

Green Education in Young Children to Implement Electricity Conservation

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Abstract. Indonesia is located in a strategic area. In 2018, its population reached 265,000,000, placing Indonesia as the fourth most populated country in the world. Out of this total population, there were 19,229,800 children of 3- 4-year age group. Nawacita (the vision of the Indonesian government) initiated the establishment of early childhood education institutions, especially for rural communities in the frontier, borderland, and remote regions by targeting a one-year compulsory education program for young children before entering elementary school. The government has guaranteed that by 2030 all preschoolers (0-5 years) will have received education and care in early childhood education. The Green Education for Young Children program includes the topic of energy conservation, with two main objectives: First, to help young children understand how to conserve electricity in the context of green education; and second, to model the implementation of energy-saving behavior for other family members of the young children.

Keywords: Energy; young children; modeling effect.

1 Introduction

Indonesia is strategically located. First, astronomically, Indonesia is located between 6°N (Weh Island) - 11°LS (Roti Island) and 95°East (Sabang city) - 141°East (Merauke city), in the eastern hemisphere with a tropical climate. As a tropical country, Indonesia receives sunlight throughout the year with only two seasons alternating in a year, namely the dry season and the rainy season. The tropical climate makes the country wealthy of natural potentials; its high precipitation makes the soil fertile. The country also has high humidity and extensive tropical rain forests, serving as the lungs of the world with various types of flora and fauna. In addition, Indonesia is divided into three time zones, namely eastern, central, and western Indonesian time zones.

Secondly, the archipelagic Republic of Indonesia is located in Southeast Asia, with 17,000 islands, a total of 1,922,570 km² land area and 3,257,483 km² vast waters. The country lies between the Asian Continent and the Australian Continent, and between the Indian Ocean and the Pacific Ocean, positioning the country on the path of the world traffic, which is very strategic and important for its international economic relations and easy trading with other countries. Indonesia's geographical location has had significant influence on its history and major events that eventually also affected the global world (Foreign Policy, May/June, 09). In addition, Indonesia is rich in cultural diversity, ethnic groups, and religions.

Thirdly, Indonesia is geologically categorized into 3 regions, as follows: (1) The western part of Indonesia is part of the Asian continent with the Sunda shelf; (2) Eastern Indonesia is part of the Australian continent with the Sahul shelf, (3) Central Indonesia is a transition called the Wallace area between the Sunda and Sahul shelves. The Indonesian archipelago is located on a mountainous track between two young mountain ranges, namely the circum-Mediterranean mountain ranges in the western part of Indonesia, and the circum-Pacific system in eastern Indonesia. The consequences of this geological position are: (1) The Indonesian archipelago has many active volcanoes; (2) the sea in the eastern and western parts of Indonesia is shallow, while the sea in the central part is deep; (3) Indonesia has a lot of mineral reserves; (4) many Indonesian regions are unstable and often experience tectonic and volcanic earthquakes; and (5) Indonesian mountains are young mountains of the circum-Mediterranean and circum-Pacific ranges.

Fourthly, in terms of population, Indonesian population shows a constructive population structure, i.e. the population of productive or working-age people is greater than the other age groups. In 2018, the number of populations was recorded to reach 265,000,000 or ranked the fourth in the world. This number comprised of 133.17 million men and 131.88 million women, 300 tribes, and 1,340 ethnic groups. The population aged 3 - 6 years reached a number of 19,229,800 (National Development Planning Agency, 2013), meaning that in the next five years educational facilities will be needed to accommodate the population of this group. The government has guaranteed that by 2030 all preschoolers (0-5 years) will have received education and care in early childhood education. Embedded in the program of Green Education for Early Childhood is the topic of electricity conservation.

With regard to the above descriptions, the following questions are raised in this research: (1) Is it appropriate to teach green education to young children in an attempt of making them understand about electricity use? And (2) How can young children receiving green education model electrical energy conservation behavior (give modelling effect) to other family members, especially the father and mother?

2 Research Methods

This research employed the survey approach, in which it is assumed that the respondents show indicators of program quality support in all fields surveyed (Udoudj, 2016). The survey was conducted to a sample of young children and their fathers and mothers in several early childhood education institutions. The survey was carried out by asking the respondents some questions about the activities they do. In compliance with the procedures of qualitative research, the questions were aimed at identifying and understanding in depth how the children carry out their activities.

