

IMPROVING THE LEARNING OF WATER ABLUTION TREATMENT THROUGH IPAL JAILANGKUNG IN 6TH GRADE OF SDN DINOYO 1

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Abstract- The availability of clean water is one of the important issues of sustainable development goals defined by the Board of the United Nations. The condition was the availability of clean water was currently starting to concern. In support of the sustainable development goals to keep the availability of clean water, then do an innovation learning that using wudu wastewater become aquaponics to kangkung plant and pool water of catfish or IPAL JAILANGKUNG. The purpose of this research was to describe the used of IPAL JAILANGKUNG in improving wastewater treatment learning former wudu. This research method using classroom action research developed by Kemmis and McTaggart. The subject of this research was 6th grade of SDN Dinoyo 1. Data collection was done by observation, interview, anecdotal records, documentation and tests. This research was conducted in two cycles. The results showed on the final act of an increase in wudu waste water treatment learning. The result of the study reached thoroughly above 78%.

Keywords-Component; water ablutions, IPAL, catfish ponds, kangkung plant, aquaponic

I. INTRODUCTION

The availability of clean water is one of the important issues of sustainable development goals defined by the Board of the United Nations. Now the source of clean water has begun to wane. This is due to many factors, including become the land of water absorption to terraced building or real estate, burning forests, deforestation, water pollution, air pollution and so on. Of course these things have implications for water availability and water quality. In fact, water has an important role for the survival of living things.

Various businesses and the ways have done by the Government in support the availability of clean water. The effort to maintain the availability of water starts from micro-scale i.e. family and environment around until the macro scale, i.e. the company. Variety of ways done in maintaining the availability of water by economizing water, planting trees for water absorption and waste water processing (recycled water). In support of sustainable development goals in maintaining the availability of clean water, SDN Dinoyo 1 do a study related to the innovation cycle of water.

This event will be based on learning innovation by the use of water for the various needs of the residents of the school. Ranging from students, teachers, employees, cafeteria manager, security guard, all of them use as the daily needs. The water used for the needs of PUBLIC CONVENIENCES (Toilet shower Wash), mopping, drinking, cooking, washing dishes, watering plants, and doing wudu'. Sometimes the use of the water leaved waste. For example, washing the dishes will result waste water mixed with dishwashing soap. The residue of waste water from mopping will produce waste water mixed with a solution of deodorizers' floor. So that, the use of water ablutions. The volume of waste water abluion in SDN Dinoyo 1 every day has increased in accordance with the activities of the religious service in the school.

Basically, water waste abluion incudes in *grey water* that can be recycled, where results can be utilized for water reclamation as for landscape water to irrigate crops, fish pond water, scrubbing floors or clean vehicles [1]. Therefore, the water volume of waste water abluion that abundant must be utilized again and recycled in order to be beneficial for survival of living things.

Relating with learning of science in the trial of water cycle material, students as agents of change and pioneer in maintaining the availability of clean water, doing waste water abluion treatment into catfish pool and the aquaponics kangkung plant. Learning media innovation is called IPAL JAILANGKUNG (waste water treatment Installation into Catfish pool water and Kangkung plant).

Based on the explanation above, was seen crucial to examine the used of IPAL JAILANGKUNG in improving learning wudu wastewater treatment.

II. REVIEW OF THE LITERATURE

A. Wastewater Treatment Learning

On the theme of learning basic Competencies there *Bumiku* must be mastered by students that is, KD. 4.2. Carry out the experiment about the water cycle as well as identify free variables and bound variables in the experiment [2]. One of the experiments that the students have to do is experiment of processing waste water is dirty to be clean (filtration). Learning in waste water treatment, water that used is waste water abluion. In fact, water ablutions are still not contaminated with soap, so that waste can still be *direcycle*.

The purpose of wastewater treatment learning is students can know the process of recycled water, cultivate an attitude of care and responsibility in maintaining the availability of water for the sake of sustainable development and create a learning innovation.

B. Waste Water Ablutions

Domestic wastewater is sewage water that comes from the settlement activity (real estate), café (restaurant), offices, Commerce, apartments and dormitory [3]. Waste water or *greywater* is wastewater from all homes or buildings, in addition waste water which comes from toilets. Waste water has the potential to be processed and recycled based on volumes that are continuous. One example of that is in the waste water of SDN Dinoyo 1 is waste water ablutions. Waste water ablutions are commonly thrown away casually. Waste water ablutions can be a good potential recycled to meet the water needs for activities that do not prioritize a high quality (non-consumption).

