

Impact of Waste Management Education at Smu Witama Pekanbaru Students



M. Rawa El Amady

Lancang Kuning University, Indonesia

ABSTRACT: This article discussed the impact of waste management education on students of SMU Witama Nasional Plus Pekanbaru. Schools are a great place to increase public knowledge about waste and the impact of waste. The environment of Witama Nasional Plus is known to be clean, free from garbage, and has carried out waste selected in the trash can. This research is qualitative research conducted in May – June 2023. Data was obtained through class meetings, where 30 female students were gathered in one class to be given knowledge about waste management, and discuss waste management at school. Students are given pre-test and post-test questionnaires. After that, monitoring the improvement of waste management in schools was carried out. Data analyzed qualitatively and tabulatively displayed. The results of questioner and monitoring are known to change student attitudes toward treating waste, *first*, there is an increase in student knowledge of management litter; *Secondly*, there is an increase in waste management in terms of personal waste disposal of students based on the type of waste and waste management plans as activities Student Council. Based on these field findings, it can be concluded that student education has a positive impact on changing students' attitudes toward waste. This research contributes to the field of environmental technology.

KEYWORDS: Trash, Students. Education.

INTRODUCTION

Waste is a problem for Indonesia, especially Pekanbaru. Nationally, based on data released by the Ministry of Environment and Forestry (KLHK) in February 2023 (Kompas, February 1, 2023), the amount of landfill reaches 18.3 tons per year. The amount of waste produced by 270,000,000 Indonesians reached 0.56 kg per person and 22.72 percent has not been able to be managed. While the same condition also occurs in Pekanbaru, where daily waste production reaches 1000 tons (GoRiau, 9 2022) with a population of 1,085,000 people (BPS Pekanbaru, 2023), so the average person produces 0.092 kg per day.¹ The Acting Mayor of Pekanbaru budgeted IDR 57.9 billion for waste management in 2023 (Riau.go.id, 06/12/2022)

The problem of large amounts of waste in Indonesia, according to Chaerul, et al (2007) is caused by a lack of waste management and weak legal certainty. This opinion is confirmed by Kardono (2007) that a large amount of waste has not been followed by management, final landfills, institution, and adequate costs. Lasma (2007) reinforces the opinion of Chaerul and Kardono that the complexity of waste management in Indonesia is because Indonesian people still low in knowledge about waste and knowledge about the adverse effects of waste, as well as low welfare factors of Indonesian people. Waste handling efforts must involve various parties, especially the government, community, and schools.

Schools are institutions that produce large amounts of waste. The waste generated by students is sourced from school waste and household waste. The household waste in question is students bringing food or necessities to school from home. Schools with a very large number of students and teachers are organic and inorganic waste producers. Ponorogo Environment and Forestry Service (DHL Ponorogo, 2017) that schools in Ponorogo produce 43.8% of plastic waste in Ponorogo Regency. The amount of garbage in this school cannot be separated from eating and drinking activities (snacks) and learning activities at school. Mineral water drinks and other drinks that use plastic cups, each food package is also generally made of plastic. Meanwhile, the school has not been included in the waste management program.

¹ Divider 270.000.000,- .it is not true because garbage is Known only in urban areas While at rural garbage does not yet have a concept about garbage. The sum Dividers the most Rational be 162 million, which is 60% of 270 million because the sum of inhabitants that stay in urban areas is estimated 60% of the sum inhabitant of Indonesian with such a sum average garbage that is Generated Per 0.94 kg per person.

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The role of schools is very important in waste management because, in the short and long term, it will increase public knowledge about the dangers of waste, waste management, and the management of garbage. The role of the school is realized by making educational efforts to students ranging from Early Childhood Education (PAUD) to Senior High School (SMU), through classrooms in each lesson, waste sorting practices and waste management practices. This education is expected to change students' perceptions of waste. As Khasanah, et al (2020) found that students in schools are less concerned about protecting the environment, littering and thinking that waste is disgusting.

Students in schools need to be introduced to the types of waste, waste selection, waste management, waste banks, and negative impacts on health and the environment. The knowledge of students influences the household, peers, and community in their environment. Students are expected to manage their waste at school and home. In addition, schools need to be involved in waste management so it does not become a burden on the environment and society. This study aims to be able to inform educational efforts carried out at Witama School Nasional Plus in waste management involving students. The purpose of this study is answer to the research question, "How is the impact of education conducted at Witama School Nasional Plus in waste management?"

