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Developing Campus-Community Based on Waste Management: Learning from Universitas Muhammadiyah Malang

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Abstract

Using a campus community-based participation approach makes local choices more revealing and we use this approach to create a reflection on local views relatively but recorded on a field record. The results showed that the affordable aspect of waste removal practices is considered more effective than centralized management and rigid waste sorting. This study focuses on community-based waste management practices based on academic community relations as campus-community at Campus Tiga Universitas Muhammadiyah Malang (UMM) Tlogomas Malang Regency, East Java, Indonesia. In the community-development analysis Ife and Tesoriero (2006) which began from the integrity phase of the process that removing waste in its place is still the responsibility of individuals and a culture of shame among peer-group colleagues. Then in increasing awareness it takes knowledge that removing waste needs to be based on the category of waste, it is useful for the processing of waste that is the same character of the material so that the waste processing process has the right output and conducive to environmental conditions. The phase of the cooperation model is still based on providing wages to the team or waste processing personnel with Integrated Landfill (TPS) Mulyoagung, Dau, Kabupaten Malang. Then the development step is the processing of organic waste or called "sampah dapur" which still requires a waste treatment

plant strategy, waste processing machine tools and the role of human resources as community actors.
Keywords: Campus-Community, Participation, Stakeholders.

Abstrak

Pendekatan partisipasi berbasis komunitas kampus menjadikan praktik terbaik lingkup lokal lebih terungkap. Kami menggunakan pendekatan ini untuk menciptakan suatu refleksi terhadap pandangan lokal serta terekam secara catatan lapangan. Hasil studi lapangan menunjukkan bahwa aspek keterjangkauan (affordable) dalam praktik pemindahan sampah dianggap lebih efektif daripada manajemen terpusat serta pemilahan sampah yang rigid. Studi ini berfokus kepada praktik pengelolaan sampah berbasis komunitas yang berdasarkan relasi civitas akademika sebagai campus-community di Kampus Tiga Universitas Muhammadiyah Malang (UMM) Tlogomas Kabupaten Malang, Jawa Timur, Indonesia. Dalam analisis community-development yaitu berawal dari fase integritas proses bahwa membuang sampah pada tempatnya masih menjadi tanggung-jawab individu dan budaya malu antar kolega sebaya (peer-group). Lalu dalam peningkatan kesadaran diperlukan pengetahuan bahwa membuang sampah perlu berdasarkan kategori sampahnya, hal ini berguna untuk pengolahan sampah yang sama karakter bahan materialnya sehingga proses pengolahan sampah memiliki output tepat guna dan kondusif terhadap keadaan lingkungan. Fase model kerjasama masih berbasis pemberian upah kepada tim atau tenaga pengolah sampah dengan Tempat Pembuangan Sampah (TPS) Terpadu Mulyoagung, Dau, Kabupaten Malang. Kemudian langkah pengembangan yaitu pengolahan sampah organik atau disebut "sampah dapur" yang masih memerlukan strategi tempat pengolahan sampah, alat mesin pengolah sampah serta peran sumberdaya manusia sebagai aktor komunitas.
Keywords: Komunitas-Kampus, Partisipasi, Pemangku Kepentingan.

INTRODUCTION

Environmental issues have become pivotal issues for civil society, including the general involvement of the university in conducting innovation and green campaigns that are acceptable to the general public and the campus community. Environmental sustainability is a guideline for the convention of countries at the Conference on Sustainable Development in Rio Janeiro, Brazil in 2012 (Murdiyarso, 2010). By drafting targets that can be applied universally and measured to stabilize the three dimensions of sustainable development involving environmental, social, and economical aspects. In August 2015, 193 countries agreed upon 17 sustainable development goals with the following subjects (United Nations, 2012). The quality and inclusive education, clean water and sanitation, affordable and clean energy, sustainable cities and communities, terrestrial and marine ecosystems, and partnerships for the goals.

From the sociological perspective, environmental development and its social changes have caused food and class relations phenomena which triggers consumption and creates waste in the urban area and waste of various industries in massive volume (McMichael, P., & Weber, 2020). McMichael & Weber (2020) describes how consumption of animal protein stimulates massive marketing of packaged foods that reflect individual choice and mobility and how packaged foods transform consumption patterns in distribution between social classes. Environmentalists from Princeton University argue that the political-economic structure has been indifferent to sustainable community development practices (Des Jardins, 1997; Mizzoni, 1994). They note that public perceptions of waste shifted between 1880 and 1910 as cities became the locus of new industry, then increased demand for urban land requiring factory areas and employee housing (Weinberg, A., Pellow, D. & Schnaiberg, 2000). Thus, population density grows following people living closer than before, resulting in spatial friction (Weinberg, A., Pellow, D. & Schnaiberg, 2000).

