

Increasing Ecological Intelligence for students in Primary School Through the Kang Pisman Program

Eldi Mulyana*, Tetep, Triani Widyanti, Asep Supriyatna

Department of Social Studies Education, Faculty of Social Science, Language and Literature Institut Pendidikan Indonesia (IPI) Garut, Indonesia

**Corresponding author email: eldimulyana@institutpendidikan.ac.id*

ABSTRACT. The purpose of this study was to determine the increase in ecological intelligence of students in elementary schools through the Kang Pisman Program. The research method used is descriptive qualitative with data collection techniques through observation and interviews. The research subjects were divided into three categories, namely the Kang Pisman program supervisor, the Kang Pisman program members, and the non-members of the Kang Pisman program. Research location at Babakan Tarogong Primary School Bandung, West Java, Indonesia. Based on the results of the study, the ecological intelligence of students at Babakan Tarogong Primary School has increased after participating in and implementing the Kang Pisman program. Ecological intelligence can also be realized by observing changes in the habits of students in disposing of waste by separating organic waste and inorganic waste. Students make it a habit of always bringing a tumbler or lunch box to school to reduce plastic use. The ecological intelligence of primary school students is increasing with the insight into social science they get after visiting a waste bank. Students also learn to make handicrafts from waste that can be recycled into useful items. The conclusion in this study is that the ecological intelligence of students at Babakan Tarogong Primary School Bandung has increased which can be compared with social science students who do not participate in the Kang Pisman program. The implementation of the Kang Pisman Program from the City Government of Bandung is very suitable to be implemented for children so that it can become a habit for students in maintaining a clean lifestyle and preserving the environment.

Keywords: *Ecological Intelligence, Students in Primary School, The Kang Pisman Program.*

1. INTRODUCTION

Humans will never escape from the environment where they live. Humans even will not survive if the environment is damaged or the environment does not exist [1]. In a philosophical perspective, humans are multidimensional beings, one of which is having a relationship with nature or the environment, so that human development in the educational process is not separate from its essence, and will always be closely related to space and time when the relationship between humans and the natural environment takes place real [2]. Environmental problems caused by humans must be addressed immediately. Therefore, we need to campaign for environmentally friendly behavior. If each individual has embedded environmentally friendly behavior, it is not impossible that environmental problems will no longer exist [3].

Students' lack of understanding of the importance of protecting the environment creates a sense of indifference to the environment around

their school. Students who have ecological intelligence will treat the environment well. However, elementary school students do not care about the surrounding environment such as littering, scribbling on tables and school walls, throwing garbage in the gutter, and so on [4]. Children who are still developing are in the process of imitation by seeing what the adults around them are doing. Likewise, in terms of disposing of trash, exemplifying throwing garbage in its place by adults to early childhood is an effort to reduce bad habits that can save the environment [5]. School students as the potential young generation to create environmental improvements in the future are expected to be able to participate in protecting the environment in efforts to prevent disasters in their surrounding environment [6].

The role of the government in solving environmental problems through education is by making an agreement between the Minister of National Education and the Minister of the

Environment regarding schools with environmental cultures [7]. The young generation should be introduced to environmental awareness from an early age, in order to create a society that cares about the environment. One of the efforts that must be made by the government is to include environmental awareness in the curriculum. The purpose of this application is to create a community that is aware of the environment [8].

The Bandung City Government introduced the concept of 3R waste management in a form that is easily accepted by local communities because it has an element of Sundanese and to be more familiar with the community by creating a Kang Pisman program (reduce, separate, and use it). Kang Pisman is expected to become a collaborative movement between the government, citizens, the private sector and other parties in building a new civilization of more advanced waste management. The goal of the Kang Pisman program is to lead to waste management with the concept of zero waste. The principle of zero waste is a waste management concept based on minimization, reuse and recycling activities. Zero waste does not mean that it does not produce waste at all, but emphasizes efforts to reduce to zero waste transported to the Trash Shelter. This waste management is in line with the Sustainable Development Goals (SDGs) target that by 2030 every country will substantially reduce waste production through prevention, reduction, recycling and reuse, to ensure sustainable production and consumption patterns [9].

