Community Education Model Design In Management Household Waste In Padang City

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Abstract. This study aims to design a community education model in waste management in the city of Padang. This type of research is qualitative research using data collection techniques, namely literature study, observation and interviews. The results showed that the paradigm of housewives regarding waste management that relies on downstream must be replaced with a new paradigm, namely waste management from upstream to downstream which covers the entire waste cycle. The obstacle in waste management is the perception of the community that waste management is the responsibility of the local government, not the responsibility of each individual. Furthermore, the sanctions given to dumping garbage in any place have not provided a deterrent effect. Therefore, based on the results of the field and literature studies carried out, obtained a community education model design based on the recycle waste management model by synergizing the government, community and company / private sector and emphasizing adult education. That is, the design of the resulting model encourages people's knowledge and self-confidence, so that it can also encourage positive change, both physically and mentally in a real, comprehensive, and sustainable manner.

Keywords: Society, Educational Model, Waste Management

1. Introduction
The acquisition of the Adipura trophy in 2017 for the City of Padang is inversely proportional to the fact that many hidden places that are far from the city center are still piles of rubbish. The results of research by [1] state that: (1) The industrial waste generation of Padang City is 5.057 kg / person / day (0.164 kg / m² / day) in weight units or 6.569 liters / person / day (0.441 liter / m² / day) in volume units; (2) The industrial waste generation of Padang City is greater than other cities in West Sumatra; (3) The composition of industrial waste in Padang City is dominated by organic waste 79.31% consisting of 9.90% food waste, 20.06% paper, 8.69% textiles, 0.54% wood, 0.54% metal, and others 18.93%. The amount of waste generated shows that the current waste management is not optimal, and is limited to conventional management.

[2] states that only 4 sub-districts out of 11 sub-districts that have just been served well by DKP or DKP are only able to provide services of 62.98% of the entire community. Furthermore, from the 540 tonnes of waste per day generated in the city of Padang, only 44%
of the waste per day can be managed at the TPA [3]. The city of Padang only has 63 fleets to transport garbage which is not proportional to the amount of garbage [4]. In addition, [5] in her research stated that the people in Koto Tangah District, Padang City have low knowledge of the dangers of waste and think waste is a material that has no economic value and is the responsibility of the janitor.

Impactif the waste is not managed properly according to [6] as follows: (1) Source of disease, (2) air pollution, (3) unpleasant odors and dangerous to health, and (4) silting rivers which trigger flooding. The city of Padang is regularly flooded when there is heavy rain.

Solutions that have been done by the local government is strengthening the discipline of upstream waste through the formation of a team of cleaning volunteers, setting the time for disposing of garbage at 17,000 WIB, strengthening solid waste infrastructure (use of sweeping cars), and regulations for disposing of garbage (implementing a Hand Catching Operation pattern) in the field against waste throwers) [7]. However, this program has not been able to make the community more concerned about carrying out independent waste management. Therefore, an educational model is offered with the advantages of producing increased knowledge [8] and improving outcome expectations, self efficacy, self reward, self instruction, self evaluation, self reinforcement, maximizing social support, and independent application [9]. This study aims to develop an educational model that can increase the active role of the community in managing waste into products of economic value. These objectives are in accordance with the strategic issues contained in the 2016-2020 UNP Research Strategic Plan in the field of Education and Education, the sub-topic of Non-Formal Education Development (Attitude and Behavior Development), and it is very important to do this, because there has been no research in Indonesia in managing waste using a model. education.

2. Method
To achieve the goal of designing a community education model in waste management in the city of Padang, the type of research chosen is qualitative. This type of research is conducted to obtain reasonable and natural and holistic data. Qualitative research seeks to see, observe, appreciate, and describe the problem to be studied as a complex phenomenon that must be studied holistically or thoroughly [10]. The data that the researchers obtained from the results of observations, interviews and documentation were presented clearly and supported by relevant theories. In data collection, the researcher is the main instrument, the presentation of the results of the analysis begins with specific findings, which are then drawn to general conclusions.

2.1. Research Locations
This research was conducted in Bungoasang Village, Koto Tangah District, Padang City, Padang City Environmental Service, Bungoasang Village Head Office, Padang Mayor Office.

2.2. Research Informants
The informants in this study are all people who are considered to have the competence and information about the research data that researchers need to provide income, thoughts, research and reinforcement about environmental behavior. Key informants in this study were the Padang City Government, the Bungoasang Village Head, the Padang City Environmental Service, the Bungo Padang Village Community consisting of the head of RT 01 RW 05 (Mr. Afrizal), the Manager of the Waste Bank, Lidah In-Law (Mrs. Rika), and about 15 other community people. The limitation on the number of informants was based on the saturation of the data.

