to the desired story by the author. Afterward, the students tell by the image sequence. But In this study, students were asked to pay attention and find a sequence of stories based on the results of the group's decision.

Determining which image they think is part of the problem, analysis, solving and

conclusions. It also trains the children to determine the viewpoint of an environmental problem. Once completed, they present them to the class. Other participants are allowed to comment on the work group presentations.

From the 16 pictures which were distributed to students, 15 groups selected consecutive images started with a middle-aged man throwing garbage into the river-the river becomes dirty-people are aware of the environment-community picking up trash and set up waste banks-the river become clean and people can take advantage of the river.



Figure 7. Sample of Pictures which were distributed to students

Based on the result, the Environment Sustainability Development focuses on Environmental Education will more easily succeed if accompanied by the media as a learning tool, such as kamishibai card game. Instructional materials such as kamishibai card and visual should be used in combination as a tool to deliver learning materials that complement each other, but we can equip with

existing materials, such as using photographs taken in the grounds, or address daiy problems.

Kamishibai card as a method can provide the ability for learners to have a role in planning their experiences and provide opportunities for them to make decisions and accept the consequences of that decision; Connect to environmental sensitivity, knowledge, and skills to solve problems and clarification at each stage of age. For the younger age given a special emphasis on environmental sensitivity to the environment in which they live; Kamisibahi can also help learners to find (discover) the symptoms and causes of environmental problems. Emphasize on the complexity of environmental problems, so we need the ability to think critically with the skills to solve problems. Students can utilize diverse learning situations and a variety of approaches as well on changing the mindset.

This research has shown that kamishibai card method give a significant effect in delivering Environmental Education to the students. The study will be followed by subsequent research to find out the level changes in the mindset of students when receiving education by kamishibai card.

#### **Conclusion**

In theory there is a method of learning that learning is a way or the efforts made by educators that teaching and learning process in students achieved in accordance with the purpose. This method of learning is very important that the learning process seem to be fun, and also the students will be able to capture knowledge from educators with ease.

Learning Environmental education using PBL models supported with multimedia seem to be a learning system that is quite effective in conveying the subject (Malik, 2004).

Environmental issues in learning multimedia models begin with a problem or a complex scenario, where students watch and pay attention to the existing problems. Then brainstorm to understand the nature of the problem. The next step is to set individual problem solving by analyzing the specific settlement, integrating it with new knowledge and skills in the context of the problem.

From the four learning methods that have been tested, they showed if there are some significant results to students. Students are more active in analyzing and observing at the problem. In the method of storytelling, students seemed enthusiastic to be part of the story itself. Such experience will continue to be remembered by the students, thus forming the individual character.

For the next stage, we will be using another different methods of learning, so we can find the most suitable method to be used in the environmental education.

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