Supriatna argues that the destruction of planet earth is caused by a system that places humans as rulers of the earth (anthropocentrism) and not nature at the center (ecosentrism). In order to save the earth and all living things in it and so that they can continue to be sustainable, new movements are needed in various fields, including the academic world. One of these academic movements is ecopedagogy. Ecopedagogy is an approach that can be used in social studies learning in building students' ecological intelligence, this is such as fostering an environmentally friendly attitude (Green Behavior) and becoming a new life style for today's students [10]. Social studies is the study of humans in all aspects of their lives, their characteristics, their behavior, both individually and collectively, in small and large areas, as well as interactions in their environment. The material object in social studies is in the form of behavior in actions that are unique to humans, free and not deterministic [11].

2. METHODS

The research method used is descriptive qualitative with data collection techniques through observation and interviews. The research subjects were divided into three categories, namely the Kang Pisman program supervisor, the Kang Pisman program members, and the non-members of the Kang Pisman program. Research location at Babakan Tarogong Primary School Bandung, West Java, Indonesia.

3. RESULTS AND DISCUSSION

3.1 Implementation of the Kang Pisman Program

The implementation of the Kang Pisman Program was obtained based on the results of interviews and observations at Babakan Tarogong Primary School Bandung. This program has been introduced since the 2019 academic year so that students have started to recognize the method being applied. The method of application to students is carried out through the orientation of the program. The implementation process for schools was delivered by the Kang Pisman Program Advisor from the government. Meanwhile, for direct implementation to students, volunteers from youth from Karang Taruna from several districts and Bandung City Environmental Ambassadors were selected from the students. Previously, they received counseling and training to get to know the Kang Pisman method as part of information literacy. Their function that helps the supervisor of the Kang Pisman Program in implementing it to students is considered appropriate because they are still young and belong to the millennial generation who have a special way and attract attention. Students and youth from Karang Taruna are considered to be more sociable, making primary school students enthusiastic about joining the Kang Pisman program.

The role of volunteers is not only to introduce students to what the Kang Pisman Program is, but also to introduce the types of activities in the program, to learn to sort out the types of waste, to introduce the concept of waste bank to students who are unfamiliar with the term. This is very important to convey to elementary school students because it can foster information literacy related to their active participation in preserving the environment. Meanwhile, the school is part of the ecopedagogy program in their environment. The Kang Pisman program for its implementation also involves social studies learning teachers in which

situations and conditions are deemed appropriate to be applied in social studies subjects which introduce the goal of educating students as good citizens. Social studies subjects are also considered appropriate to educate students so that they do not have an anthropocentrism spirit but instead raise awareness of the spirit of ecosentrism. So that social studies learning in schools by collaborating to implement the Kang Pisman Program can improve ecological intelligence in students.



FIGURE 1. Collection Process

Increasing ecological intelligence through the Kang Pisman Program at Babakan Tarogong Primary School Bandung can realize Green Behavior and become a new life style today. The material object in Social Studies is in the form of behavior in actions that are unique to humans, free and not deterministic so that the collaborative implementation process of the Kang Pisman Program is synergistic with the Social Studies concept taught to students at school. The school canteen also implements Zero Plastic as part of the ecopedagogy where it is not allowed to use plastic packaging. Students are required to bring their own containers such as lunch boxes and tumblers to buy snacks. This has an impact on the volume of waste in schools has decreased. The school also took the initiative to implement literacy in the Kang Pisman Program regarding Waste Banks and Eco Brick.



FIGURE 2. Eco Brick

Waste banks are used to accommodate inorganic waste and provide important education on the economic side of the type of inorganic waste so that economic activity material in social studies subjects can be conveyed not only in cognitive aspects but also to educate students in affective and psychomotor aspects. The Eco Brick concept was also applied in the Kang Pisman Program in collaboration with social studies teachers at Babakan Tarogong Primary School in Bandung by instructing students to prepare mineral water bottles and plastic waste. The plastic waste is put into the bottle and then the Kang Pisman supervisors and volunteers from the Youth Organization and Environmental Ambassadors teach the students to make decorations and other handicrafts from the trash.



