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The Effect of Waste Management in Spatial Organization in Palakali Creative Art Space

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ABSTRACT

Garbage is produced by various types of human activities and is one of the environmental problems that have an impact not only on the environment but also on human health, such as environmental pollution, death of animals or plants, and the emergence of diseases caused by vectors. One of the efforts to reduce is by sorting waste based on its type so that it is easier to determine the next processing method and implementing 3R (reuse, reduce, and recycle) to prevent and reduce waste generation. Palakali Creative Art Space already has trash cans based on type (organic, non-organic and Hazardous Toxic/B3), but the practice of sorting waste according to these criteria has not been carried out.

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1. Introduction

Palakali Creative Art Space is a building that stands in the city of Depok, West Java. Functioned as an educational tool and creative forum for the community to be able to exchange information, explore, and collaborate. Art Space is a place that is favored by the community, especially creative people and art connoisseurs, from small children to adults. Palakali Creative Art Space will be an attraction for local and non-local communities. Palakali Creative Art Space established around a growing settlement. A slum environment is a factor that is often faced by developing countries. The importance of the environmentally friendly concept itself is that it provides many benefits by approaching natural conditions and the climate around the area for operations that are more environmentally friendly.

In an effort to improve the quality of life, the ability of the environment to support life at a better level must be maintained. Palakali Creative Art Space was built using the application of the concept of environmentally friendly buildings, as an example of building architecture for environmentally friendly developments in the city of Depok. This development concept is a response to the issue of environmental degradation, especially regarding waste in the city of Depok.

In an effort to reduce environmental problems, Palakali Creative Art Space applies environmentally friendly concepts to buildings, just as interior design will be oriented towards an environmentally friendly concept approach. With an environmentally friendly approach, the planned interior design creates healthy, environmentally friendly, civilized, and cultured spaces through the selection of building materials (forming and complementing space), determining the lighting system, and determining the ventilation system. The factors of material selection, lighting systems and ventilation systems have the most physical effect on humans as users of space and the surrounding environment (Paramita et al., 2018). With an environmentally friendly concept, it is hoped that it can allocate materials that are easily recycled for both construction and decorative elements so that the amount of waste disposal is much less. The purpose of this research was to examine the application of environmentally friendly architecture to the Palakali Creative Art Space.

2-7 minggu The problem of waste in big and small cities is a serious concern for the local government considering the development of the volume of waste from day to day is increasing along with the development of the population and people's behavior towards waste and environmental problems. The Depok area has 11 sub-districts, namely Beji, Bojongsari, Cilodong, Cimanggis, Cinere, Cipayung, Limo, Pancoran Mas, Sawangan, Sukmajaya and Tapos sub-districts (Setiyono, 2022). According to information from the Head of the Cleanliness Division of the Depok City Environment and Sanitation Service (DLHK), Iyay Gumelar at the Depok City DLHK Office, during the pandemic, residents were required to work at home WFH (Work from Home) (Zahra and Damanhuri, 2011). Before the Covid-19 pandemic, the amount of waste in Depok City was 600 tons per day, but during the pandemic it was 700 tons per day. All waste from the 11 30districts is accommodated in the Cipayung Depok TPA, with the characteristics of the waste shown in Table 1.

Table 1. Characteristics of Waste Accommodated by TPA Cipayung

No	Waste Type Composition	Prosentase (%)	Period of Decomposition (Weathering)
1	Organic ingredients	72,97	2-7 weeks
2	Paper	7,07	3-6 months
3	Glass	1,25	1 million years
4	Plastic	3,57	>100 years
5	Metal	1,37	>100 years
6	Wood	3,65	1-13 years
7	Cloth	2,40	6 months – 1 years
8	Rubber	1,24	-
9	Etc	6,38	-
	Amount	100	

(source: https://depokgratissampah.files.wordpress.com/)(Abidin et al., 2021)

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Palakali Creative Art Space as a creative area with various activities in it (art education activities, creative product production and community collaboration), it is certain to produce waste in every activity. Not infrequently, visitors often bring garbage to the creative area which continues to increase over time, the many plants in the area also produce dry leaf waste, as well as waste from former projects that have not been managed properly, of course this if left unchecked can become a serious problem and it needs to be resolved wisely, so that Palakali Creative Art Space tries to be as ideal as possible in managing waste so that it has a good impact on the surrounding environment, and the city of Depok in general. Therefore, with this study the authors aim that Palakali Creative Art Space can provide facilities and infrastructure to carry out environmentally friendly activities, especially organic and inorganic waste and provide infrastructure to display works on processing organic & inorganic waste.

