Waste collecting point as the school of the waste management system

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Abstract. Waste collecting point is a communal waste management system with systematic sorting of waste at the source recommended by the Banda Aceh City Government to be applied to schools, namely the State Middle School 1 in Banda Aceh City. This study aims to determine the implementation of waste collecting points in an effort to overcome the problem of waste in schools. The method used in this study is the study of interviews, observations, research results, technical guidelines, journals, books, and government documents by analyzing data in a qualitative descriptive manner. The waste collecting point system is expected to be a system that will continue to be tested and developed through expert validation and limited testing. This system is useful for providing recommendations to schools in efforts to manage waste. Based on the results of the study that the implementation of waste collecting points as a waste management system has been running effectively but there are still several problems, namely the allocation of funds for the provision of facilities and infrastructure, garbage transport schedules, transportation officer errors, and lack of socialization by the city government.

1. Introduction
The environment is a unity of space with all objects and living things including the behavior of humans and other creatures that live in it. That way everything that has happened and will happen to the environment is not solely by changes in the environment, but there is a role for living things, especially humans, which greatly affect the environment. Regarding human behavior towards environmental conditions that tend to be ignorant, improving human behavior is a top priority in overcoming environmental crises. This condition encourages the need to provide an understanding of the younger generation about the importance of environmental care in terms of waste management.

Waste problems have become a very serious problem, especially in big cities. Continuous waste production increases along with population growth, changes in consumption patterns, and people's lifestyles that have increased the amount of waste generation both in type and diversity of waste characteristics. Shared awareness and commitment are needed towards a change in attitudes, behaviors, and ethics that are culturally cultured [1][2]. Then there must be a change in the paradigm of waste management by (1) reduction of waste volume from the source by selecting or processing with simple technology such as composting with household scale or institution, (2) community participation in waste management coordinated by Kelompok Swadaya
Mayarakat (KSM) and then to prevent the accumulation of waste, a concept is needed sustainable and appropriate waste management system.

The city of Banda Aceh also experienced the same problem with the accumulation of garbage. Dinas Lingkungan Hidup Kebersihan dan Keindahan Kota (DLHK3) together with the civil engineering lecturer at the Syiah Kuala University diligently socialized the waste management system, but the community is still classified as often littering. The programs for reducing inorganic waste are also not running well, resulting in a high accumulation of waste, this is also due to the government's difficulty in transporting waste due to the lack of a fleet with a high amount of waste and a landfill site that is starting to narrow.

So the city government and DLHK3 jointly drafted and issued Peraturan Walikota Banda Aceh No.7 of 2017 [3] concerning guidelines for implementing community-based waste management using the waste collecting point system or abbreviated as WCP, on the basis of cooperation between 2 cities that were once hit by the earthquake and tsunami natural disaster, an agreement was made to accelerate reconstruction both morally and in development. One program that was carried out from the study was how to manage waste. Waste management efforts are activities to change the characteristics, composition, and amount of waste so that it can be further processed, utilized, or returned to the environmental media safely where WCP is a waste management system carried out at the source of waste, then waste has been sorted by type and the characteristics have been determined in 5 types: wet, paper, bottles, plastic and residue. This activity has been carried out in the village environment in the city of Banda Aceh by providing effective results in terms of reducing the amount of waste to landfill.

Seeing that this WCP system works well in the community (village), it does not rule out the possibility that WCP can also be applied to the school environment, which is notably educational and is a large number of garbage contributors. The implementation of caring character education to the environment in schools is developed through learning experiences that lead to the formation of character in students in the learning process, not enough students get an understanding in the classroom but it will be better accompanied by actions outside the classroom and daily activities, examples of which it is very important to instill in the character of students, namely how to properly manage waste [4].

The application of WCP in the school environment is still relatively new so that there are obstacles including the curriculum that is not optimal, both in concept and practice and other factors that hinder the success of this system, including limited references, inadequate support facilities, and school communities who need to adapt thus causing the process to run so optimally. Therefore, based on the above problems the purpose of this research is to see and know how to implement waste collecting points in the waste management system as an effort to overcome the problem of waste in schools, especially in SMPN 1 Banda Aceh City.