FIGURE 3. Process weighed at the waste bank

3.2 Student responses to the implementation of the Kang Pisman program

The implementation of the Kang Pisman Program is said to be successful or not depending on the response of the students who carry it out. Therefore, in this study conducted interviews and observations of student responses regarding the Kang Pisman Program in synergy with social studies subjects in schools. So the conclusion is obtained in the study that the response of students at Babakan Tarogong Primary School Bandung is very enthusiastic and considered good where there is a sense of self-awareness of the importance of protecting the environment. This becomes a benchmark for increasing ecological intelligence in students where they implement the Kang Pisman Program as part of information literacy as well as change their behavior to be more environmentally friendly. The participation of social studies subject teachers in synergy with the Kang Pisman Program Supervisor and assisted by youth from the Youth Organization and students as Environmental Ambassadors.

The students were very enthusiastic about implementing the assignments given by the Kang Pisman Program Advisor and his volunteers. Each member of Kang Pisman provides information literacy and practices the method so they are immediately enthusiastic about being involved in several stages of the activity. Student responses like this must be maintained and even increased by constantly being used by the school by implementing ecopedagogy in learning, especially by social studies teachers. The role of parents is also very important because students must also implement not only in school but also implemented in their homes. This will further strengthen ecological intelligence in students and change not only a mindset but also a habit in their life as a green behavior. Students are increasingly familiar with the concept of green consumer in their daily lives which has a very good impact on their lives, especially in the socialization concept of the Waste Bank and Eco Brick.



FIGURE 4. Expressions of Students After Collecting Inorganic Waste

The introduction of Waste Banks to students has resulted in an increase in their spatial intelligence, such as not littering. Students who are getting used to it will reprimand their friends and teach them how to properly dispose of garbage by sorting the types of waste to be disposed of. Students become aware of and understand the use of a Waste Bank and the types of waste that can be accommodated at the Waste Bank. The Zero Plastic program at Babakan Tarogong Primary School Bandung has also been implemented in the school canteen so that students' ecological intelligence is increasing and they understand the dangers of plastic waste for human life. Students are accustomed to bringing food and drink containers such as lunch boxes and tumblers from home to reduce the use of plastic packaging in the school canteen during recess.



FIGURE 5. Eco Brick Result

The 2-hour Kang Pisman Program activities were fruitful. The enthusiasm of the students can also be seen in the happy expressions on their faces when collecting inorganic waste at their school. Unpretentious sources who include the millennial generation increasingly make delivery to students memorable and memorable so that they also help Social Studies teachers in implementing ecopedagogy in social studies learning. Students also begin to know the economic side of the waste they throw away, especially inorganic waste which can be weighed into the Waste Bank. The money from the Waste Bank is also taught by the Social Studies teacher to implement material on economic activities as well as to educate students to get used to saving

3.3 Barriers to Implementation of the Kang Pisman Program

The implementation of the Kang Pisman Program certainly has obstacles in its activities. It cannot be denied that the pattern of educating students at the primary school level has its own difficulties compared to educating students at the secondary school level. It takes patience in educating elementary school students because 70% of them prefer to play. Therefore, it is important to educate the information literacy of the Kang Pisman Program with the concept of learning by playing. The role of the teacher in communicating with the Kang Pisman Program Advisor who is assisted by volunteers from the Youth Organization and Environmental Ambassadors from students is certainly needed because the teacher himself understands the level of intelligence of his students. The lack of time in socializing the Kang Pisman Program is still lacking. It is not certain that the next teacher can explain the socialization of the Kang Pisman Program in accordance with the implementation directions of the Kang Pisman coaches and volunteers.

In addition, an obstacle in implementing the Kang Pisman Program in schools is the limited

funds to develop the Kang Pisman Program. Schools only take advantage of existing facilities and infrastructure. The lack of teachers' involvement in the coaching program has made the concept of ecopedagogy not work properly. Although the Kang Pisman Program involves coaches from the government and assisted by volunteers from the Youth Organization of each District and Environmental Ambassadors from students, it still needs the role of teachers in schools to be involved in fostering students and jointly responsible for improving ecological intelligence in students. Based on the results of interviews with teachers at Babakan Tarogong primary school, Bandung, the more teachers are involved at each grade level, the easier the information literacy is conveyed to students. The more people involved on the part of the teacher will make students more enthusiastic because the teacher is a figure that the students have previously known. The teacher also understands which students are adaptive and which students need help in socializing. The role of classroom teacher involvement in Babakan Tarogong primary school will be very effective in the future in increasing students' ecological intelligence even with the limited facilities and infrastructure in schools that do not have a waste bank and trash cans that are sorted according to the type of waste. Class teachers who teach ecopedagogy in social studies learning must be involved as facilitators for students who are prepared as early as possible as agents of change in their environment.

