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# Fostering Students' Environmental Awareness through the Family Medicinal Plants (Toga) Program

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## Abstract

This Community Service activity aimed to increase students' knowledge, environmental awareness, and interest in medicinal plants through the development of a medicinal plant garden at SDN 2 Kelayu Utara. The activity employed a qualitative descriptive approach involving elementary school students as participants. Data was collected using observation sheets, activity documentation, and informal interviews conducted during the implementation process. The Community Service activity stages included an initial observation of the school environment, procurement and arrangement of age-appropriate medicinal plants, introduction of the benefits and uses of medicinal plants, and the habituation of daily planting and plant-care activities. The findings indicate a positive change in students' attitudes and behaviors, as reflected in increased enthusiasm for planting and caring for medicinal plants, improved understanding of their benefits, and the emergence of habits such as sharing knowledge about medicinal plants with peers. Additionally, the activity contributed to a more engaging, enjoyable, and environmentally based learning atmosphere. These results imply that integrating medicinal plant gardens into school activities is an effective strategy for fostering environmental care, enhancing contextual learning, and strengthening students' awareness of medicinal plants at the elementary school level.

**Keywords:** *Students' Environmental Awareness, Family Medicinal Plants, (Toga) Program*

## 1. Introduction

Indonesia is one of the agricultural countries. There are many kinds of plants that can grow in Indonesia. Plants are not only useful as food ingredients or as decorations. Plants are also very useful for healing and medicine. The healing abilities and positive effects of some plants as medicine have been known long before scientists invented various medicines with chemicals. The development of urban and rural areas in recent decades has increased very rapidly. The increase in economic levels in urban and rural areas synergizes with the level of development in these areas. This situation strongly shows that residential land in both rural and urban areas is shrinking. Only

in certain rural areas that are far from urban reaches still have yard land that can be used for plant cultivation. One form of community participation and at the same time the application of appropriate technology that has the potential to support health development is through treatment efforts by utilizing traditional medicines that can be produced by utilizing yard land for TOGA (Azwar et al., 2022). This medicinal plant can also be cultivated at home or commonly referred to as a live pharmacy. Family medicinal plants (TOGA) or commonly referred to as living pharmacies are the cultivation of medicinal plants in the yard of the house or yard as an anticipation of prevention and treatment independently using existing medicinal plants. While medicinal plants themselves are plants whose plants are partially or entirely used as medicines, ingredients or medicinal herbs (Handayani & Setyowidodo, 2018).

In the field of medicinal plants, Indonesia is known as one of the countries with the second largest biodiversity after Brazil, so it has great potential in developing medicinal plants based on our own medicinal plants. Indonesia is rich in a variety of medicinal plants. More than 1000 species of plants can be used as raw materials for medicine, therefore the cultivation of medicinal plants in Indonesia has a very good potential to be developed (Setiawan, 1999). Although most of the residents of Negeri Tua village, Marga Tiga District, East Lampung Regency work as farmers, many people do not know family medicinal plants or are called living pharmacies. In fact, living pharmacies need to be developed because not only as spices or cooking but family medicinal plants can be used as an alternative to maintain and take care of our health naturally without side effects such as ginger, turmeric, kencur, betel nut, brotowali, and others.

Therefore, holding a training on planting family medicinal plants is one way to preserve the cultural wisdom of family medicinal plants in Indonesia, especially the residents of this Old Town village. With this training, the benefits or efficacy of several family medicinal plants will be explained and will be taught how to grow and use these medicinal plants. This training aims to enable the people of Kajor Dhuwur Hamlet to know and know the benefits of traditional medicinal plants to maintain and maintain health naturally without side effects, reduce expenses or family economy by not using chemical drugs.

Toga stands for family medicinal plants. Family medicinal plants are basically plants that are planted in the yard, garden or plot of land that are used as plant cultivation that are efficacious as medicine to meet family needs for medicine. Family medicinal plants also function as environmental utilization around the house and garden. In today's era, more families are aware of the benefits of medicinal plants themselves.

Another definition explains that what is meant by TOGA is Family Medicine Park. The word "Garden" indicates an effort to increase the aesthetic value of plants, in this case medicinal plants with arrangements that are in accordance with the potential of the land and pleasing to the eye. While the word "Family" indicates that this "medicine garden" functions to maintain the health of

all family members and is made in the family environment, namely in the yard of the house, it can also be in the yard of the school or office.