In addition, interviews were conducted with some teachers sampled from several early childhood education institutions. The questions were focused on finding about the input, process and output of graduate achievements in the relevant early childhood education institutions.

3 Results and Discussion

Learning Approach for Young Children

There are two models of early childhood education that have been developing so far. First, education with games, namely early childhood education activities carried out by playing so

that children are happy, willing, and free from any force or pressure from other parties. This kind of education takes a variety of stimuli or multichannel stimuli, such as sound, song/tone, image, shape, and color. Early childhood play triggers a variety of young children's potentials.

Games and play are keywords in early childhood education. The two simultaneously serve as learning media as well as the essence of early childhood education. The world of children is the world of play, and learning is done with or while playing, which involves all the senses a child has. Play for children is a serious but fun activity. According to Conny R. Semiawan (in Jalal, 2002, 16) play is an activity that is chosen by children because it is fun, not because of the rewards or compliments. Through play, all aspects of a child's development can be improved. According to Howard Gardner, human intelligence is not singular; instead, human beings have multiple intelligences, namely visual, spatial, music, linguistic, mathematic, kinesthetic, interpersonal, and natural intelligences. Hence, early childhood is a golden age, where the growth of the brain is very rapid by creating billions of brain cells like sponges that are ready to absorb anything that is stimulated by the surrounding environment.

Free play in early childhood can help children express themselves and explore the surrounding to strengthen the things they have already known and discover new things. All of the potentials in young children—the physical, mental, intellectual, and spiritual ones—can be developed optimally. In addition, young children can be taught about history, geography, and others. According to Jerome Bruner, every material can be taught to each age group in ways that are in line with their development (Supriadi, 2002). Quantum Learning (De Porter & Hernacki) or the learning revolution puts an emphasis on “early learning” in children by choosing appropriate methods instead of making learning at an early age “academic” (Supriadi, 2002). The study of Bruner and Donalson (in Supriadi, 2002) found that some of the most important learning in life was obtained from early childhood, and learning is mostly gained through play. Therefore, play for early childhood is a bridge to the development of all aspects. The key lies in play or games.

However, play as an idea associated with learning lacks appreciation in various cultural environments (Supriadi, 2002, 40). In fact, criticisms against a number of kindergartens are not because they teach counting, reading, and writing but rather because of the wrong way in which kindergartens are made a miniature of elementary schools.

Early childhood education with play is very appropriate to improve young children's abilities to be able to obtain and process information about new things and practice skills and also to get to know new friends and new environments.

Play in early childhood education can use several methods: (1) Storytelling or reading stories that contain educational values; (2) singing songs that contain educational values; (3) traveling to tourism objects or places that are relevant to children's life; (4) role-playing of characters, objects, and other roles around the child; (5) demonstration, with educators/tutors giving examples to later emulate children; (6) giving assignments that provide children with the opportunity to carry out tasks based on direct instructions that have been prepared so that children can experience real-life tasks and carry out the tasks completely, and (7) training children to have a good command of psychomotor abilities that require coordination among muscles, eyes, and the brain.

The second approach is early childhood education with a scientific approach, with a concern with learning methods and the principles of education. This approach gives an emphasis on learning in stages, distinctive ways of thinking, and learning from the process of interaction with the environment. The scientific approach is one approach in developing ways of thinking and reasoning through the processes of observing and communicating the results of an investigation of the environment. Cultivating good attitudes is done through habituation and modeling. The

scientific approach is carried out in the following stages: observing, questioning, gathering information, reasoning/associating, and communicating.

The scientific approach is a series of discovery by exploring the environment. The stages in detail are as follows: (1) Observing or identifying an object using all the senses of the child (vision, hearing, smell, touch, and taste) so that more information is received and processed in the child's brain; (2) Questioning, as the process of thinking that is driven by the child's curiosity about an object or event; (3) Gathering information by repeating the same activities but with different ways of playing; (4) Reasoning/Associating, which connects the knowledge that has already been possessed with the new knowledge that has been gained or that is around the child; and (5) Communicating, i.e. conveying things that have been learned in various forms; for example, through stories, movements, and by showing the results of children's works in the forms of drawings, play dough, and puppets from paper pulp.