Based on the interview, the obstacles related to funding were not only conveyed by the teachers at the school but also from the advisors and volunteers of the Youth Organization and students who became Environmental Ambassador. They feel significant obstacles in the future when the next Kang Pisman Program is implemented, especially when making activities or products made from economically valuable inorganic waste. Schools do not allocate funds in an effort to utilize waste. So it is not uncommon to end up collaborating with the private sector in providing funds. The use of private funds, of course, contains risks if the program does not run properly and is only incidental in nature. Some students who were not involved in the Kang Pisman Program activities became constrained. This is because when the Kang Pisman Program was implemented, not all students were involved because only certain students were selected by their respective class teachers which of course were biased. So that when interviewed and observed, not

all students understood the Kang Pisman Program, especially when they implemented class picket activities. Students who did not participate in the Kang Pisman Program did not understand well the waste collection and sorting process. The equipment provided at the school was not yet available, such as trash bins that were sorted by type and compounded by a small amount. So that students who take the Kang Pisman Program also experience problems in sorting waste. It is possible that if there is no solution from the school due to funding constraints, students will return to their previous habits.

Another obstacle is not getting used to it and the lack of socialization to parents and school canteens that provide food and drink for students. Based on the results of interviews and observations of teachers and students at Babakan Tarogong Primary School, Bandung, it was found that parents were still not responsive to the implementation of the Kang Pisman Program, such as bringing food and drink containers from home. Some parents think that bringing food and drink containers from home, such as lunch boxes and tumblers, increases the burden on students' luggage in their bags. Of course, other factors as a familiar assumption in our society have not been able to discipline ourselves from the start of the student's home environment. The school canteen is still not used to socializing not using plastic. They assumed that just words were made complicated so that some canteen sellers could not implement it. Of course it is very important for the government to participate here, both the Bandung city government and the Bandung City Education Office to educate and provide assistance to several schools that are experiencing these difficulties. This is because not all schools have adequate facilities and infrastructure. In addition, the geographic aspect of the primary school location has quite a bearing on the pattern of clean living behavior, which cannot be denied that some schools experience quite severe socioeconomic obstacles.

However, based on researchers' observations, the Kang Pisman Program can still be organized well by the coach who is assisted by volunteer colleagues from the Youth Organization and Environmental Ambassadors from students. They have creative ideas as the millennial generation by seeing every potential and positive side that already exists in the schools visited. Enthusiastic teachers also become good facilitators at Babakan Tarogong Primary School, Bandung, especially in its implementation which is linked to social studies

subject matter in schools. The government must continue to involve volunteers from the Youth Organization and Environmental Ambassadors from the students because creative ideas and innovative implementations are always present among the youth even in different situations and conditions from one another. So it cannot be said that the Kang Pisman Program failed to be implemented in Babakan Tarogong Primary School Bandung because it needs to be introduced periodically every semester. In addition, the government must continue to provide a role not only in counseling and training in education about the meaning of the environment for life but also obliged to provide financial assistance with a collaborative program involving related parties. In addition, reward and punishment is very important for schools in this case. Rewards to teachers and students must also be made to be awarded each academic year as Environmental Ambassadors.

Another obstacle is that in the COVID-19 pandemic situation, direct education and training to schools cannot be carried out. Only through the class teacher teaches the concept of ecopedagogy online in social studies learning. Teachers must be creative in making interesting image and video content that are shared with students so that they can become ecoliteracy. Teachers can take advantage of social media such as Facebook, Instagram or Whats App Group to convey ecoliteracy to students. Another obstacle is that some elementary school teachers do not master technology. However, of course socialization from the school in collaboration with relevant government parties to provide innovative media for students is very important. Based on the interview, the Kang Pisman Program coach would be very responsive if there were schools that needed interactive video assistance and creativity in the form of animated images, or other related learning materials to improve ecological intelligence in students. Schools must also educate elementary school teachers who do not master technology either by training or by helping facilitate e-learning such as learning management systems that can be accessed by students.

