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Technical Assistance for the Design of a Family Medicinal Plant Garden (Taman TOGA) at Graha Mandiri Residence, Patemon, Semarang City

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Abstract

The decline in medicinal plant availability is not only due to growth and harvesting processes, but also to limited land availability. On the other hand, land limitation remains a major factor in planning the provision of medicinal plants. Likewise, the existence of vacant land does not automatically guarantee its optimal utilization for developing a family medicinal plant garden (Taman TOGA) within a residential environment. Graha Mandiri Residence is a housing area with several vacant plots in certain locations. The establishment of a Taman TOGA is expected to provide environmental, health, and social benefits; however, design-related issues are among the main constraints. This community service activity aims to provide technical assistance in designing a Taman TOGA, thereby creating opportunities for residents of Graha Mandiri Residence to manage unused land and transform it into a productive and beneficial space. The design applies the Therapeutic Garden concept in the development of the “Maju” Taman TOGA. This concept is expected to enhance functional and aesthetic values while accommodating residents’ needs in accordance with architectural principles and landscape design approaches.

Keywords: *design; family medicinal plant garden; taman TOGA; therapeutic garden; community service*

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A. INTRODUCTION

Green Open Space (Ruang Terbuka Hijau, RTH) is defined as an elongated or clustered open area that can be utilized for vegetation or green spaces, either naturally occurring or intentionally developed (Direktorat Jenderal Penaatan Ruang Departemen Pekerjaan Umum, 2008). RTH is classified into public and

private green open spaces. Public RTH refers to areas owned and/or managed by municipal or regional governments that are open to the general public. Public RTH is further categorized into three groups: (a) green corridors along roadways, (b) urban parks and urban forests, and (c) green open spaces with specific functions. Meanwhile, private RTH refers to areas owned by individuals, communities, or private entities, such as home gardens or yards surrounding residential or building areas (Undang-Undang Republik Indonesia Nomor 26 Tahun 2007 Tentang Penataan Ruang).

The composition of RTH is regulated so that 10% of the total area is allocated to private RTH and 20% to public RTH, with the remaining areas designated as protected zones. According to data from the Central Java Provincial Environmental and Forestry Agency (DLHK) and the Public Works and Water Resources and Spatial Planning Agency (PUSDATARU), the proportion of RTH in Central Java Province remains below the minimum standard stipulated. Government Regulation No. 14 of 2016 states that green open space must constitute at least 30% of the total housing area (MenhumHam RI, 2016)(Aini & Rohmadiani, 2020). Furthermore, the rapid growth of urban development has not been matched by a proportional provision of green open spaces (Masrochatun, 2020). Therefore, efforts are required to plan the expansion of RTH locations and to optimize existing green open spaces that have not yet been properly managed (Nuraini et al., 2020).

Graha Mandiri Residence, located in Patemon Subdistrict, Gunungpati District, Semarang City, has several vacant and underutilized plots of land that are poorly maintained. These vacant lands could serve as public green open spaces if they are properly designed through appropriate landscape planning. However, limited design knowledge and technical expertise are among the major constraints faced by local residents.

Considering this background, the residents of Graha Mandiri Residence expressed their intention to develop a well-planned and representative Taman TOGA design with the assistance of professional expertise. In response to this need, the residents, through the local neighborhood head, collaborated with the Faculty of Engineering, Universitas Negeri Semarang. As part of the Tri Dharma of Higher Education, particularly in the field of community service, the Community Service Team from the Faculty of Engineering actively participated in this initiative by implementing a Community Service Program.

This activity was intended to provide technical assistance to the residents of Graha Mandiri Residence by planning and designing a Taman TOGA to optimize the utilization of available vacant land. Through this program, the unused land is expected to be transformed into a functional, productive, and beneficial green open space that supports environmental quality, community interaction, and public health.

B. METHOD

The methods applied in this activity consisted of discussions, field surveys and measurements, presentations, and design assistance. All activities were conducted offline (on-site), including the mentoring process, with the following stages:

Preparation Stage

At this stage, discussions were carried out to identify the problems faced by the community. The activity involved the community service team, the Community Leader of Graha Mandiri Residence, and students to determine residents' needs

as a basis for developing an appropriate design. This stage aimed to obtain a comprehensive understanding of the existing conditions and the local community's expectations for the utilization of vacant land as a Taman TOGA.