2. Research Methods

The method used in this study is a qualitative method. The qualitative method is a description of the analysis of the Palakali Creative Art Space building. Data collection techniques from this method were obtained from literature studies, case studies and literature studies which were carried out based on research needs. These data can be obtained from interviews, field notes, photographs, video tapes, personal documentation, notes, or memos and other documentation.

3. Results and Discussion

Palakali Creative Art Space is a type of single house building that has commercial value and community and organizational empowerment. The Palakali Creative Art Space building design has an environmentally friendly concept by presenting lots of green plants and the application of recycled materials which aim to unite nature with buildings and reduce the amount of waste in the city. The following is a complete description of Palakali Creative Art Space:

Figure 1. Existing Location Data for Palakali Creative Art Space
(Source: Personal Documentation, 2023)

Figure 2. Illustration of the Palakali Creative Art Space Building
(Source: Personal Documentation, 2023)

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i. Project Name : Palakali Creative Art Space
ii. Owner : Art Design and Education Practitioners
iii. Manager : Palakali Creative Team, creative activity assistants and staff
iv. User : Visitors to exhibitions, participants in art workshops and training.
v. Facility : Galleries, showrooms, discussion rooms, creative activity spaces, spaces creative products, performance areas, prayer rooms, toilets, warehouses, parking areas and green open areas.
vi. Main Land Area : 1200 m2
vii. Additional Land Area : 300 m2
viii. Building area : 1000 m2
ix. Operational hour : 08.00 - 17.00 WIB

3.1 Palakali Creative Art Space Facilities

Palakali Creative Art Space has several building facilities, including:

3.1.1 Educational Facilities

Figure 3. Educational Activities at Palakali Creative Art Space
(Source: Personal Documentation, 2023)

Education is a planned effort to influence other people, be it individuals, groups or communities so that they do what is expected of the educational actors (Sekarningrum et al., 2020). Education is one of the three pillars of Palakali Creative Art Space which aims to provide knowledge for visitors so that it can be applied in everyday life, especially regarding waste that can never be separated from human life. The education here is like a briefing on how to manage household waste into a work that has historical value, can be appreciated and is useful so that it has a sale value.

The activities carried out included processing the waste from the participants who brought it to their respective homes in the form of clean waste, which was then sorted and selected according to the type and character of the material.

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3.1.2 Appreciation & Collaboration Facility

Figure 4. Appreciation activities for artists and visitors at Palakali Creative Art Space
(Source: Personal Documentation, 2023)

Appreciation is a process of positive evaluation or appreciation aimed at a person or group.

Figure 5. Collaborative Activities at Palakali Creative Art Space
(Source: Personal Documentation, 2023)

Collaboration is a form of cooperation related to other parties to achieve a common vision (Nugraha and Rahman, 2017). Palakali Creative Art Space often collaborates with several communities such as Jaya Danakirti Garbage Bank, IPRO, Danone and Unilever, Ministry of Environment and Forestry in creating a society that is aware of cleanliness and cares more about the environment.

Showroom as an area of appreciation and collaboration

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Figure 6. Exhibition of recycled works at Palakali Creative Art Space
(Source: Personal Documentation, 2023)

An exhibition space or art space is a non-profit art gallery as a place for creative workers to convey their works of art to the public while maintaining these works as well as a means of educating the public about the development of art.(Pane et al., 2021)

Exhibition is an activity carried out by conveying the artist's ideas to the public through the medium of his artwork (Mononimbar et al., 2019). As in the picture above, which is a documentation of a series of exhibition activities at Palakali Creative Art Space that seeks to maximize waste into an exhibition that has historical value from the artist/maker.

Organizing types of waste: Plastic waste, Styrofoam waste, packaging waste, bottle waste, paper waste.

i. Green Open Space Facility as a space for appreciation and collaboration

Green open space facilities are facilities that are deliberately used for open use, as a place to grow plants, both those that grow naturally or those that are intentionally planted (Wuisang et al., 2023; Xue et al., 2017). According to Rijal(2008), Optimization of green open space is carried out by planting vegetation of different types to create a layered structure. Green open space (Nastiti et al., 2019) is created as a form of effort to maintain harmony, harmony and balance with the surrounding green non-open space. Open space supports the connection between humans and nature to live side by side (Husnan & Prayogi, 2021). Living between humans and nature that are interconnected, namely in the form of humans respecting nature so as to build an interdependent relationship between humans and nature and between humans.