THEORETICAL STUDIES

Soemirat, (2014) defines waste as waste material produced by a human activity both individually, in households, institutions, and industries. This definition is by the definition based on Law No. 18 of 2008 concerning waste management, namely waste is the rest of daily activities and/or natural processes in solid form. A similar opinion was also conveyed by WHO as quoted by Chandra (2007), namely something that is not used, not used, disliked or one that is made that comes from human activities and does not occur by itself Damanhuri & Padmi (2010) found that waste is classified based on the source of waste, namely household waste, institutional waste, industrial waste, waste from public facilities, waste from the remnants of building construction, waste from the results of wastewater management and agricultural waste.

Referring to Law No. 18 of 2008 concerning waste management, waste management is divided into two groups, *first*, waste reduction (waste minimization), which is limiting the occurrence of waste by reuse and recycling. *Second*, waste handling which consists of selecting, collecting, transporting, processing, and final processing of waste. The implementation of Law No. 18 of 2008 is not easy because the amount of increasing waste is not comparable to the waste management program and there is still little public knowledge about waste and the negative impact of waste (Ejaz & Janjua, 2012). Therefore, massive multi-stakeholder participation is required to be involved in waste management.

Zulkifli (2014) introduced a 4R approach for waste handling, namely 1) Reduce, which is an effort to minimize the goods or materials we use; 2) Reuse, i.e. choose items that can be reused; 3) Recycle, namely items that are no longer useful can be recycled so that they are useful and have added value; and 4) Replace, which is replacing items that can only be used once with more durable items. These four efforts can reduce the volume of waste so that a lot of waste can be handled. In line with that, Permadi (2011) conveyed the importance of recycling waste which consists of activities such as separation, collection, processing, distribution, and manufacture of used products or materials and the main components in modern waste management.

Students need to be introduced, namely *first*, to the threat of garbage hazards. Inorganic waste contains *absorbent polymer* (SAP) which can cause hormonal damage, and entering the body through the food chain can cause infertility (Anwar; 201: 7). Likewise, plastic waste when exposed to heat releases microplastic compounds that are very likely to enter the human body through air, soil, and water (Riski P; 2019). In addition, garbage causes pollution because it contains gas, piles of garbage occur a lack of oxygen, poisoning from gas produced by garbage, cause diseases transmitted by insects, rats, dogs, and cats, and physically disturb environmental aesthetics (Hadiwiyoto; 1983)

Second, carry out independent management efforts such as 1) Reduce, 2) Reuse, 3) Recycle, and 4) Replace independently. Students are expected to independently conduct selection and management.

Third, waste management that can make money. Management can be done by itself by recycling used waste, selling waste to collectors, can also establish waste banks in schools as part of extracurricular activities whose benefits can finance student council activities and empathize with the poor at school.

Fourth, make efforts to clean school movement. This movement was driven by the student council by making it a student council program. Where waste is sorted through the provision of separate garbage cans. This activity is integrated into the third educational model above so that the clean school program has the impact of generating costs for student council activities and social programs to the community.

To ensure that the four programs can be introduced properly, students are given basic knowledge about the types of waste, organic and inorganic waste and sources of waste. Organic waste is waste that comes from the rest of living things that can experience decay can also experience weathering, and waste can be managed properly to remain friendly in the environment.

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Meanwhile, inorganic waste is the result of the disposal of human activities (plastic and glass) which takes a long time to decompose (Siregar F, et al., 2020). Students are also introduced to the concept of 3R (Arisona, 2018) and or 4R (Zulkifli, 2014) The introduction of waste processing to students can be done in the classroom, with special classes, or being part of a subject or outside the classroom. Activities outside the classroom such as involving students directly disputing, collecting, sorting and processing waste, including visiting waste banks. In the waste bank, students are introduced to composting materials, namely organic waste around the campus or school, then invited to sort or separate waste from stones, because it is feared that the presence of or can damage the enumerator men. Students are also invited to participate in chopping the garbage that has been collected to make it smaller in size. Through waste management education, students have an awareness of environmental cleanliness and obey others so as to reduce air pollution so that the air remains normal (Budhiawan et al., 2022)Purnama W (2020) reported the results of his research on waste management in elementary schools in Ruteng through the educational stage, namely providing awareness, then providing knowledge, and carrying out waste management starting from sorting to temporary manufacture or by burning waste. Another pattern is to be part of even some schools set up waste banks. The waste bank was established according to Uma (2014) to get used to disposing of waste in its place and immediately sorting and maximizing the use of used goods, so that awareness arises that used goods provide economic benefits and environmental cleanliness. Waste banks are an alternative to invite residents to care about waste, the concept of which may be developed in other areas. Nuryani (2012) said that through waste the community is organized so that it gets economic benefits. These benefits are obtained by collectors, waste bank managers, and of course the community as customers.