2.3. Data Collection Techniques and Tools
The technique of collecting data is by conducting observations, interviews, through interview guides, and data collection tools in the form of available records [11]. In line with Faisal, [12]
states that data collection is basically all forms of data acceptance that are carried out by measuring and calculating it. Likewise, [13] states that data collection in qualitative research can be done through observation, interviews, questionnaires and documentation studies. In this study, data were collected by means of: observation, interviews, and in-depth interviews.

2.4. Data analysis technique
Researchers conducted data analysis starting when data collection took place and after completing data collection. At the time of the interview with the informant the researcher had conducted an analysis of the answers to the information being interviewed, after the answers to the information were analyzed, if the researcher did not feel the information was credible. In accordance with the opinion of Miles and [14] states that “activities in qualitative analysis are carried out interactively and take place continuously and thoroughly, so that the data is saturated, activities in data analysis are data reduction, data display (data display), and Conclusion (conclusion drawing / verification).”

The following is a flow diagram and a fishbone of the research that will be carried out:

**Figure 1. Research Flowchart**

**Figure 2. Fishbone Research**

3. Results and Discussion

3.1 Needs Analysis
Garbage is a consequence of human activity and every human being must produce waste or garbage. Perms that occur due to waste will increase along with the increase in population. The population that is increasing has resulted in the amount of waste increasing. The amount of waste generation is very closely related to the population, because the larger the population, the greater the waste produced [15].
Therefore, it is necessary to carry out effective waste management so that the waste has economic value.

Waste management that has been carried out to date is seeing waste as a resource that has no benefit and relies on a downstream approach. It is time for waste management that relies on the downstream to be abandoned and replaced with a new paradigm, namely waste management from upstream to downstream. Waste management with a new paradigm views waste as a resource that has benefits, while its management rests on a source approach (upstream-downstream approach). The new waste management paradigm covers the entire life-cycle of waste from upstream (before it is produced) to downstream (in the phase where the product has been used and becomes waste) which is then sent to the TPA.

This is in accordance with the results of the needs analysis carried out through interviews and discussions with the people of Bungoasang Village, Koto Tangah District, Padang City. Residents in Kelurahan Bungo Posting can sort the waste according to its category and the sorted waste is placed in front of their house and then picked up by the garbage officer once every two days or once in three days at the most. This garbage officer does not come from the Padang city office, but from the agreement of all residents of RT 01 to make him a garbage officer, all residents pay a monthly garbage collection fee of Rp. 20,000 - Rp. 30,000 to the garbage officer, and residents who do not pay money. These transports carry their garbage directly to the TPS near the Tabing Railway and they are not allowed to throw garbage into the river around the Bungoasang village.

Types of waste generated by households are organic waste such as vegetable waste, kitchen waste and inorganic waste that can be processed and recycled such as paper waste, cans, etc. The amount of waste generated in 3 days for organic waste is 4 kg. However, this organic waste has not been processed into compost because it is constrained that the community does not have knowledge of how to process it so that all this organic waste is transported by trash rickshaws. While paper, cans, oil plastics, and electronic waste are sorted and placed in their respective bins in the house, the sorted waste will be channeled to the waste bank. This waste sorting has been going on since early 2018 and the community has started to think and act by sorting waste which has economic value. Some of the things that become obstacles in waste management are the inadequate use of waste, the perception in the community that waste management is the responsibility of the local government, the lack of community participation in waste management, limited landfill locations (Final Processing Sites) and limited land for technical processing.

From the perspective of implementing regulations, it turns out that the implementation of regional regulations is in fact 21/2021 concerning the regulation of waste disposal has been partially realized, and there are still many community attitudes in disposing of waste that are not in accordance with the regulations. In addition, the implementation of penalties for violators of regional regulations has not been optimal. Apart from the rules for waste management, it has not yet been touched solid waste management at the household level, such as sorting waste.

The low level of public knowledge about waste management and utilization so that it has economic value, results in a low public view of the value of up to, and conditions also affect the quality and aesthetics of the environment. Based on the results of the needs analysis, the design of an educational model in waste management that is carried out will be more optimal if the government, society and companies work together so that waste management can be carried out optimally. Through a household waste management approach that involves the role of the government, companies and the community, it is hoped that an innovative solution will be obtained to familiarize the community in managing waste, which previously caused waste to turn into waste into a blessing by involving related systems. The educational model design is compiled based on the principles: “what students learn, not what the teacher teaches” [16]. This means that the final result that is assessed is what the adult obtained from a meeting (in this case a community discussion), and not what the teacher did in that meeting. According to [17], adult education is not enough just to provide additional knowledge or skills, but must be equipped with self-confidence. Increased
knowledge equipped with sufficient self-confidence can encourage positive change, both physically and mentally in a real, comprehensive and sustainable manner.