2. Methods
This study uses a case study research design as well as descriptive qualitative research and the process of collecting data by interview, direct observation, the study of documentation, journals, books, and government documents. The population in this study are all elements involved in formulating waste collecting point strategies, methods, and systems as well as the location of the research conducted at SMP Negeri 1 Banda Aceh City and Dinas Lingkungan Hidup, Kebersihan dan Keindahan Kota of Banda Aceh City. The data analysis technique used is data reduction, data presentation, drawing conclusions and verification and data validity techniques using Triangulation of Sources and techniques.
3. Results And Discussion

Garbage cannot be eliminated in human life, moreover, every human activity can be said to always produce waste, so for now, the thing that can be done is not to eliminate waste but to manage how waste can be useful, reduced or minimizing the use of goods and activities that can produce waste.

Waste management in the future needs to be more focused on changing people's perspectives and behavior and prioritizing community involvement in management (bottom-up) because it is evident that the (top-down) approach does not work effectively [5]. It is proven that the application of waste collecting points as a waste management system in schools will provide encouragement to students and teachers and all school members to strive to contribute to waste management.

3.1 School Waste Issues

This research was conducted at Banda Aceh 1 Public Middle School which was directly appointed by Dinas Lingkungan Hidup Kebersihan dan Keindahan Kota Banda Aceh (DLHK3) as a pilot project or driver of the waste collecting point system. As based on the results of an interview with Mr. Muhammad Yunus S.Pd as the deputy head of the curriculum field and as the first person to make an MoU with DLHK3 regarding the implementation of the WCP system, it was revealed that the garbage problem in Banda Aceh SMPN 1 was a very serious problem, because trash or waste produced by SMPN 1 Banda Aceh can be said to be very large per day and must be transported every day. This is influenced by the number of students at SMPN 1 Banda Aceh, which reached 865 students, aided by teachers and school staff, reaching 900 school people with various kinds of activities that might produce waste, every day students buy food and beverages either wet or dry food and every day also the rest of the snacks collected with a large enough capacity. So that every day the garbage collector must be immediately taken or transported to the polling station.

So from the school made several efforts to deal with the problem by dividing the type of waste into wet and dry areas in every corner of the building and everyday school officials took the collected garbage to be placed in school garbage bins so that garbage workers from the city government transported it for a period of 2 days. and taken to the landfill without sorting or sorting first.

This activity does not reduce the amount of waste available. The problem of narrowing the landfill is caused by garbage disposal with various types of waste without being sorted first, so that the effort is addressed “Circular from Walikota Banda Aceh Nomor 658/0327 Regarding Appeal and Limitation of Waste generation in Government / Private Schools / Dayahs in the Banda Aceh City Area” is not working [7].

In addressing the issue of "Indonesia Emergency Waste" and reducing the volume of waste to landfill and implementing regional policies and strategies for managing household waste and household garbage according to Peraturan Walikota (Perwal) Kota Banda Aceh Nomor 46 Tahun 2018 to go to Banda Aceh "Waste-free 2025" [6], it is urged to carry out the selection and limitation of waste generation.

This is what drives schools as educational institutions and agents of change and is determined to become one of the institutions that have a role to play in promoting waste reduction, Banda Aceh SMPN 1 appoints itself to work with DLHK3, which previously was an SMPN 1 Banda Aceh. referrals and schools that get adiwiyata but with these achievements the school does not yet have a system or policy on how waste management is obliged to foster an environmentally caring character.

3.2. School Waste Management
Problems that arise make the school wiser to make a decision, by collaborating with SMPN 1 Banda Aceh with DLHK3 on the basis of wanting to properly manage waste, DLHK3 will facilitate, recommend and send the necessary needs. The agreement can summarize the aims and objectives of implementing the WCP system as follows:

1) Realizing a clean, beautiful and comfortable school environment towards adiwiyata school.
2) Improve waste from its source by sorting waste at least paper waste, bottles / cans, plastic packaging and residues.
3) Increasing student and teacher participation in waste management.
4) Optimization of cleaning and waste retribution services.

