Introducing environmental education to early children through 3R activities (an effort for Indonesia free trash)

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Abstract. The Indonesia Zero Waste Program must be implemented continuously and sustainably. One interesting effort is to teach children about the importance of environmental aspects in the future. The success of the program must involve all aspects of society. Besides the Indonesia Zero Waste Program can be implemented through environmental education, which applied in formal education. Environmental education since childhood was an effort with a successful level of material absorption and formation of the right attitude. This paper was the result of work in classroom action research which a collaborative way between researchers and teacher at MI Fathul Ulum, Palurejo. Respondents in the study were children at first grade students with a qualitative research approach. Collecting data in this study using documentation techniques with coherent time records. The research objective was to foster an environmental care attitude from an early age. Emphasizes knowledge of attitude and absorption of 3R-related material (reduce, reuse, recycle). The results of this study were in the form of better student knowledge about protecting the environment. Regarding the formation and knowledge of attitudes, students are invited directly to 3R practical activities. This activity is manifested in 3R activities that produce used goods that have useful values.

1. Introduction
Garbage is a part of human life that cannot be removed easily. In the modern era like today, humans produce more waste in every activity. There are two types of waste, organic and inorganic, which often becomes a problem is an inorganic waste, such as single-use plastic wrap because this type of waste is difficult to decompose for a long time. In urban areas, plastic or plastic waste from food wrappers or household shopping items often clogs up the water sanitation flow when it rains, this results in flooding. Indeed, this is the result of a lifestyle that is not wise towards waste management from every individual people and from a part of a community called family life.

Today human activities and lifestyles cannot be separated from producing waste. Daily routine activities such as eating and drinking also produce waste, for example; instant drinks which of course are packaged in disposable plastic bottles, and eating food in plastic or paper packaging. From these activities, it is clear that humans produce at least two different types of waste every day. Apart from causing flooding, waste that cannot be broken down naturally (inorganic) can be a source of new problems if it is not managed wisely.

Regarding the condition of waste in Indonesia, a study states that each individual is estimated to throw out 0.52 kg of waste every day. The study in 2015 also presented the results that Indonesia became the second largest contributor to plastic waste dumped into the sea after China with a range of 0.48-1.29 MMT per year [1]. This condition is closely related to people's lifestyles.

In 2017, as proof of the seriousness of the Indonesian government towards the condition of waste, through a Presidential Regulation concerning Policies and National Strategies for Management of Household Waste and Waste Similar to Household Waste. The policy direction is valid until 2025. Two important points in the policy are; 1) Reduction, 2) Handling of Household Waste and Waste Similar to Household Waste. To do these two points, the government has set several strategies,
one of which is community interaction through communication, information and education. From these policies, it is expected that by 2025, the target of reducing the amount of household waste and household-like waste will decrease by 30%, with a target of handling it by 70% from the projected figure of waste piles of 70.8 million tons [5].

Now, 5 years after the research and 3 years after the presidential regulation was published, the numbers still uncalculated, or unpredictable whether there is an increase, decrease, or static. However, this research does not refer to the movement of these numbers, the focus of this research is to provide education and knowledge to children to be wise about waste. Children are part of society they will grow up and become adults and have the knowledge how to make the environment sustainable. The environmental education should begin in early childhood education. The environmental education is not often embedded within early childhood curricula, so that early childhood educator must engage more fully with transformative education approaches [6].

The research subjects were first grade students. They were selected with the consideration that they are still in the category of early childhood. They are special figures who are undergoing a process of rapid growth and development. They have their own world and characteristics that are very different from those of adults. Children are always active, dynamic, enthusiastic, and have a curiosity about what they see and hear, as if they never stop learning. Early childhood children have various fundamental advantages as a place to instill useful attitudes as adults [7].

2. Methods
The method in this research was classroom action research (CAR) at MI Fathul Ulum, Banyuwangi. CAR used because it tried to instill or change the attitudes and values of the subject which makes it possible to encourage a more positive attitude towards one aspect of life. The aspect of life in question was to be wise towards waste generated by her/himself or others.