C. IPAL JAILANGKUNG

IPAL JAILANGKUNG is an innovation learning media waste treatment by changing waste water ablutions become catfish ponds and kangkung plant that planted with aquaponics media. Waste water ablutions will fit into a large drum capacity 150 liters through the plumbing. Through the drum channel water ablutions, shelter water is driven to the Aquarium pump engine through paralon. Paralon made holes to kangkung plant aquaponics media. The roots of Ipomoea aquatic plant fibers used to lower the concentration of contaminant in the liquid waste through a combination of physical processes, chemistry and biology. The roots of Ipomoea aquatic effectively used to manipulate the waste water (*greywater*), but can affect the efficiency [4]. Waste water ablutions that flow from the paralon channeled to 4 large drums containing catfish pool water. The volume of water in the drum of roughly 200 liters filled 50 tail catfish seed aged 1 week. Pool water that contains these catfish streamed to the reservoir by using drum machines for aquarium pumps next media streamed to aquaponics of kangkung plant. At this stage this is Kangkung plants get nutrients from the dirt catfish that is already mixed with water. Next the water from the drum down to paralon contains catfish. This process is directly continuously.

Through IPAL JAILANGKUNG students are directly involved in the process of filtering water and recycled water. Learning with IPAL JAILANGKUNG is expected to cultivate an attitude of care and responsibility to the willingness of the water.

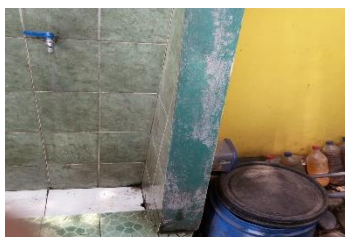


Fig. 1 Drum for saving waste water ablution



Fig. 2 Pump machine of aquarium



Fig. 3 Filtering of waste water through kangkung plant



Fig. 4 Waste water ablution used for catfish pond water

III. RESEARCH METHODS

This research uses research action class. Class action research is a process of controlled investigations in finding and solving the learning that happens in the classroom, the troubleshooting process is done in these forces cycle, with the aim to improve the quality of learning and learning outcomes in particular class [5]. An overview of the class action research uses the cycle developed by Kemmis and McTaggart as the picture below.

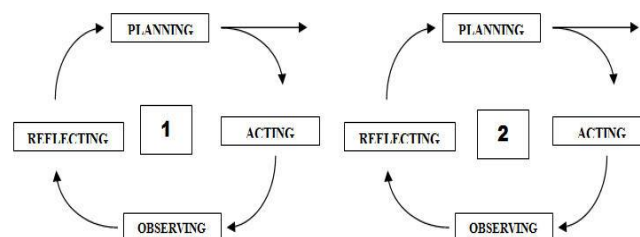


Fig. 5 cycle Models that developed by Kemmis and McTaggart

Method of data collection consists of observation learning activities of students during and after the trial, interviews to explore the response of students learning by using IPAL JAILANGKUNG, anecdotal records to observe the results of student learning by using, and documentation. The subject of research using 30 students of 6th grade which consists of 18 male students and 12 female students with heterogeneous skills. This research was carried out in August until December 2017.

In first cycle, students with his group hold water results of wudu. The results of the catchment of the water pipe paralon streamed to wudu. The water in the pipe filtered paralon with water filters. The water that is already filtered must still is screened again by the fiber roots from kale plant that patch in the shards of bricks. Kangkung plant was formerly a stem sprouts developed through the medium of hydroponic from filtration results of water ablution [6]. At this stage the student explained that the fractional function, bricks and root sprouts can filter the waste water. For plants, the waste water ablution can be used as food sources so that the plant can grow with fertile. Whereas, the function of the bricks is a place for glutinous the roots of kangkung. After through two stages of filtration, the water flowed into the paralon that already in connect to four drums. So the drums that contain the water that was already to use in habitat of catfish seed. Thus, the availability of clean water for kangkung plant and catfish will be constantly awake.

IV. RESULTS AND DISCUSSION

Results and discussion of wastewater treatment with IPAL JAILANGKUNG are:

A. *There is an increase in learning outcomes with waste water ablution treatment by using IPAL JAILANGKUNG media.* Based on the results of research starting from the pre action, cycle I and cycle II there is an increase in the results of a study by using waste water ablution treatment material. Students become more understand how the process of filtering waste water ablution become the water for pond and kangkung plant. The results of the research there were 78% of students scored above KBM (Minimum Learning Completeness). It looks like in the graphs here.