Waste banks can also be used as a model of waste management education to students at school because the beginning of the waste management process is in the waste bank, including the economic benefits of waste. Through the introduction of waste banks to students presenting real efforts to benefit waste for students, recycling produces economically beneficial works. Students can also determine the role positions that will be carried out whether as waste bank managers, collectors or just as customers, all of which positions bring financial benefits.

METHOD

This research was conducted at Witama Nasional Plus, Jalan Srikandi Pekanbaru in May – June 2023. The choice of this school is because it is newly established with a fairly clean environment. This research is a class-based qualitative research, where 30 students of grades X and XI collected in one class were given information about waste using the lecture method and answered on May 25, 2023. Before the lecture started, 30 students were given a test to find out students knowledge about waste and waste management. Then the researcher gave a lecture on waste and waste management followed by a question and answer. After the question and answer, students were given back questionnaires about changes in their knowledge about waste and waste management. After the stairs from May 25, 2023, to June 10, 30 students were monitored, where monitoring was carried out by teachers and researchers interviewed teachers about changes in student attitudes towards waste and waste management. Then continued with discussions with students.

The results of the questioner pre-test and post-test are tabulated using the Excel program and then displayed in the form of a chart, and interpreted descriptively. Data on pre-test and post-test results are then juxtaposed with observation data, results of discussions with students, and interviews with teachers. The entire data is analyzed with a thematic approach by looking at the tendency of emerging themes. The results of the analysis are written descriptively in this article.

RESULTS AND DISCUSSION

a. Overview of Witama School Nasional Plus

Witama Nasional Plus Jalan Srikandi was inaugurated on May 20, 2022 by the Governor of Riau. Previously, there was a Wiatama Nasional Plus School on Jalan Tanjung Datuk Pekanbaru which was established on May 20, 2008. Sekolah Witama Nasional Plus Jalan Srikandi is not a branch of Sekolah Witama Nasional Plus Jalan Tanjung Datuk even though it is in one way. The school is located on Jalan Srikandi, Delima District Tampan Pekanbaru stands alone with its principal

The vision of Witama Nasional Plus is to realize superior international quality education based on belief in God, and positive behavior by combining academic success with non-academic. This vision is realized with the following missions; (a) create an environment of love learning and learning to love; (b) Develop a learning environment that upholds honesty, trust, a sense of responsibility, mutual respect, independence, and behavior by the code of ethics. (c) Motivate students and staff to discover and develop their talents and abilities to the fullest extent possible. (d) Help students and staff to be happy and always grateful to themselves and believe in their own abilities. (e) Educate students, teachers, and staff to have moral and social responsibilities comprising themselves and the surrounding environment. (f) Explore the ability of students, teachers, and staff to use technology

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as a tool to facilitate their work. (g) build close and mutually beneficial relationships with all parties interested in the school of Witama.

Witama School believes that everyone has their own intelligence so they deserve a good education according to their abilities. Everyone who has succeeded in growing, developing, and attaining has according to his God-given abilities is someone who succeeds. For this reason, Witama wants each of his students to succeed by making school a place where students who do not know become aware, who know to understand, who understand to understand, who understand to master, and who master to apply in life. Therefore , Witama Nasional Plus school uses English within the school, with national and international curricula.



Source: Witama School National Plus website, didownlod June 6, 2023, at 09.00 WIB

Photo 1 : Witama Nasional Plus School Building

At Witama School, it is not only about academic achievements that must be achieved by students. However, it is a place to grow and develop and bear fruit for every student regardless of their background. Every child is unique and has their intelligence.



Source: Foto Amady, field study 2023

Photo 2 : Research Team Taking Photos with Witama School National Plus teachers and students

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b. Impact of Knowledge Education About Waste

The environment of Witama Nasional Plus School is clean and maintained clean, starting from both the yard which is generally dipping rooms, and meeting places. Tong waste has been provided based on organic and inorganic waste sources. School hygiene management is carried out by special cleaning staff and has not involved students and Organisasi Siswa Intra Sekolah/ Student Organization in School (OSIS). Students are expected to do sorting at the time of garbage disposal. The garbage in the garbage cans is collected at a temporary landfill (TPS) by cleaners then the city cleaning department transports it to the landfill.

Students who attend Witama Nasional Plus generally come from the upper middle-class economic class, so students focus on studying while at school. While at home students generally waste affairs are managed by their workers as well. These upper-middle-class economic students are not so close to waste and waste management, because they are not in direct contact. Therefore, information about waste and knowledge about waste for them is a new thing.