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Figure 7. Palakali Creative Art Space Green Open Area
(Source: Personal Documentation, 2023)

ii. Furniture and Decorative Elements Production Room

Figure 8. Palakali Creative Workshop
(Source: Personal Documentation, 2023)

Workshops The production area located in the Palakali Creative area is a place that functions to produce furniture and interior elements made from wood, multiplex, HPL, Vinyl, iron, which then produces production waste that is used to make other items, such as furniture, artwork, and other interior accessories.

Some of the recycled waste in the workshop area is reprocessed into objects that have aesthetic designs, furniture and some are placed in the building facade area

The use of recycled glass waste as an office building facade above the workshop building. In addition, wood waste is also used to add aesthetics to the building columns.

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Figure 9. Educational area in a green open space
(Source: Personal Documentation, 2023)

Garbage waste is reprocessed and used as furniture from workshop waste in the Palakali Creative Art Space area.

3.2 Waste Management Management

According to the Ministry of Public Works and Public Housing, the problem of waste is not in waste management but in management as a whole. Therefore it is necessary to have a clear waste organization that starts from the smallest layers such as single houses and residential houses to facilitate the waste recycling process. So that the recycling process can be appropriate and optimal. The following are several categories of types of waste found in the Palakali Creative area, namely:

An example of a TPS (Temporary Disposal Site) design is:

I. TPS is divided into 3 main parts, namely: containers, sorting areas and storage areas. Containers are only used for the collection of residues that will be disposed of in the TPA. One TPS is designed to only need one container
II. Processing capacity is calculated based on the required land for sorting and stockpiling every 1 m3 of waste. TPS area table and container volume used, namely:
III. Garbage transfer in SPA
Garbage enters the SPA area scale with the following criteria
following :
Collection vehicles in the form of:
- Cart
- Garbage motorbike
- Garbage rickshaw
- Pick up car

*Incoming waste transfer system is equipped with a ramp

Tabel 2. TPS area and container volume table data

TPS land area (m^2)	Land dimension (m x m)	Volume of Containers Used (m^3)
50	5 x 10	8
100	10 x 10	8
200	10 x 20	14
300	10 x 30	14
400	15 x 27	14
500	15 x 34	14
1000	15 x 67	14

(Source: Regulation of the Minister of Public Works of the Republic of Indonesia no. 03 of 2013, PUPR)

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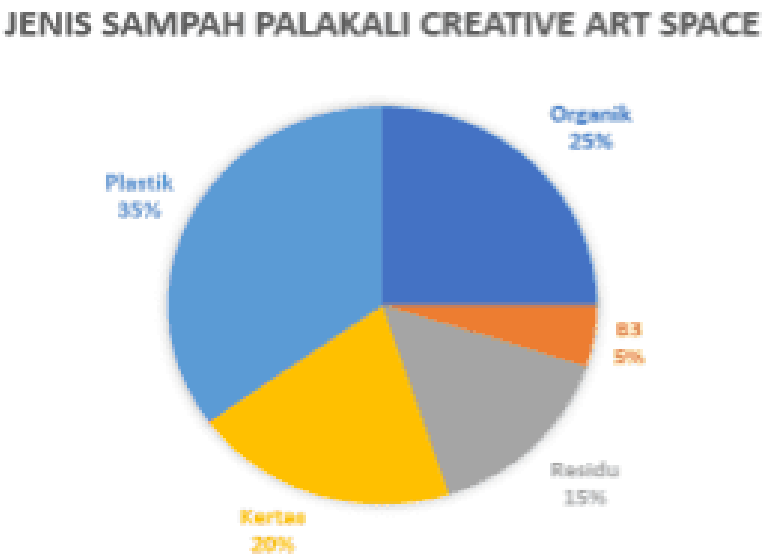

Figure 10. Circle diagram of waste presentation by type
(Source: Personal Documentation, 2023)

Table 3. Table of waste categories in Palakali Creative Art Space

No	Room Name	Space Function	Trash Type
1	Parking	Vehicle parking area	Organic waste, Paper, Plastic, Residue
2	Gallery	Display of work, area of educational activities	Organic waste, Paper, Plastic, Residue
3	Green Open Area	Circulation and play area	Organic waste, Paper, Plastic, Residue
4	Ceramic Hall	Wooden display, Educational activity area	Organic waste, Paper, Plastic, Residue
5	Production Workshop	Craft making workshop	Organic waste, Paper, Plastic, Residue
6	Creative Hall	Recycle bin storage room, education area and dining area	Organic waste, Paper, Plastic, Residue
7	Multipurpose Room & Prayer Room	Prayer area, Educational area	Organic waste, Paper, Plastic, Residue
8	Relaxing Corner Room	Smoking area, Relax area	Organic waste, Paper, Plastic, Residue
9	Toilet	Facilities for defecation and urination	Residue waste, Plastic waste
10	Open Stage	Demonstration area and talk show	Organic waste, Paper, Plastic, Residue
11	Fish Pond & Animal Cages	Maintenance of fish and other animals	Organic waste, Paper, Plastic, Residue
12	Gallery Hall	Display works & circulation	Organic waste, Paper, Plastic, Residue