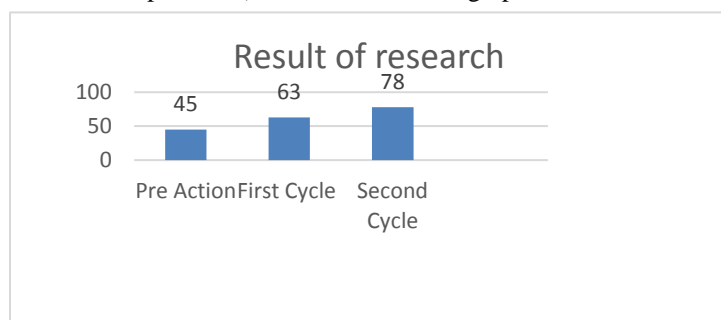


Fig. 6 Graph of the results of research

B. *The results of the learning wastewater treatment with IPAL JAILANGKUNG is learning more interesting and does not bore.*

Based on the results of observation and interviews, learning by using IPAL JAILANGKUNG makes students more challenged. This is because they must accommodate waste water first. In addition, to obtain the best results the quality of pool water should frequently drained catfish. To drain the pool water, the students formed pickets to clean it once a week. Based on the results of student's observation about water ablution treatment for catfish pond, there is a 90% catfish may survive in the pool water. It is like on a graph here

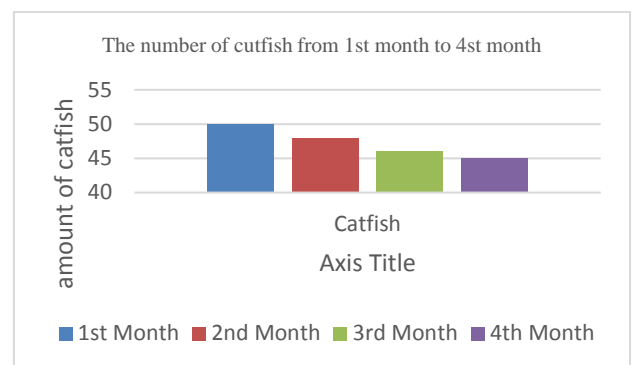


Fig. 7 Graph the total of Catfish from month 1 up to 4

The growth of catfish through the drum media did not develop to the maximum. This is due to many factors, including feeding and media that was disproportionate to the total of catfish. This is shown in the following graph.

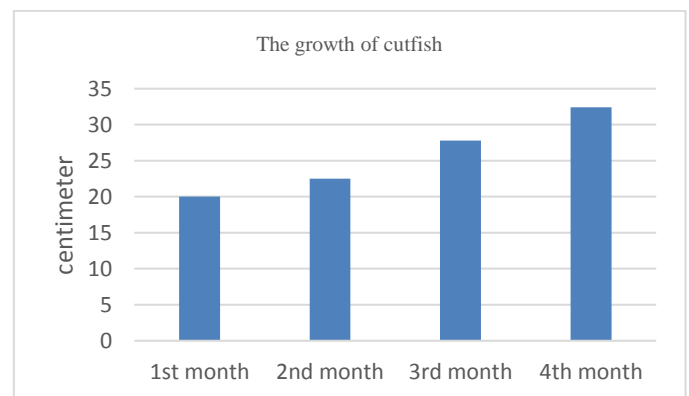


Fig. 8 The growth of cutfish

On kangkung plant every 2 weeks once, students harvesting the results of kangkung. Each month, students had to replace with a new crop of kangkung (sprouts). This is due to kangkung plant which old will have the color like green yellowish and the stem will harden, so do not proper to consumption.

VI. REFERENCES

C. *Growing the ability to innovate*

IPAL JAILANGKUNG media is new media learning in waste water treatment in SDN Dinoyo 1. The latest innovation in this learning process, can improve creative thinking ability of the students. Students will think how IPAL JAILANGKUNG can be used not only on using water only, but the former water hand-washing, washing the dishes or waste water bathroom.

D. *The growing consciousness attitudes matter against the availability of clean water.*

The availability of clean water is apprehensive. More lessen the land of water absorption; the number of water pollution will bring students to be wiser in using water. In addition, the fact that the wudu' water clean water is discarded if useless redundant. By merycycle wudu water into fish pond is one implementation of a learning cycle in the water.

F. *Growing consciousness of liability against clean water sustainability*

Has become the responsibility for preserving the availability of clean water, remember that water is a basic requirement for all living things. This can be seen, on behavior of the students to turn off the tap when do not used. Because their behavior before, happy to turn on the water and squirt it into their friend.

G. *Recreative of educational medium*

Besides being useful for learning, IPAL JAILANGKUNG can also be used as a means of recreative. Especially, the existence of catfish pool. The activity give feed the catfish likewise with kale plant, kale stems extending and leaves that grow should be harvested. The activity of harvesting kangkung plant is fun activities for students. Not only that, the stem of kale that was yellowing should also be replaced immediately. Plant kale by using the way of cutting stems also the implementation of artificial vegetative propagation material.

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V. CONCLUSSION

Based on the results of research and discussion that have been submitted, it can be concluded that an increase in the wudu wastewater treatment learning through IPAL JAILANGKUNG of 78%. Learning through IPAL JAILANGKUNG can improve the attitude of care about the willingness of clean water, and grow the awareness of responsibility to the willingness of clean water.