Implementation Stage

After the initial coordination, a site analysis was conducted. Site analysis involved direct field observations to examine existing conditions, including circulation patterns, visual aspects, and other relevant environmental factors. In addition, spatial analysis (programming) was conducted to identify activities that could be accommodated within the garden area. This analysis was intended to determine the objectives, needs, and concerns of prospective users, so that the design could function effectively and efficiently in accordance with its intended purpose (Sandi et al., 2018). Based on the pre-design materials prepared, the first presentation (Presentation 1) and discussion were conducted with all team members and prospective users. This session aimed to gather feedback and suggestions to improve the preliminary design. The pre-design drawings included a site plan, floor plan, and perspective views to ensure that the proposed design could be easily understood visually by the users.

After the preliminary design drawings were approved, detailed drawings were prepared for construction implementation. Following the revisions, a second presentation (Presentation 2) and discussion were conducted to clarify the design and ensure that it met the community’s needs and expectations. Subsequently, a Design Planning Document for Taman TOGA, Graha Mandiri Residence, was compiled as a guideline for project implementation.

In this community service activity, the participation of the community partners was emphasized from the initial stage until the completion of the program. The partners actively shared information about the problems encountered and collaborated closely with the service team to identify and collect relevant data. They also actively raised issues and submitted suggestions as part of efforts to refine the Taman TOGA design and achieve a mutually agreed solution.

Team Expertise

The community service team consisted of lecturers and students from the Architecture and Engineering Study Program, Universitas Negeri Semarang. The team members' expertise in architecture fully aligned with the theme of the community service activity. The team proposed a solution through the planning and design of a Taman TOGA to optimize public green open space, enabling residents to use it while also providing a communal space to strengthen social interaction and a sense of togetherness among community members (Sari et al., 2024)(Setyabudi et al., 2017). Public green open spaces can be planted with various types of vegetation, including family medicinal plants (TOGA). TOGA refers to medicinal plants commonly grown in home gardens and can be used by the community as natural resources for basic health care (Harefa, 2020). In addition, TOGA cultivation provides multiple benefits, such as serving as cooking spices, improving family nutrition, and enhancing visual aesthetics (Nauli et al., 2022)(Delita Septia Rosdiana, Ali Khomsan, 2018)(Angela Librianty Thome, Nurhidayah Amir, Fathia Fakhri Inayati Said, Rifki Sakinah Nompo, Viertianingsih Patungo, Ricky Riyanto Iksan, 2022).

The planning and design of the Taman TOGA also considered fundamental architectural and landscape design principles, including:

1. Providing space for the community to create comfort through optimal spatial arrangement and design.

2. Responding to the site context, where the planned design is expected to improve environmental quality.
3. Creating connectivity by ensuring easy accessibility and strong integration, both physically and visually, with the surrounding environment.
4. Achieving a balance between nature and human activities by considering climatic conditions, landform characteristics, and ecological aspects.
5. Integrating functions according to user needs to create a pleasant and comfortable atmosphere.
6. Ensuring that the design can be developed and implemented economically.
7. Applying a flexible and adaptive design that can respond to future developments and changing needs (Setyabudi & Agus, 2020)(Setyabudi, 2016).

C. RESULT AND DISCUSSION

The initial stage of this activity involved coordination among the Community Service Team to discuss the implementation plan and the expected outcomes. Subsequently, the team conducted a field survey and initial coordination with the Community Leader of Graha Mandiri Residence. The survey produced data on the site conditions that would later be used to develop Taman TOGA, including land dimensions, topography, and existing vegetation.

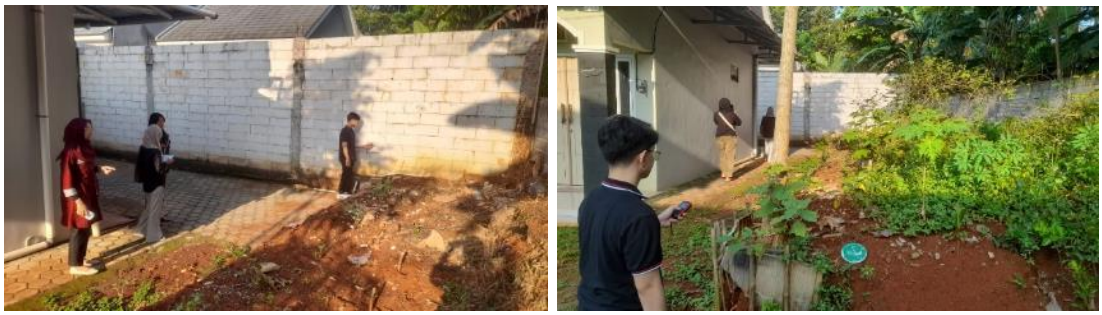


Figure 1. Preparation Stage and Field Survey



Figure 2. Existing Site Condition Data

These data served as the basis for formulating an appropriate, context-sensitive design that aligned with both the physical site conditions and community needs.