To find out students' knowledge about waste and waste management, before a lecture on waste and waste management was held a pre-test, then after the lecture was delivered to 30 students a post-test was also carried out with different questions but the material was the same, but while the lecture process took place Students are also asked knowledge about waste to find out students' interests in answering the questions submitted.

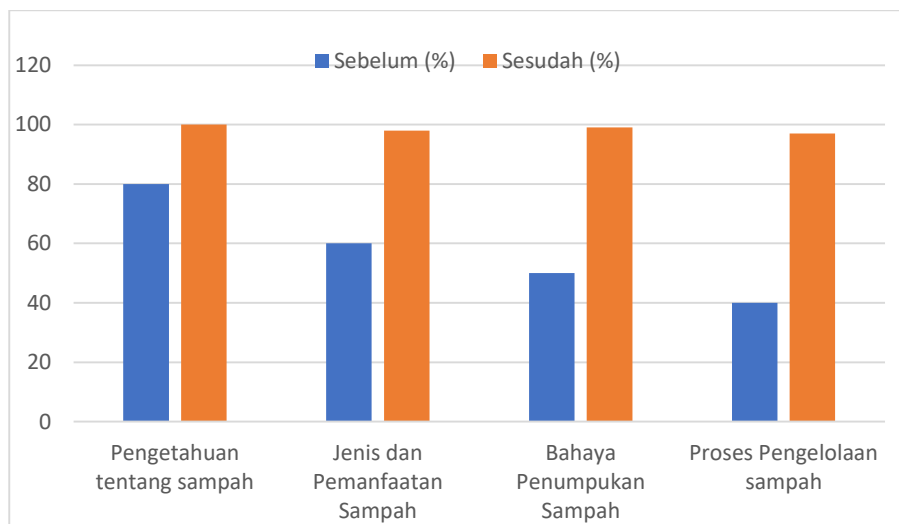


Source: Foto Amady, field study 2023

Photo 3 : Lecture by the Research team

Pre-test and post-test materials with 4 indications of knowledge about waste and waste management, namely 1) knowledge about waste; 2) types of waste use; 3) the danger of garbage accumulation; and 4) the waste management process. The results of the research showed changes in students' knowledge about the four indications as stated in the following chart 1. This data shows that students' knowledge is very significant after receiving education about waste management at SMU Witama Nasional Plus.

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Source: Results of the Questioner Pre and Past Test study, 2023

Chart 1: Improving Student Knowledge of Waste Management

The results of the pre-test and post-test quiz encouraging picture because the level of student absorption is quite high. Before the lecture was given, students' knowledge about waste was very good about garbage not reaching 100 %, after the lecture the knowledge reached 100%, as well as type knowledge and waste utilization, hazards of waste accumulation and waste management processes. All the individuals questioned showed a very significant increase in knowledge. This increase in knowledge indicates the seriousness and interest of students in waste management.

The lecture delivered by the research team to 30 students and attended by the principal and teachers was able to open their horizons to the students. Principal Rosmeita Hutabarat, S.Pd (Interview, June 6, 2023) said that the impact of the knowledge gained by students and teachers was felt was that students had Concern for waste in schools, especially personal waste produced by students. Students have shown empathy by making garbage in garbage cans based on the type of garbage. The school is also in the process of discussing with the student council board to make the waste management program part of the student council program. Even the school is looking for ways to realize the bank until Sekolah Witama Nasional Plus.

CONCLUSION

Based on the research process and research findings, it can be concluded that education of students has a positive impact on school involvement as a waste management institution. Schools are a large waste-producing institution that has teachers and students who are potential human resources to develop knowledge about waste and manage waste.

The level of absorption of students towards the information conveyed by the speaker about waste and waste management is very good reflecting that waste management education to schools is quite effective. Therefore, educational efforts in schools need to be increased so that information about waste, waste hazards, and waste management spreads widely not only to students but also to students but to peers, outgoing and outgoing members who will form after the students are married. Students' knowledge about waste, waste hazards and waste management triggers students to have empathy for the social environment and the natural environment.

The research contributes to environmental studies, especially environmental management technology, especially in terms of building multi-stakeholder awareness in waste management.

ACKNOWLEDGMENTS

The author would like to thank Yayasan Witama and Witanma National Plus School for allowing us to conduct research at Witama Nasional Plus School. I would also like to express my gratitude to the Postgraduate Environmental Science Study Program of Lancang Kuning University for all the facilities provided.

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