Globalization prompts social credibility among citizens as well as brings impact on the transmission of infectious diseases caused by bacteria or viruses from various types of trade markets so it affects water contamination in urban drainage and cycles of various types of the food supply that lead to waste, moreover waste from urban consumption (Weinberg, A., Pellow, D. & Schnaiberg, 2000). Within the scope of environmental policy in urban Indonesia exists the relationship between the education community, urban space, and sustainable communities, comprising waste management by engaging educational institutions and the academic community. The policy on waste management is written in Law no. 18 of 2008 that the central government and local government shall finance the implementation of educative waste management by involving the community, both NGOs, and educational institutions such as universities or high schools. The community can coordinate with private sector units operating in waste management (Maryanti, 2017). Community initiatives in waste management are deemed more effective in reducing landfills and waste (Dharmawan, 2019).

Community-based waste management or based on the government's official abbreviation referred to as PSBM (Pengelolaan sampah berbasis masyarakat) is one of the government programs in support of the Rio Convention "Sustainable Development Goals" (SDGs) with the regulation of the Minister of Public Works and Housing Number 21 of 2006. This regulation aims to increase the active role of the community and the private sector as a managing partner (Ramadhan et al., 2021). Community-based waste management operations can be carried out in residential or campus areas through community empowerment which later can be replicated (Maryanti, 2017).

One of the cities in Indonesia that has succeeded in implementing a community-based approach and involving community participation in reducing waste from the source is the sub-urban of Malang Regency and its collaboration model with the academic community of the Universitas Muhammadiyah Malang (UMM). Government stakeholders claim that two superior programs that are targeted by the central government related to community-based waste

management are the waste bank program and Mulyo-Agung TPST3R program, Kecamatan Dau, Kabupaten Malang which are committed to the principle of reduce, reuse, and recycle (3R). Meanwhile, the *civitas academia* community in UMM as a campus community applies the concept of a community-based organization (CBO) and Community Based Solid Waste Management (CBSWM).

Framework by Maryanti (2017) in waste management is oriented towards a strong partnership between the community and local government. The local government should create a common framework that can provide opportunities for collaboration among stakeholders. Partnerships between different actors are important to build synergies in the implementation of waste management, especially through community-based programs. The readiness of all actors to share and support mutually will help to achieve the goals.

Community-based programs appoint the responsibility for operation and maintenance to the community according to the agreement between the community and the local government so that the main actor who leads the role in waste management is the community (Maryanti, 2017). However, Maryanti (2017) suggests that community-based does not directly imply that everything is done by the community. The government and other agencies also have roles and responsibilities, such as serving as motivators and facilitators. Facilitator functions to provide assistance and facilitation of limited communities to achieve the objectives of sustainable activities (Puri, Sheil and Wan, 2005).

If the community is unprepared and shows weaknesses to plan or operate, it is government or other institutions that should back them up. Back-up facilitation may include financial, technical assistance, and institutional support. However, it should be noted that the community does not rely on support from the government and other agencies because the main goal of community-based programs is to create an independent community that is able to overcome problems in their environment (Maryanti, 2017).

The conception Maryanti (2017) is converted through an educational space, which is campus-community in the form of dissemination that searches for describing the learning process of waste disposal and processing as well as communal confirmation through social norms with internalization (Abercrombie, N., Hill, S., & Turner, 2006). The study of the participation of UMM campus academic community is qualitative research by identifying; how the campus-community is involved in waste management in the UMM Campus Tiga environment? Why is campus-community involved in environmental resilience? The analysis unit of this study is the *civitas academia* UMM (student-lecturer) of five faculties and waste management staff as the main informants in the in-depth interview. The purpose of this qualitative study is to investigate and understand the character of the *civitas academia* UMM community involvement in waste management which requires a connection with waste management staff as well as steps to develop waste management at Campus Tiga UMM.

RESEARCH METHOD

This field research is based on fieldwork notes that contain participant-observation principles. The data search was carried out in a qualitative fashion by using in-depth interviews along with observations and then following the procedures for collecting data on community participation (Creswell, 2012).