The CAR design used in this study refers to [2] because it focused on activities (act and observe) which one component simultaneously. This certainly different if the design proposed by Kurt Lewin, which there are four components in one cycle; plan, act, observe, reflect. In Lewin’s design, acting and observing both are separate activities. The CAR cycle illustrated in figure 1, and the explanation of its implementation in this study is in Table 1.

![Figure 1. The action research spiral [2]](image-url)
Table 1. CAR Implementation Plan at MI Fathul Ulum Palurejo

| Phase | Cycle 1 | Cycle 2 |
|-------|---------|---------|
| Plan  | Researcher together with teacher plan learning activities | Plan learning according to the results of cycle 1 reflection |
| Act and Observe | Implementation of learning simultaneously carrying out observations | Implementation of learning along with observation |
| Reflect | Finding learning activities that are not suitable at the time of the plan | Finding or not learning activities that were not appropriate during the second plan, and so on. |

Source: Main research notes

The CAR cycle in this research was planned for two cycles. However, if during the reflection activities with the classroom teacher there were still some unsuitable conditions, the additional cycle would be carried out. The number of cycle implementation considers whether the students were still in the stage of not understanding yet, satisfied with the material and information, or sufficiently understanding and bored with the learning activity. Those conditions are known during observation, and it was decided by researchers and teacher during the reflection phase.

The approach in this classroom action research (CAR) used a qualitative approach. The collected data used documentation techniques with a coherent time record. The aim was to see every detail of the learning carried out by the teacher and the responses given by students. The results of this record could be used as material for reflection by researchers and teacher for learning processes in the next cycle.

Generally, action research is expected to fulfil three functions [8]:
- assistance in coping with practical situations;
- assistance in developing, differentiating, and systematising professional competences;
- a contribution to the development of a professional and public discussion among people working in and concerned with education, in order to improve and validate educational experience and the knowledge underlying it.

Each of these functions has special relevance for environmental education because it can be expected to support its movement from a marginal position in education towards mainstream practice. Environmental education destabilises some of the perennial tenets of schooling and provides potential answers to some of the dilemmas they create [3].

3. Results and Discussion

3.1. First Cycle Learning Report
The CAR activities in the first cycle of this study were by the plan (see Table 1). All materials and lesson plans were compiled jointly by teacher and researchers. Learning process in the first cycle is limited to measure the level of students' initial knowledge about waste, its impact on the environment and life. In addition, students also measured their abilities around the 3R. Measurement of knowledge about 3R by direct questions and must be answered by students immediately, such as; "Do the children know what 3R is?". When the question was asked, the total number of students answered “don't know” almost simultaneously. The following table is presented step by step and the results of the CAR phases in cycle I;
### Table 2: Learning Cycle I at MI Fathul Ulum Palurejo

| Phase        | Description of Activities'                      | Students Responses                                    |
|--------------|------------------------------------------------|-------------------------------------------------------|
| Plan         | • The teacher and researcher prepare lesson plans | -                                                     |
|              | • Learning activities are limited to simple measurements of students' knowledge about 3R. | -                                                     |
| Act and Observe | • The teacher asks questions about 3R          | • Students do not know about 3R                       |
|              | • The teacher explains about 3R                | • Some students are not enthusiastic about the teacher's explanation |
| Reflect      | • Unattractive material                        | -                                                     |
|              | • The teacher's explanation has not aroused student enthusiasm | -                                                     |

Source: Main research notes

From the researchers’ notes during the learning and observation activities, it shown that students are less interested in the material and teacher's explanation (Table 2), so it caused students didn’t enthusiasm. If enthusiasm has not been obtained, it is possible that the information and knowledge about 3R has not been fully absorbed in students' memory.

#### 3.2. Second Cycle Learning Report

One week after cycle I, then cycle II was carried out by referring to the results of observation and reflection in cycle I. The results of reflection in cycle I were concluded, there were students who less interested in the learning process delivered by the teacher, then in cycle II, the teacher teaching methods need to be improved. In general, the implementation of cycle II was described in table 3.

