

EDUCATION AND PRACTICE OF RECYCLE OF INORGANIC MATERIALS TO INCREASE THE USE VALUE OF WASTED PRODUCTS IN SRENGSENG, WEST JAKARTA

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ABSTRACT

SMK Bina Insan Mandiri Islamic School Curriculum Characteristics of a modern Islamic school and has been established for more than 30 years. This school provides knowledge and skills and fosters a strong foundation for the future of the new generation of Islam, with a correct understanding of religion, upheld spiritual values and noble morals that are the basis of each individual. This PkM activity aims to provide insight into waste management which is a big problem for all of us. The target of this activity is school students to provide education about the importance of awareness of waste management and provide creative ideas in managing inorganic waste into valuable products through the recycling process of inorganic waste. The output of this activity is publication in the Community Service Journal, HKI, mass media publications and LPPM UMB Youtube channel videos. Based on the evaluation through the questionnaire technique, expectations were obtained with a value of 4 And performance of 4.2, which means that the material presented has met expectations and the performance of the activity is also considered very good.

Keywords: Education, Practice, Recycle, Anorganic Waste, Use Value

1. INTRODUCTION

SMK Bina Insan Mandiri is an educational institution that aims to educate the young generation with noble character in the corridor of IMTEK (Faith & Piety) based on IPTEK (Science & Technology). One of the problems faced not only in this school but also in other environments is the problem of inorganic waste that is difficult to decompose with nature, therefore good inorganic waste processing is needed (Rita Uthartianty, 2019). With a large number of students, this PkM activity is very necessary because our team assesses that this Mitra has great potential in producing inorganic waste and is a very appropriate target to educate students about the importance of waste management and its dangers to the environment. This is of course in line with one of the goals of Indonesian education, namely "National education functions to develop abilities and shape the character and civilization of a dignified nation in order to educate the nation's life, aiming to develop the potential of students to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens ". This objective is in line with character building because to adapt to the environment, it requires a character or mentality that cares about the environment, knowledge with the transfer of simple techniques in waste management, creativity in making a product that has added value, independence, and responsibility towards the surrounding environment (Raharjo Anis, I Made Bayu Pramana, 2022).

Continuous use of plastic products will deplete some non-renewable natural resources. In addition, it produces several substances that are harmful to human health. Plastic is one of the materials that can be found in almost every product (Yuliarty & Anggraini, 2020). Waste management is the activity of collecting, transporting, processing, recycling or disposing of waste materials, usually referring to waste materials produced by human activities, and usually managed to reduce their impact on health, the environment, or aesthetics (Yuliarty et al., 2019). Waste management is also carried out to restore natural resources. The 3R concept (Reduce, Reuse, Recycle) is a waste management strategy that aims to reduce the negative impact of waste on the environment (Wijaya et al., 2024). This concept encourages people to be wiser in managing waste by reducing the amount of waste produced, reusing items that are still suitable for use, and recycling waste into new products (Ayu Arwati et al., 2021). The application of 3R is not only beneficial for the environment, but can also provide economic and social benefits for the community.

1. Reduce (Reduce) means reducing the amount of waste produced. The most effective way to reduce waste is to avoid using products that produce excessive waste, such as single-use plastic packaging, products containing hazardous chemicals, or products that are not easily recycled . For example, bringing your own shopping bag, using a refillable drinking bottle, and choosing products packaged with materials that are easily recycled (Adlan et al., 2024).
2. Reuse means reusing items that are still usable for other purposes. This can be done by reusing items that are no longer used, such as using used plastic bottles as storage containers, using used cardboard as storage boxes, or

donating clothes that are still usable. Another example is using used cans as plant pots, or using used plastic bottles as storage containers.

3. Recycle means turning waste into new products that have utility value. The recycling process requires special technology and facilities to separate and process waste into new raw materials. For example, recycling used paper into new paper, recycling used plastic bottles into synthetic fibers, or recycling used aluminum into new raw materials to make other aluminum products.

The information that needs to be provided is not only the understanding, impacts and others, but also how to manage waste that is easy and can be done by individuals (Marliani, 2015). This education should be implemented or carried out in schools, offices, and other public facilities (Layali, 2024). This education is very important and must continue to run, in order to prevent the major impacts that occur if many of us still do not know how to manage waste responsibly. The impact that occurs if waste management is not carried out will have an impact on human survival, namely the increasing number of sources of disease. Waste that is not managed properly will attract many germs and pests such as rats, cockroaches, ants, flies that can carry germs to settlements. In addition, landslides due to piles of garbage originating from too much garbage dumping in open areas. Environmental pollution also often occurs due to poor waste management. Air pollution caused by indiscriminate burning and causing smoke in the air. Water pollution caused by garbage or waste that is directly dumped into water channels without being processed again. And land pollution caused by garbage that is piled up and left without any further action. If the environmental conditions are not good and do not support, daily human activities are also hampered (Suhardi & Yessika, 2024).

If this waste management education can run smoothly, it can provide benefits by changing waste into materials that have economic value or can change waste into materials or goods that are not harmful to the environment. This PKM is focused on recycling inorganic waste, what is meant by the recycling process here is reusing used or unused goods to be multifunctional or become trade commodities (Ilhamuddin et al., 2018). This effort is intended to reduce or overcome environmental pollution due to littering. These abundant resources can also support the creation of creative industries. According to DCMS (Creative Digital Industries National Mapping Project ARC Center of Excellent for Creative Industries and Innovation, 2007) the creative industry is an industry that comes from the use of creativity, skills and individual talents to create welfare and employment through the creation and use of the individual's creative power and creativity (Fatmawati, 2022).