Learning Electricity Conservation for Young Children

One of the scientific approaches applied in early childhood education is related to electricity conservation learning materials by means of observing, asking questions, gathering information, reasoning/associating, and communicating. Observing is done to find out objects by using the senses such as seeing, reading books, listening, touching, and feeling. In this context, it can be done by listening to the description of economical use of electricity. Electricity supply is not enough to meet the needs of the entire community, which is why many places experience an electricity crisis. Meanwhile, electricity needs are increasing. Electricity has entered all lines of the needs of today's human life. Anyone who lives in a big city will not be able to live without electricity. Almost all necessities of life, especially in large cities, must be supported by electricity, such as the use of fans, water pumping machines, computers, gadgets and smartphones. Almost all human activities in this globalization era require electricity, starting from office activities, shops, factories/industries, households, to even private activities. To avoid the effects of global warming caused by wastage of physical energy that threatens humans, one of the solutions that can have a big impact is by saving electricity.

Asking is encouraged to the child, both about things they have heard and other things they want to know. Some examples of the questions include:

- a. Has the impact of wasting electrical energy been felt on the increase in global temperatures that can be seen from the rise in sea levels, rising earth temperatures, and the loss of glaciers, and even the threatened habitat of human beings as a result of global warming?
- b. Why do some people who in fact live in a region with a sufficient supply of electricity do not use electricity wisely?
- c. Is saving electricity energy an act of reducing the amount of electricity used?
- d. How can electricity conservation be achieved by using electricity efficiently, i.e. by using less electricity or by reducing electricity consumption or activities that use electricity?
- e. Can electricity conservation lead to reduced costs and increased environmental value, state security, personal security, and comfort?

Gathering Information this can be done in various ways, such as: Doing, trying, discussing, reading books, asking questions, and drawing conclusions from various sources. Households with the highest electricity consumption play a major role in the global warming phenomenon. Wise use of electricity at home is really necessary to maintain the balance of life on earth. The culture of electricity conservation should be cultivated at home by carefully selecting electrical equipment that does not consume much energy. The simple habits related to wise electricity use should be promoted. Such wise habits include: 1) Switching off the lights when not used; 2) Turning off electronic appliances such as TV or computers and the like when not in use; 3)

Setting the AC at a normal temperature (25-27oC); and 4) Using public transportation and reducing the use of private vehicle as much as possible.

Socializing to obtain good reasoning is the ability to connect information that is already possessed to newly acquired information so as to get a better understanding of something. In this regard, the culture of saving electricity should also be promoted in the school environment. This can be done by: (1) integrating the values about hygiene, healthy living, and electricity conservation into school lessons and homework by assigning children to calculate the amount (kwh/kilowatt per hour) of electricity at home for a month; (2) habituating the action of turning off and unplugging electricity when not in use, and setting the air conditioning at a room temperature (25oCelsius); (3) saving electricity by replacing incandescent lamps with energy-saving lamps, making sure to turn off all unused electrical equipment (lights, fans, tape, tv, etc.) if the child is the last person in the room before leaving the room, conducting “energy patrols” in the school environment to control rooms whose lights have not been switched off or toilets with faucets still running; and (4) fostering electricity conservation attitude by taking the following steps: (a) forming small groups of students to conduct “energy-efficiency” patrols; (b) setting a schedule for conducting daily checks on electricity usage at school; and (c) making posters to invite friends to participate in electricity-saving programs.

The electricity-saving movement in schools can familiarize students with activities to save electricity from an early age. In addition, understanding the culture of conserving electricity, each student can share his/her knowledge with the closest environment.

Communicating is an activity to convey things that have been learned in various forms; for example, through stories, movements, and by showing the work in the form of drawings, play dough, paper pulp, crafts of recycled materials, and woven products.

4 Conclusion

First, prepare the learning environment by arranging the place of activity and providing tools, materials, sources or media that can be explored to apply the scientific approach. Second, open the lesson by showing children various tools, materials, sources or media to be observed, both indoor and outdoor. Third, the core lesson can be done by carrying out the processes of observing, asking questions, gathering information, reasoning/associating, and communicating. Fourth, close the lesson by having one of the children talk about the experience s/he has gained in front of friends. The teacher can clarify/reinforce the knowledge acquired by the child and encourage the child to be able to expand his/her ideas and work. In addition, the teacher can convey plans in the future to follow up on the ideas proposed by the child.

Based on the findings of this research, it is recommended that early childhood education teachers pay attention to learning methods and the principles of early childhood education. Teachers should pay attention to gradual learning, distinctive ways of thinking, and learning from the process of interaction with the environment. It is important in order to help children implement the habit of electricity conservation which in turn will provide modeling of efficient electricity use for other family members, especially the father and mother.

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