Research Method	Result of Socialization in *Campus-Community* Social mapping analysis is used to explore the relationship of waste management practices among stakeholders in the form of community involvement based on the relationship of the *civitas academia* UMM as a campus community.
Data Collection Technique	Fieldnotes Participation Exploring the perceptions of all parties mapped in the problem context using the active participation method, namely the researcher is familiarized with the campus community. Through in-depth interviews and small talks (26 May-26 August 2021)
Secondary Study	Literature Review Aims to get a general picture of the subject to be studied. Literature review employs: Campus-community participation Documents from the Environment Agency, NGOs, and other stakeholders. Media studies.
Research Subject Mapping Perspective of Stakeholder Participation Concept Campus-Community Academic Consists of Five Faculties	Campus community within the Faculty of Economics Campus community within the Faculty of Agriculture Campus community within the Faculty of Social and Political Sciences (FISIP) Campus community within the Faculty of Engineering

	Campus community within the Faculty of Psychology The main informant from the Center for Renewable Energy (EBT) of UMM Campus The main informant from the Waste Management Center of UMM Campus.

The participatory concept is not designed as a solid participatory approach to conducting environmental studies (D. et al., 2001). Instead, this method is a preliminary study to trace a method to increase the simplicity of identifying priorities and communal problems for the environmental picture. The participatory method comes from emancipation which is the ideal foundation of environmental ethics (Ife, 2009).

The closest "outsider" position is the researcher himself, who sets the goals and methods (Dillon, 2020). But this research, however, relies on the participation of community members as research assistants and field guides and depends on the group's decision-making knowledge of the landscape to assist researchers in determining sample locations. The feedback received is so important and has a massive impact on all the final methods in this study. Participation is relative; may include local involvement in setting goals, selecting methods, applying, analyzing, and interpreting (Sheil et al., 2006).

We are not implying that a "participatory" approach fits the general definition of the term, as it involves the participation of local communities. Our approach makes local choices more revealing and we use this approach to create a relatively broad yet simple description of local views. This method for environmental experts such as Sheil et al., (2006) can help facilitate various discussions that produce attentive opinions from the participation of the UMM academic community about the dialogue about what becomes an environmental problem and why. Participatory dialogue embedded in participant opinion surveys will contribute to any form of cooperation involving outsiders in efforts to supply local needs. Participants' feedback clearly shows that the benefits were unexpected, such as stating the theme of waste management and water management. Nonetheless, in the course of the campus facing pandemics, it was considered that they had not received adequate attention and carried out participatory learning on how to clearly express the views of the UMM academic community to others.

Our participatory research can be viewed as a first step involving consultation with key informants in an iterative process, in which the different views and priorities of the campus community can guide emphasis on the next steps, and therefore have relevance in developing a "participatory" approach. Our approach makes local choices more revealing and we use this approach to create a reflection of local views in a relatively simple way. Basically, a survey is not

conducted solely based on a hypothesis. However, in a community-based, the general idea will support team mentoring in a general survey.

Idea 1: Community-based local knowledge provides a valuable opportunity to understand the ecological aspects of the landscape, and increases the efficiency and survey value.

Idea 2: Local values are inseparable from the local ecology chain and can be a model for managing landscapes.

Idea 3: Landscape history is frequently well known and accessible through local documentation and informants. The historical information helps to understand past landscape changes as well as present-day vegetation patterns.

Idea 4: Some specific and limited habitats have significant meaning to: 1) different groups or sections of local communities, and 2) limited flora and fauna and types of plants or forests (World Bank, 2013).

Idea 5: Types of community-based reactions can be adequately explained if environmental and historical aspects are taken into account rather than as independent ones. In this way, we can better predict waste management and understand which formations are vulnerable or require special regulations for their maintenance (Ramadhan et al., 2021).

The sampling technique used is cluster random sampling, because the researchers divided the UMM academic community based on the character of faculty home base, encompassing the Faculty of Engineering, Faculty of Economics, Faculty of Social and Political Sciences, Faculty of Agriculture, and Faculty of Psychology. The sample respondents involved 150 respondents at minimum (margin of error ± 5% at 95% confidence level), which took 30 respondents from each faculty. Further, data collection during the pandemic or online learning was completed through online interviews and sample respondents filled online questionnaires. A quality control survey through an online questionnaire included: the interviewer is at minimum a student and has received training. Interviews were controlled systematically performing spot check as many as 10 percent of all respondents based on an iterative strategy (Sheil et al., 2006).

From the number of *civitas academia* UMM community (student-lecturer) as a campus-community employing ratio-sized data up to more than 100 times, it shows that the orientation of the sample distribution formed is close to the assumption of a normal distribution when the number of samples reaches 30. The larger the number of samples, the more normal the distribution will be (Sheil et al., 2006).