3.2 Interim Model Design
In this model design, changes that occur as a result of learning occur in each participant and learning citizens through interaction with other individuals to learn together with confidence. Changes in behavior in terms of cooperation in various activities are the result of changes in behavior after the learning process. The following is an educational model design compiled in this study based on the results of existing research and theoretical studies:

![Diagram](image)

**Figure 3.** Diagram of the Educational Model Design for Household Waste Management Models in the City of Padang

4. Conclusions and Suggestions
Waste management that has been carried out to date is based on the view that waste is a resource that has no benefit and relies on a downstream approach. Thus an educational model in waste management is needed. What is an obstacle in waste management in this study is the use of waste is not optimal, there is an assumption in the community that waste management is the responsibility of the local government, lack of community participation in waste management, limited landfill locations (final processing sites) and land for technical processing. The local regulation has not been optimized 21/2021 concerning fines for littering, there is no Regarding solid waste management at the household level, there are groups of people who do not know about the use of waste with the model of reusing waste into economic value products, the support of community leaders and the government has not yet been maximized to make the environmental cleanliness program a success. Therefore, it is necessary to design a model that synergizes government, society and companies through the approach of familiarizing the community in managing waste, with an approach adult education.

Reference
[1]. Alfath and Hadiguna. 2015. Proposed Waste Management Logistics Policy in Padang City: Lessons Learn Locating and Routing Garbage Transportation. Journal of Science and Technology UIN Suska Riau. Vol. 12 (2): 146-154.
[2]. Ministry of Education. 2001. Big Indonesian Dictionary Language Center 3rd Edition. Balai Pustaka: Jakarta.
[3]. Dwiyanto, Bambang. 2012. Model of Increasing Community Participation and Strengthening Synergy in Urban Waste Management. Journal of Development Economics. Vol. 12 (2): 239-256.
[4]. Ernawati. 2018. Waste Management Model Based on Community Education in Koto Tangah Subdistrict, Padang City, Indonesia. Sumatra Journal of Disaster, Geography and Geography Education. Vol. 2 (1): 118-123.
[5]. Ikhsandri, 2014. Study of Waste Management Infrastructure in the Jakabaring Developing
Area, 15 Ulu Urban Village, Palembang City. Journal of Civil and Environmental Engineering. Vol 2.

[6]. Knowles, Malcola, 1973. The Adult Learner: Neglected Species. American Society For Training and Development, Madison, Wis.

[7]. Kushartanti, Sumaryanti, and Sriwahyuniati. 2015. Development of the Education Model – Supervision–Integrated Physical Activity Evaluation for Metabolic Syndrome Patients in the Hospital Wirosaban Yogyakarta. Higher Education Leading Research Reports. state University Yogyakarta: Yogyakarta

[8]. Lunandi, AG 1980. Adult Education. Gramedia.

[9]. Miles, MB, & Huberman, AM (1994), Qualitative data analysis: Asourcebook of new methods(2nd ed.). Thousand Oasks CA: Sage.

[10]. Nabila, S., Ramelan, AH., Himawanto, DW. 2016. The Inner Community Empowerment Model Waste Management in Slum Settlement Areas in Mojosongo Village. Seminar National Chemistry and Chemical Education VIII "Increasing the Professionalism of Educators and Researchers in Chemical Science in the Era of the Asean Economic Community (MEA)". UNS: Surakarta.

[11]. Nasution, 2002, Research Methods, Scientific Research, Earth Literacy, Jakarta.

[12]. Setyawati and Herlambang, 2015. E-booklet-based Nutrition Education Model to Improve Nutritional Knowledge of Mother Toddlers. UPGRIS Informatics Journal. Vol. 1: 86-94.

[13]. Surjandari I., Hidayatno A., Supriatna A. 2009. A dynamic model for waste management Reducing the Stacking Load. Journal of Industrial Engineering. Vol. 11 (2): 134-147.

[14]. Suryanto, Ari, et al. 2005. Study of Economic Potential with the Application of the 3Rs in Management Household Waste in Depok City. Depok.

[15]. Suwerda, Bambang. 2012.Garbage Bank (Theory and Application Study). Rihama Library: Yogyakarta.

[16]. Suyanto. 2017. Building Sodaqoh Garbage Awareness as a Model of Empowerment Public. Journal of Community Empowerment: Media for Thought and Da’wah Development. Vol. 1 (2): 245-256

[17]. Tallei, Trina E., Iskandar, J., Runtuwene, S., & Filho, Walter L. 2013. Local Community-based Initiatives of Waste Management Activities on Bunaken Island in North Sulawesi, Indonesia. Research Journal of Environmental and Earth Sciences. Vol. 5 (12): 737-743