### Table 3: Learning Cycle II at MI Fathul Ulum Palurejo

| Phase        | Description of Activities'                      | Students Responses                                      |
|--------------|------------------------------------------------|--------------------------------------------------------|
| Plan         | • The teacher and researcher improve the lesson plan results from the discussion on the reflection phase of cycle I | -                                                     |
| Act and Observe | • The teacher asks questions about 3R          | • Some students already understand about 3R           |
|              | • The teacher explains more specifically about 3Rs assisted by instructional media | • Students are enthusiastic about the explanation from the teacher by looking at the learning media poster |
| Reflect      | • Posters as a learning medium have attracted students to be more enthusiastic about 3R information | -                                                     |
|              | • Still need a practicum on 3R to educate students about simple waste management | -                                                     |

Source: Main research notes

After the implementation of cycle 2, it was known that students were more interested in the material and teacher's explanation than in cycle I. This was because the results of reflection in cycle I were carried out well in cycle II. The results of reflection in cycle I have shown that students were not enthusiastic about the teacher's explanation of the 3R, then researchers took the initiative created the
learning media such as a poster about 3R (Figure 2). The media poster aims to attract students' interest, indeed after cycle 2 end the poster was nailed to the wall in the classroom.

### 3R Poster

**What is 3R?**

- **Reduce**: to use less or to decrease the amount of something.
- **Reuse**: to use something again.
- **Recycle**: to sort and collect rubbish in order to treat it and produce useful materials that can be used again.

**What is 3R poster for students**. After learning in second cycle end, the poster nailed on the wall in the classroom and students can see or read it every day.

3.3. **Third Cycle Learning Report**

Initially, researchers and teacher had planned this CAR to be limited to two cycles. However, the results of the learning process and cycle II resulted in reflection discussion which still needed cycle III. The discussion (plan phase for cycle III) resulted in two different things between the teacher and the researchers regarding the learning activities to be carried out. Researchers provided suggestions about the 3R practice by create some new items from plastic bottle waste. While the teacher gives suggestions, students know enough to practice 3R by means of the teacher brought the media needed and according to the explanation on the poster. The results of planning and discussion show that suggestions from teacher are more effective than suggestions from researcher. Researchers agree with the suggestions from the teacher on the basis that the teacher more understand about the condition of the students than the researchers in addition, the teacher also explained that the learning time in the classroom was not enough, if the practice of making used goods became new items. Verily, this would be homework for students, and this is against the teacher’s principle that the students at the first grade should avoid as much homework as possible, because it was likely that the students were not doing it by themselves but their parents.

During the implementation of cycle III, researchers still play a role in learning activities as a companion and observer. The researchers saw that the trash as the media brought by the teacher into the classroom was quite varied for 3R practices, such as plastic bottle waste, toys from used plastic bottles, plastic bags obtained while shopping, even organic waste was also carried by the teacher. Researchers completely leave the implementation of cycle III to the teacher, because the researchers found teacher enthusiasm and new teaching techniques after passed through cycles I and II. Of course, this condition was a benefit for teacher and new findings for researchers.
Similar conditions are also found in a CAR study such as a result of conducting Classroom Learning Environment Action Research, science teachers will feel a sense of empowerment, renewed enthusiasm for their profession, and the reward of self-reflection [4].

3R practice during learning was fun. The teacher make students into groups of 4-5 students. In turn, the group demonstrated the 3R as exemplified by the teacher. The reflection process showed that there was no record for cycle III, this showed that this CAR was sufficient until cycle III.

4. Conclusions
The results of the study are far from the qualitative hypothesis that the researcher proposes in this CAR. Even though it is far from a qualitative hypothesis, it does not mean that this research has failed, but rather has a positive impact not only on students but also on teacher as research partners. Students, since the beginning of the study have been determined as research subjects, have absorbed the information about 3R and how to manage waste wisely through the 3R principle. Teacher as research partner have also received new teaching techniques, of course this will be useful for subsequent learning activities.

The results of the study in particular were that students as subjects had been educated on practical waste management through 3R information. This condition is part of efforts to make Indonesia free trash by 2025 and the success of the government program on waste management. In general, schools and grade 1 teacher as partner has received insight and knowledge about simple waste management through 3R.

This study is not perfect, the researcher proposes a suggestion for further research conducted for students grade 4, 5, and 6. The focus of the research theme remains on protecting and preserving the environment. In addition, research subjects can also be replaced with millennial who have the potential to make positive changes to the natural environment.

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