In the WCP management structure to ensure the WCP system can run as intended, the management of activities, collection, and transfer of school waste is assigned to the Cleaning Leader, janitor and Eco Club chairman and WCP members, namely students.

1) Cleaning leader is a representative of the teacher in charge of carrying out hygiene in schools and ensuring the waste management system in the school runs well. Cleaning leader directs the janitor and Eco Club chairman in the activities of sorting, collecting, removing garbage and trash patrol.
2) The cleaning staff is the officer assigned by the school principal to clean the school every day, transport waste from the WCP depot to the polling station and recycling warehouse, and transport organic waste to the organic waste management site and process organic waste into compost.
3) The Chairperson of the Eco Club is students who have members from several students who voluntarily supervise and monitor WCP facilities, orderly trash patrols and periodic socialization to WCP members.
4) WCP members are picket duty students of the class who carry out their collection of garbage according to their type to the WCP depot with full awareness.

Determination of the overall structure and systematics through a statement by the principal of Banda Aceh SMPN 1. To support the performance of the WCP structure, the following must be done:

1) The WCP system waste management sosialisai is carried out by DLHK3 accompanied by the institution that houses this activity, the CoMu Project.
2) The commitment of the WCP system implementation was marked by the signing of the MoU by DLHK3 and the 1st SMPN 1 Banda Aceh.
3) Determining the location of waste sorting in each class, facilitation of the WCP depot, warehouse of Waste Bank and TPS.
4) Formation of the WCP team structure.
5) The preparation of the WCP system management budget was proposed by DLHK3 and included school budgeting in accordance with the ability of the local school.
6) Socialization and guidance.
7) Transportation services.
8) monitoring and evaluation.

Whereas the obligations that must be carried out by DLHK3 together with SMPN 1 Banda Aceh. DLHK3 and related institutions in the WCP system are obliged to:

1) Disseminating WCP to school equipment, cleaning staff and student representatives in each class.
2) Accompanying the determination of the WCP depot point and location of sorting waste in the class.
3) Directing and fostering a cleaning leader, Eco Club team and ensuring the WCP system continues.
4) Monitor and supervise WCP activities.
5) Regulates transportation of transporting residues and recycling.

As well as for the parties in SMPN 1 Banda Aceh, it is obligatory to:
1) Providing facilities for sorting waste in the class and in the WCP depot.
2) Providing facilities for managing organic waste.
3) Providing funds for Cleaning Leader incentives and salary for cleaning and reward officers for Eco Club members.
4) Issued a decision letter from the WCP waste management team at the school.
5) Hold regular mutual cooperation at least 2 months, the schedule of which is prepared by the Cleaning Leader.
6) Make school regulations about cleanliness and waste management in schools.
7) Attend annual evaluation meetings conducted by DLHK3 or the Minamal city government once a year.
8) Commit highly and give full support to the implementation of the WCP system and must pay for garbage levies according to the rates specified in the applicable garbage retrubusi Qanun.

In terms of socialization and detailed coaching, it becomes:
1) DLHK3 provides information to school officials, janitors and students about the importance of waste management at the source and the WCP system mechanism.
2) The time and schedule of the socialization is carried out according to school needs and based on evaluation by DLHK3 and related institutions.
3) Banda Aceh SMPN 1 through the Eco Club accompanied by a monitoring team from DLHK3 conducted a socialization in the form of visiting classes to convey the technical and benefits of sorting waste.
4) Coaching is carried out by DLHK3 in the form of cleaning leader training at least once a year.
5) The guidance material provided is in the form of work procedures and cleaning leader mechanism, WCP system, procedures for socialization, sorting of waste in the WCP depot, transportation and together discussing issues at WCP.