Identification and Inventory of Problems

Based on the initial coordination with the community leader and the residents, several characteristics of the users' daily activities were identified, including:

1. Most residents are working individuals.

2. Residents enjoy gathering and socializing during their free time.
3. Many children play in the area, particularly in the afternoon.

Therefore, the Taman TOGA design was expected to accommodate and consider the following aspects:

1. All design elements should have clear functions and benefits.
2. The provision of storage space and an area for leaf disposal or composting.
3. The addition of shading elements to protect users from excessive heat during activities.
4. The inclusion of a pond as a water element.
5. A non-monotonous garden layout to enhance visual interest.
6. The installation of plant name labels to support educational and informational purposes.

These requirements indicated that the garden should not only function as a medicinal plant cultivation area, but also as a social, educational, and recreational space for the community.

a. Presentation 1 and Discussion of Alternative Solutions

During the first presentation, the Community Service Team shared existing site data and discussed possible design solutions based on residents' needs. From this discussion, a tagline for Taman TOGA of RT 05 RW 07 Graha Mandiri Residence was established: **"Taman Maju."** The term *Taman Maju* is an abbreviation of *Taman RT Lima RW Tujuh* (Garden of Neighborhood Unit 05, Community Unit 07) and also symbolizes the spirit of progress and development that residents aspire to achieve.



Figure 3. Documentation of Presentation 1 and Initial Discussion

b. Development of the Preliminary Design

Based on Presentation 1 and the discussion of alternative solutions, the preliminary design adopted the **"Therapeutic Garden"** concept. The Therapeutic Garden is defined as a garden designed for both functional and aesthetic purposes. The vegetation planned for Taman Maju included various types of family medicinal plants (TOGA), such as rhizomes, fruit-bearing plants, vegetables, and aromatic plants.

This concept emphasized the following aspects:

1. **Use of low-maintenance materials**
   The materials selected for the Taman TOGA design were chosen to ensure ease of maintenance and long-term durability.

2. **Provision of seating areas**
   Seating areas were added at the front of the garden to facilitate relaxation, social interaction among residents, and supervision of children while they play.
3. **Ease of accessibility**
   The garden layout was designed to provide convenient access from the entrance, leading into the main garden area and continuing to the storage and supporting facilities.



Figure 4. Application of the Therapeutic Garden Concept



Figure 5. Visualization of the 3D Design

The preliminary design was presented as site plans, spatial layouts, and three-dimensional visualizations to help residents easily understand the proposed design and its spatial organization.

c. Presentation 2 of the Preliminary Design

After preparing the preliminary design drawings, the Community Service Team presented them to the Community Leader of Graha Mandiri Residence and to the residents' representatives. This session aimed to obtain final feedback and approval of the proposed design. Following approval, the design drawings for *Taman TOGA Maju* were formally handed over to the Community Leader of Graha Mandiri Residence.



Figure 6. Documentation of Presentation 2 of the Preliminary Design

d. Preparation of the Design Planning Document

The final stage of the community service activity was the preparation of the Taman TOGA Design Planning Document based on the agreed preliminary design. This document included comprehensive technical drawings, including a location plan, site plan, floor plans, elevations, sections, construction details, and other necessary drawings. The Design Planning Document was intended to serve as a formal guideline for the implementation and construction of Taman TOGA at Graha Mandiri Residence.

CONCLUSION

The Community Service activity entitled “Technical Assistance for the Design of a Family Medicinal Plant Garden (Taman TOGA) at Graha Mandiri Residence, Patemon, Semarang City”, funded by the Faculty of Engineering DPA, Universitas Negeri Semarang, has been successfully completed. The design of Taman TOGA, which adopts the Therapeutic Garden concept, is expected to effectively accommodate the local community's needs while adhering to architectural and landscape design principles. Through this activity, the utilization of vacant land in Graha Mandiri Residence has been optimized into a functional, productive, and beneficial green open space. The garden is intended not only as a cultivation area for family medicinal plants but also as a communal space that supports social interaction, recreational activities, environmental education, and environmental quality improvement. Similar community service programs can be further developed and expanded to other residential areas, particularly those with underutilized vacant land, to provide broader benefits to surrounding communities and support sustainable urban green space development.

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