1. Two in-depth interviews at a minimum:

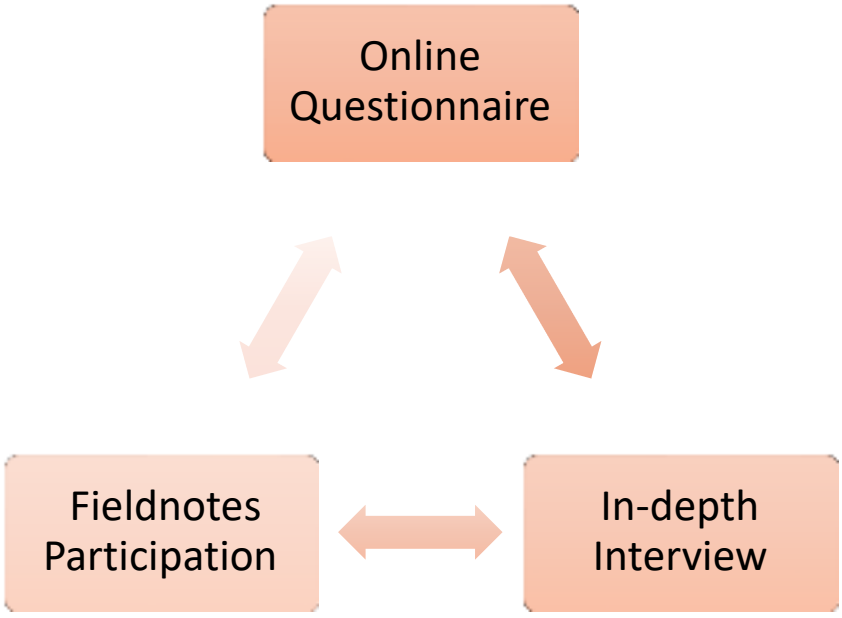
One interview with the head of campus working unit management (semi-formal technique). One in-depth interview with the campus community (informal model with creative methods such as Participatory Research inviting students or lecturers as UMM academics to carry out a social map by drawing on paper or ground; and inviting discussions to understand changes in the campus environment that occur in the academic community environment.

2. In-depth interview: Waste management staff.
3. Small Talks/Field notes Participation: Observing participation by investigating obscure issues on the surface/informal talks and confirmation principles.

RESULTS AND DISCUSSION

The research site is Universitas Muhammadiyah Malang Campus Tiga, which is a suburban campus located 8.7 km from Malang City. This campus is registered in the regional administration of Dau Subdistrict on the Tlogomas highway no. 246. According to the archives of the Directorate General of Higher Education in 1966 under the Decree Number 68/B-Swt/p/1966 Campus Tiga UMM comprises 10 faculties covering 60 study programs, consisting of Diploma III, Bachelor, Postgraduate, Doctoral, and Professional Programs (Archive, 1976).

With various study programs, UMM builds a community-based relationship based on the academic community composing students, scholar groups, laboratory research group, campus employees and lecturers as well as experts. The measurements of the research team found that the ratio of campus open space to the total campus area was 0.97, while the ratio of open space to campus population was calculated 34.22; campus area covered with forest vegetation of 0.60 and



plant vegetation of 0.19. Furthermore, the campus area for water absorption was 0.07 according to campus budget support for the environment of 0.05.