Related to the garbage that has been collected and then transported, the garbage transportation schedule can be concluded to be:
1) The transport of residual waste is carried out by DLHK3 assisted by the TPS3R institution with the frequency of transportation in accordance with the routine garbage transport zone schedule.
2) Transportation of organic waste is carried out by janitors with frequency every day to the organic waste management site.
3) The transportation of bottled waste, paper and packaging waste is carried out by waste bank partners from DLHK3 with the frequency in accordance with the agreement of both parties.
4) The system and schedule for transporting garbage at any time can be adjusted to the development of school waste management.
5) Monitoring and evaluation is carried out by DLHK3 to see the development of the WCP system in schools and to determine whether it is running as it should or not and as an evaluation material for this system.
6) Monitoring and evaluation is carried out in the form of regularly reviewing the field once a month, especially the condition of waste sorting facilities in the class, WCP depot, garbage bank warehouse, and processing of school waste.

3.3. Implementation of Waste Collecting Point School
After the establishment of Banda Aceh 1 Public Middle School as a pilot project of DLHK3 and CoMu Project, the school fully carried out this activity seriously. For the school itself, the thing that was felt after implementing this WCP system was that schools became more organized from garbage and the school benefited in the form of economic value from the sale of garbage (recycled), because such waste in plastic and paper was placed in 1 garbage bin and then can be sold, indirectly students also begin to realize to sort out waste in accordance with its type which is divided into 4 characteristics, namely paper waste, bottles, plastic, and residue.

The garbage container placement is divided into 4 types found in each class. In technical activities carried out by school residents fully follow the rules recommended by DLHK3, so the school seeks to adapt to students and teachers how to manage waste with the WCP system. Only if there is a discrepancy with the school environment is revising or repairing carried out.

Regarding funding and infrastructure facilities so far it is still managed by the school itself, from the DLHK3 side, it can only fulfill 4 medium containers for collection from each type of waste. The students can be said to adapt quickly to this WCP system. It can be seen from students getting used to throwing garbage according to its type in each of their classes, although there is still negligence that occurs, the teacher as the Cleaning Leader and Eco Club will give a mild warning to students who violate.

For the teacher itself, it is unrelenting to provide education to students, and if they find teachers who violate it, they will also be given a reprimand, so that it is expected to form characters who care about the environment in the realm of waste management.

This WCP system runs not the absence of obstacles or obstacles, in fact, the obstacle that is very difficult to repair is located in each of the school residents about their habits and concerns, there are still students and teachers who still dispose of litter or dispose of garbage not according to their type. But the school will always improve the bad character. Then the officers were also often found by the school to mix the garbage that had been sorted out by the school officials, several times it had been reminded of the transport officers to try not to mix when collecting garbage.

So for the WCP system to work properly, it is expected that all the concerned stakeholders will work together well and optimally. Overall this activity has shown a positive direction, because the WCP concept is an effort to reduce the accumulation or supply of waste to the landfill, it is also seen from the production of waste collected from schools that are reduced by about 30% of the waste which will usually be disposed to landfill because other types of waste residue will be processed by the TPS3R and the organic waste bank warehouse.

4. Conclusion
The basis of good and correct waste management lies in human care and habits, it is not possible to get it in a quick and easy way. The problem of garbage, especially in the city of Banda Aceh, is very serious because it sees the landfill has begun to narrow and cannot hold large amounts of garbage continuously, if there is no change in waste management if it is left unchecked it is possible that the landfill will no longer be collecting garbage. The
WCP system itself is a communal waste management system with limited to 20-30 households or 1 school for a WCP depot facility. The amount of waste produced every day can be reduced if the sorting is done first, sorting is based on the type of waste, namely paper, bottles, plastic, and residue. Paper, bottles and plastic waste can be recycled, processed, composted to obtain economic value from the waste. That way the transportation of waste brought to the landfill is only residual waste and automatically the volume of waste will be reduced.

Now at Banda Aceh 1 Public Middle School, the implementation of the WCP system has gone well. Even though there are some obstacles, namely in terms of funding infrastructure, the carrying capacity of garbage that is still relatively old so that it builds up a high amount of garbage, officials who still mix waste that has been sorted during the transportation process, and socialization by the government are still not working properly.

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