Based on the description of the situation analysis, the PkM team concluded that there are several problems faced by Mitra, namely:

1. Mitra is one of the places that has the potential to produce potential inorganic waste because of the very large number of students.
2. Based on observations, waste management practices in the Mitra environment have not been carried out intensively so that the school really appreciates it if there are external parties who can provide education, as well as provide waste processing skills practices at their school.

The following image is an example of a product that will be recycled into other useful products:



Figure 1. Wasted products that will be recycled

2. METHOD

The implementation method uses a descriptive method to explain the phenomena faced, namely the availability of inorganic waste which is a problem for the environment and the practice of recycling inorganic waste. The stages carried out are as follows:

1. Conduct initial observations directly to the Partner's location

2. Come to the location and ask to sign the Implementation of the Implementation Arrangement Cooperation between the Industrial Engineering Study Program, Faculty of Engineering, Mercu Buana University and SMK Bina Insan Mandiri Regarding Community Service Domestic Cooperation or Letter of Cooperation / Willingness of Partners to cooperate
3. Visit the Partner's location for the implementation of the activity. The activity is carried out in the following stages:
4. Opening of the PkM activity. This PkM is carried out in groups with other lecturer teams with related materials. The opening is marked by the start of the event starting from the greeting from the Partner represented by the Principal of SMK BIM, then the greeting from the representative of the PkM team, followed by the handover of the plaque to the Partner.
5. Next, participants enter the location of the activity which is divided into 5 themes and start the activity in their respective places.
6. Providing presentations to students about the importance of inorganic waste management education to overcome environmental problems and providing insight into the importance of creativity in reducing and reusing inorganic waste into valuable recycled products, namely those that are valuable in terms of their usefulness and economically.
7. Providing direct practical materials to students, by providing inorganic waste production techniques using tools that are relatively easy to obtain in their environment and providing practice in using lever technology in making recycled products.
8. Conducting activity evaluations in the form of filling out activity questionnaires and then the team processes data based on the results of the questionnaires obtained from participants.
9. Creating output targets based on the initial proposals made, namely: creating a paper to be published at the 2025 ICCD International Conference, creating video documentation of activities, publishing to online media with links <https://megapolitanpos.com/tingkatkan-jiwa-wirausaha-dan-peduli-lingkungan-universitas-mercu-buana-gelar-pelatihan-di-smk-bina-insan-mandiri-jakarta-barat> ; <https://www.poskota.net/tingkatkan-jiwa-wirausaha-dan-peduli-lingkungan-universitas-mercu-buana-gelar-pelatihan-di-smk-bina-insan-mandiri-jakarta-barat/> ; <https://pelitaekspres.com/tingkatkan-jiwa-wirausaha-dan-peduli-lingkungan-universitas-mercu-buana-gelar-pelatihan-di-smk-bina-insan-mandiri-jakarta-barat/> submission of IPR and making posters of activity results.
10. Making a written report to LPPM Universitas Mercu Buana.
11. Providing activity reports to Partners and providing activity certificates to participants as a form of appreciation for the participants

3. RESULTS AND DISCUSSION

This activity was carried out on Thursday, June 5, 2025 with 100 vocational high school students as participants, then divided into small groups according to the theme of the Community service program activity consisting of 5 activity themes. For this activity, there were 28 participants, implemented in the classroom. Documentation of the activity can be seen in this report.

Materials and tools:

Materials needed: Used cardboard, used drinking water gallons, pieces of wood, small plastic pipes, used ice cream sticks, wire, used decorative paper (optional). Materials can be seen in Figure 1 below:



Figure 1. Practical Materials and tools for Making Trash Cans

The results of the evaluation by distributing the questionnaire obtained the following conclusions:

Table 3. Results of Activity Questionnaire Evaluation

No	Question to	Expectation	Performance	Gap
1.	Community service program topics are in accordance with the needs of participants	4.0	4.3	+0.3
2.	Community service program topics are topics that are in accordance with the global environment	3.6	4.1	+0.5
3.	Community service program materials utilize appropriate technology	4.0	4.6	+0.6
4.	Community service program activity topics are beneficial for participants	3.8	4.0	+0.2
5.	Community service program activity topics are beneficial for the environment	4.1	4.2	+0.1
6.	Community service program activity topics can be utilized economically	3.8	3.9	+0.1
7.	Community service program activity topics are beneficial for science	4.0	4.6	+0.6
8.	Community service program team delivers material clearly	3.9	4.1	+0.2
9.	Community service program team is communicative with participants	4.2	4.3	+0.1
10.	Community service program team can help participants solve problems well	3.9	4.0	+0.1
11.	Materials for activities are well available	4.3	4.5	+0.2
12.	Practical tools are well available	3.9	4.1	+0.2
13.	Ease of product manufacturing	4.2	4.6	+0.4
14.	Consumption provided to participants	3.9	4.2	+0.3

Based on Table 3, the evaluation of activities can be seen that the gap between expectations and performance all gave positive values, meaning that there was no disappointing performance with an average level of satisfaction of 4.2. Documentation of activities can be seen in Figure 1 below :



Figure 1. Documentation of activities

4. CONCLUSION

Conclusions and suggestions that can be given are:

1. Based on the evaluation results by distributing questionnaires, the level of participant satisfaction was 4.2 which is included in the satisfied category and from the expectations and performance obtained, there is no big gap, so between expectations and facts in the field are in line.
2. This activity has a positive impact on partners so that it can be continued in the future.
3. The suggestion for this activity is to provide more flexible time so that all materials can be delivered optimally

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