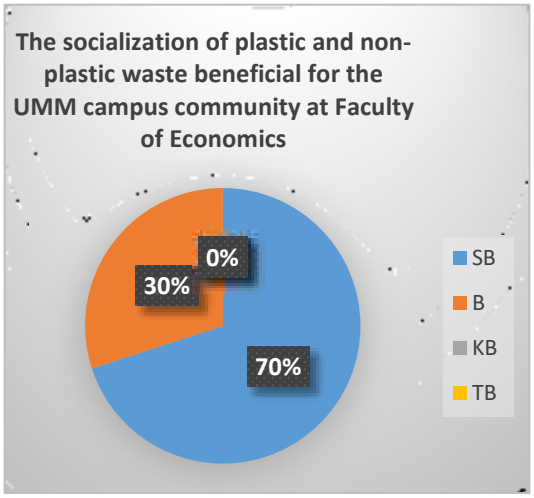
The researcher conducted an in-depth interview with Yeppy and Pardi, the staff of the UMM mechanical engineering laboratory, and the garbage disposal staff at the student dormitory (*rusunawa*) who are responsible for controlling the waste processing on Campus Tiga. Based on field notes participation and in-depth interviews, it shows that the waste management working unit employed various options based on the material attributes. *First*, "segregated", waste is separated and segregated based on plastic versus non-plastic category or plastic versus organic category. Temporary Waste Dump Site (TPS) officers sort out the types of organic and non-organic waste. Then organic waste is divided into two, leaf waste and kitchen leftovers. Meanwhile, non-organic waste is separated into several types; plastic bottles, plastic cups, plastic bags, paper, and cardboard. Since the student dormitory is used as the self-isolation place for COVID-19 patients. The trash can always conduct disinfectant spray and waste segregation of COVID-19 patients (Ward, 2020). *Second*, 'sold' the type of waste sold is a non-organic waste. The reason is that the campus management has not been able to process this non-organic waste and no designated personnel could process non-organic waste. Eventually, this non-organic waste is sold to PT. Aneka Karya. *Third*, "composted" is the type of waste that is used as compost –leaf waste which is initially fermented so that decomposition occurs and then enters the filtering stage and is then given molasses to be used as a fertilizer product and supplied to the Faculty of Agriculture. *Fourth*, "combusted" the option of combusting waste is for trash in the form of styrofoam and electronic goods as well as used decorations during campus events.

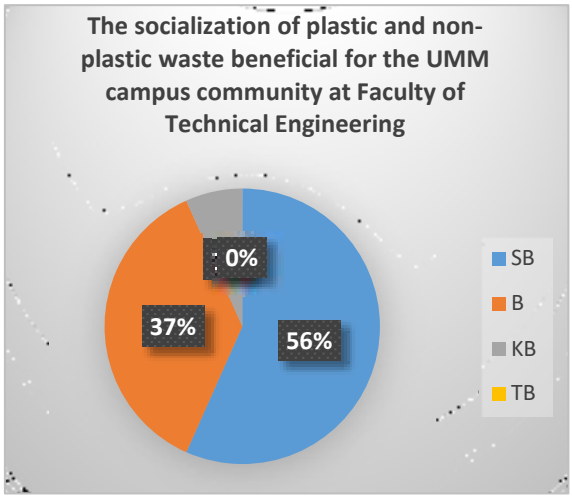
The waste disposal system in each working unit followed these execution process: each organic waste management staff or called customer service (CS) collects organic and non-organic waste which is then transported to the TPS behind the campus and then sorted by the TPS officers. Then, after segregation, it is separated from Wet waste or kitchen waste and is transported by the Supit Urang Final Disposal Site (TPA) officers who cooperate on a profit-sharing basis with the civitas academia UMM community allocating transportation costs of IDR 500,000. From the Waste Management Institutional Unit at Campus Tiga, UMM has control management that waste is collected by CS in each unit. Waste is divided into four types; organic, non-organic, wet waste for COVID-19 patients, and dry waste for COVID-19 patients in the isolation center of the UMM student dormitory. The four wastes are separated and then processed to the Campus TPS which is located behind the student dormitory.

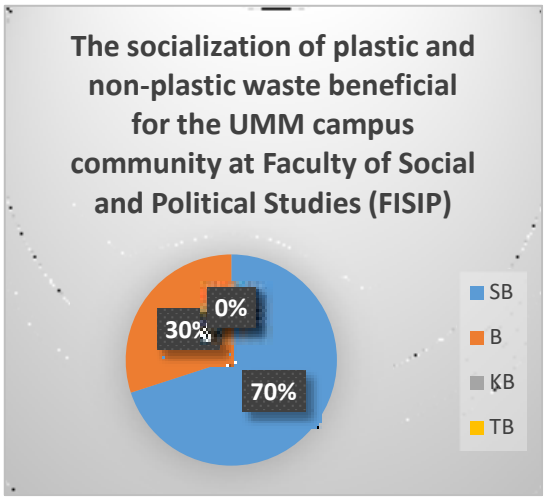
The research team has theoretical consideration that organic waste materials are materials that require special attention in terms of processing or recycling mechanisms so that a waste segregation policy is required in trash cans that need attention for the campus community of each faculty. This is related to the composition of waste influenced by economic conditions and macro consumption patterns of urban communities (Maryanti, 2017). Therefore, we conducted a survey by taking samples from five faculties. The following is a pie chart of the results of the campus-