3.4 Increasing Students' Ecological Intelligence After Implementing the Kang Pisman Program

The implementation of the Kang Pisman Program at Babakan Tarogong Primary School Bandung based on the results of observations, it is obtained information that the ecological

intelligence in students is increasing every time. Every academic year the number of students involved in the Kang Pisman Program increases, the awareness of students to sort waste by type also reduces the use of plastics. This is when learning before online, many students brought food boxes and tumblers to school.

Ecological intelligence has been taught to students at Babakan Tarogong Primary School, Bandung. This is carried out when they enter school from class 1. The ecological intelligence that the school tries to teach is in the form of greening the school environment. Activities carried out by inviting students to maintain the school garden and guard it. Students are also taught to plant plants in pots and are taught the types of plants that are beneficial to human health. Cartoon pictures that educate students in caring for the environment are also provided by the school in certain areas including the school canteen. Counseling to traders in the canteen was carried out to educate Zero plastic.

Ecological intelligence, according to Supriatna, is based on knowledge, awareness, and life skills in harmony with nature. A person who has ecological intelligence will understand that every behavior and action does not only have an impact on himself and others, but also has an impact on the natural environment in which he lives, which must be maintained in order to have the carrying capacity for the lives of himself and others. This ecological intelligence can be fostered and developed through social studies learning [12]. In addition, the importance of students having ecological intelligence is that they can make individuals apply what they learn as a result of human activity on the ecosystem, so as to reduce environmental damage and prevent damage to the earth [13].

Another program activity organized by the Babakan Tarogong Primary school before the information literacy of the Kang Pisman Program was that another Bandung City government program was organized, namely the Goes to School Program which is the Garbage Collection Movement (GPS). Only when the implementation is at a certain time and is not held regularly. However, the GPS program was held on Friday as part of a habit of getting used to the students. The GPS program is only implemented by a few students, especially for students who come from underprivileged families. The program provides assistance in the form of bicycles to students whose houses are quite far from the school on foot and

must come from underprivileged families. So not for all Babakan Tarogong Primary School students in Bandung. Only the current academic year has not been implemented properly due to the COVID-19 Pandemic which requires students to study at home as part of implementing health protocols.

4. CONCLUSIONS

The implementation of the Kang Pisman Program at Babakan Tarogong Primary School Bandung is carried out with various activities. Some of these activities include reducing waste by familiarizing students with bringing lunch boxes and tumblers to school as a Zero Plastic effort, sorting waste by type before dumping it into the trash, utilizing waste in the Eco Brick concept by making handicrafts from recyclable waste that is economically valuable, then introduces students to the concept of a Waste Bank which is also of economic value by weighing the waste and replacing it with money that can be saved by students. The obstacles faced in implementing the Kang Pisman Program in schools do not actually fail students to improve their ecological intelligence. There are many creative ways to be able to convey ecoliteracy to students through ecopedagogy in social studies learning, especially during the COVID-19 pandemic, you can use online media via WhatsApp.

Group with students, Instagram, Facebook and YouTube, which are starting to be used by many students as a means of learning and learning in schools. Before the COVID-19 pandemic, it can be seen that the change in behavior of students when they came to school where they implemented Zero Plastic by bringing supplies from home in the form of lunch boxes and tumblers. When they snack during recess, the lunch box and tumbler are used to accommodate their snacks that are bought in the canteen, thereby reducing the use of garbage in schools. The awareness of the importance of the environment for students has begun to materialize with the concern of students in reprimanding their friends who are wrong in sorting waste when their friends want to put garbage in their places,

especially students who are still littering. Students have increased their ecological intelligence apart from getting to know the Zero Plastic program which reduces the use of plastic waste, Eco Brick which uses plastic waste to become new objects of value, sorting waste based on organic and inorganic types, as well as the introduction of Waste Bank. The involvement of teachers also further increases ecological intelligence in students where the concept of ecopedagogy is taught in social studies learning so that it makes students feel that what they are learning is in accordance with the realities of life.

ACKNOWLEDGMENT

This publication has received support and funding from the Institut Pendidikan Indonesia (IPI) Garut.

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