(Source: Personal Documentation, 2023)

The process carried out in waste management can be seen in the following figure. The processing of waste at Palakali Creative Art Space is carried out according to the 3R principle, namely

Waste processing flow based on category and type

I. Organic waste / food waste

Is a type of waste that comes from living things and tends to decompose easily. Example: Leftover garden leaves, animal waste and human food scraps. The following is the flow of organic waste processing

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Figure 11. Flow of organic waste processing at Palakali Creative Art Space
(Source : Personal Documentation, 2023)

Garbage originating from animal manure, fallen leaves in the palakali area and food waste is then sorted and categorized into dry and wet class classifications. Which is then recycled into a form of organic fertilizer in a certain way which will be used as fertilizer for plants in the Palakali area.

Garbage or waste produced by this building is in the form of plant waste, and remnants of human consumption. The waste management generated at Palakali Creative Art Space makes great use of the waste generated. The resulting plant waste is made into biogas. The gas produced from biogas is used for stoves and electricity. Liquid produced from biogas is processed into solid fertilizer and liquid fertilizer and used for plantations.

II. Inorganic Waste / Household Waste

Is a type of waste that comes from inanimate objects and tends to be difficult to decompose. Example: plastic, paper, cardboard, textile fabrics, Styrofoam (Oktivasari et al., 2022). The following is the flow of organic waste processing:

Figure 12. Flow of inorganic waste processing at Palakali Creative Art Space
Source : Personal Documentation, 2023

Figure 13. Storage bins & waste sorting activities
Source : Personal Documentation, 2023

III. Hazardous & Toxic Waste (B3)

B3 waste is waste that can harm humans, animals or the environment (Prasetyaningrum et al, 2017). After sorting the waste into the B3 category, it will be separated and disposed of in a special place for that category of waste. Examples of B3 waste are glass waste, packaging for detergents or other cleaners, as well as insect repellents and the like.

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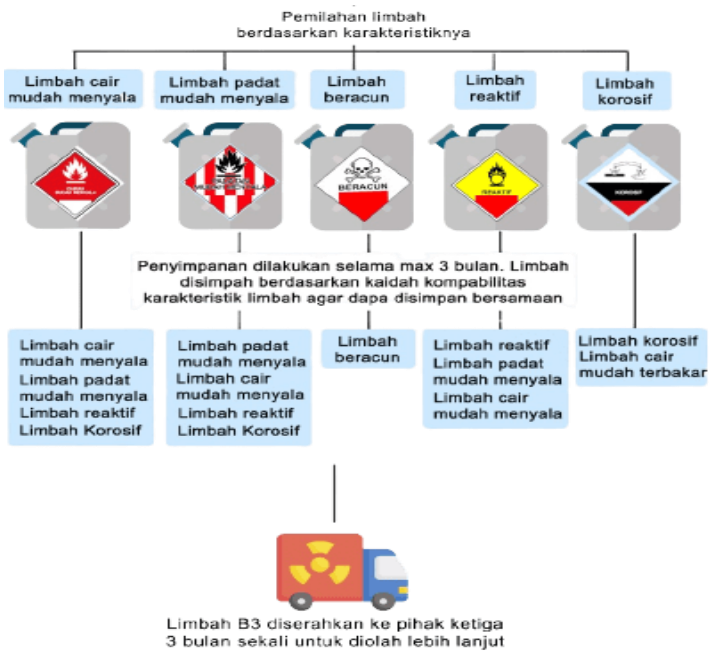

Figure 14. B3 Waste Management Flow at Palakali Creative Art Space
Source : Personal Documentation, 2023

4. Conclusion

In the aspect of the quality of environmentally friendly public building areas that implement good waste management, it must always be carried out continuously starting from the process of planning, implementing, and post-activity evaluation.

Organic waste is processed into compost which has excellent advantages and benefits and the process of making organic fertilizer in the form of compost is made through an easy process and uses simple tools but produces fertilizer products that are very useful for soil health.

Whereas for inorganic waste, goods are sorted based on the type of material and then processed into furniture, interior elements, exterior elements and artworks or handicrafts that have economic and aesthetic value to influence the economic aspect, then a special room is needed to display these items as a display space for materials and works.

Thus, the existence of this waste processing facility is expected to reduce the volume of waste in the environment, especially in the area around Palakali Creative Art Space.

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