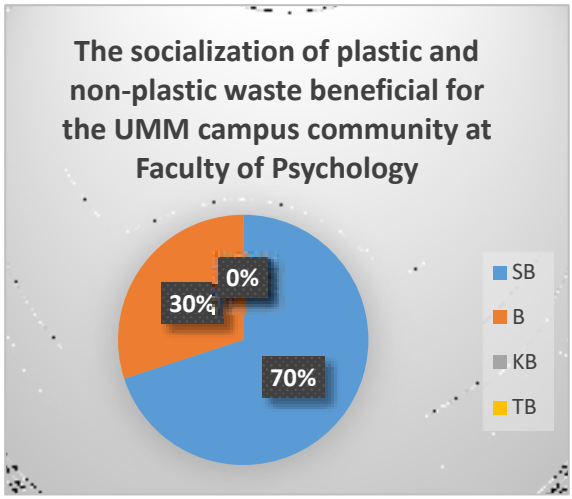
community poll from each faculty with the multi-choose acronyms “very useful” (VU), “useful” (U), “less useful” (LU), and “not useful” (NU).

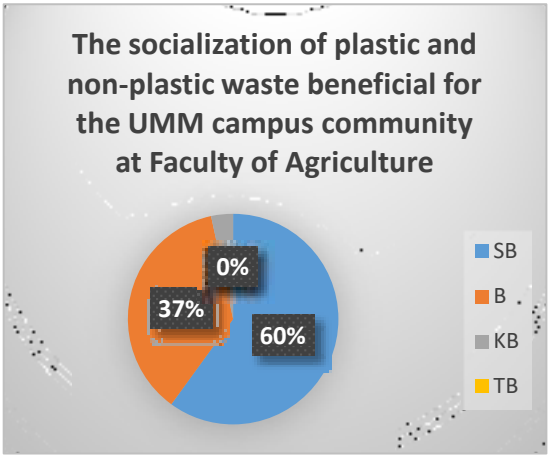
Picture Chart. Sampling data from five faculties the results of the campus-community polling











The poll shows that the overall participation of campus-community responded to the question "Is the socialization of waste disposal based on separating plastic and non-plastic waste beneficial for the *civitas academia* UMM community?" The results were 65% very useful, 33% useful, 0% less useful, and null useful. Therefore, this participatory study shows the results of the socialization of the waste management system in the category of plastic and non-plastic waste for the *civitas academia* UMM as a campus community.

Figure 1. One of the sites where the trash cans are categorized: organic, paper, and plastic the Dormitory in Campus Tiga UMM.

Source: Document Fieldnotes Participation in Dome UMM (26 May-26 August 2021)

Then the results of the dissemination can be analyzed through community development because it connects with the relationship of building waste management practices among stakeholders in the form of community involvement based on the correlation of the civitas academia UMM by adopting the community-development analysis approach from Ife & Tesoriero (2006) with community-based through the concept of participation. Ife & Tesoriero (2006) state that there are five community-based phases with social mapping as follows:

Table 1. Community-Development Analysis.

Participatory Concept	Socialization Result in *Campus-Community*
Process and Result Phase	Waste segregation, starting from the landfill and then sorting the waste at the campus TPS are control processes over the cleanliness of the campus with the involvement of campus-community norms and waste processing staff and their working units.
Process Integrity Phase	The reason proposed by the campus community is that if ones do not throw trash away in its place, the campus

	community will feel ashamed of their colleagues and classmates.
Raising Awareness Phase	Campus-community considers categorized trash cans to be useful as well as socialization of waste management, but knowledge of specific and ecological waste management to campus-communities has not been accommodated in a forum or active movement.
Cooperation Model Phase	Campus-community has made several collaborations with the wage system for the waste management team, the waste recycling processing PT. Aneka Karya, and Mulyoagung Integrated TPS as a business entity owned by Dau Subdistrict (*Kecamatan*), Malang Regency.
Development Step Phase	Processing kitchen waste (*sampah dapur*) and organic still requires a waste management strategy, upgrading human resource capacity, and machine tools for waste processing.

CONCLUSION

Researchers found that campus-community is a space for socializing waste management related to waste segregation control so that it can apply the 3R – reduce, reuse, recycle. Hence, campus cleanliness and environmentally friendly principles can be achieved regardless of all campus-community limitations. With the practice of campus-community, this relationship can bridge the roles of other stakeholders, namely between waste management human resources and government units, while the campus-community can educate the waste management system in which the internalization of environmental ethical values exists based on the socialization of integrated practices of waste segregation and literacy support. Thus, the stakeholder relationship can produce affordability in the practice of removing waste.

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