TOGA is a nutritious plant that is managed by a family on the land. yard. This planting is carried out to provide traditional medicines that can be produced by themselves for family needs. Health is improved with TOGA as a treatment, this plant needs to be grown alone in the yard to alleviate health problems. This plant can help family nutrition problems and become a source of income for the community (Linda and Rafdinal, 2022). Although medicinal plants have been used in traditional medicine for a long time, their use as raw materials is not always effective. Instead, efforts have been made to better understand its qualities and uses. This is supported by the policy of the Minister of Health of the Republic of Indonesia regarding traditional medicine as outlined in the Ministry of Health No. 1076/SK/VII/2003 concerning the use of medicinal plants in the implementation of traditional medicine and Law No. 23 of 1992 article 47 concerning traditional medicine. Indonesia is an archipelagic country with diverse landscapes.

The development of TOGA aims to improve common welfare. Various factors, both clearly supportive and inhibiting, contribute to the growth of TOGA. TOGA is a style of clothing used in communal life to allow people to gather and take responsibility for the welfare of themselves and their environment using land that can be used as a means of planting medicines to provide treatment early, especially to families or the nearest community. Family medicine garden culture is basically the cultivation of plants that are useful as medicine to meet the family's needs for medicines. Medicinal plant gardens or other resources that can be made available to the public, especially medicines made from plants. Even if done alone, planting therapeutic plants for families (TOGA) can encourage small and medium businesses in the pharmaceutical sector (Hafni Rahmanita, 2018).

Yards usually have a limited land area, so the type of medicinal plant should be chosen that is important and useful for the purpose of maintaining daily family health. In addition, plant types are chosen that are easy to cultivate and do not take up space due to the large size of the crown. Because the nature of the yard is different from the garden or field, the selection of plants must also pay attention to beauty factors and pay attention to the condition of the yard, for example, the contour of the soil, the shape and presence of trees or other buildings. The most important factor in arranging land for medicinal plants is to pay attention to aesthetics (beauty). Don't let the medicinal plants that we plant in the yard spoil/disturb the scenery. It must also be considered the existence of other park elements, namely soft materials such as cattle pens, flag poles, footpaths, fishponds, and others.

Medicinal plants can also be grown in pots or in the field around the house. If the land that can be planted is large enough, then some of the crops can be sold to increase family income. Medicinal plants that are classified as spices or kitchen spices, hedge plants, fruit plants, vegetable

plants, or even wild plants can be arranged in the yard as toga. Apart from being a medicinal ingredient for sick family members, the plant can be used for various purposes according to other uses.

Previous studies on family medicinal plants (Tanaman Obat Keluarga/TOGA) have predominantly examined their utilization in community health promotion, traditional medicine preservation, and household-based economic empowerment (Azwar et al., 2022; Handayani & Setyowidodo, 2018; Linda & Rafdinal, 2022). These studies emphasize adult participation and focus mainly on preventive, curative, and economic outcomes within family or rural community contexts. Similarly, research on environmental education in schools has highlighted the importance of experiential and environment-based learning for fostering students' ecological awareness; however, such studies rarely integrate local medicinal plant cultivation as a structured learning medium (Santoso, 2008; Rahmanita, 2018). As a result, there remains a limited understanding of how school-based medicinal plant programs can function not only as environmental initiatives but also as pedagogical tools that shape students' daily learning habits, attitudes, and character development at the elementary level.

Addressing this gap, the present Community Service (PKM) activity aims to enhance elementary school students' knowledge, environmental awareness, and interest in medicinal plants through the establishment of a medicinal garden integrated into daily school routines at SDN 2 Kelayu Utara. Using a qualitative descriptive approach, elementary school students were involved as active participants in planting and caring for age-appropriate medicinal plants. Data was collected through observations, informal interviews, and activity documentation to capture behavioral changes and learning engagement. The findings reveal increased student enthusiasm, improved understanding of medicinal plant benefits, and the development of responsible habits such as consistent plant care and peer knowledge sharing. The novelty of this study lies in its integration of medicinal plant cultivation into routine school activities as an environment-based learning strategy, differentiating it from prior studies that focus primarily on community or household contexts.

This approach demonstrates that school-based TOGA programs can effectively foster environmental care culture, contextual learning, and character education among elementary school students, thereby extending the existing literature on medicinal plants and environmental education into formal primary education settings.

# 2. Method

## 2.1 Participants

This study employed a qualitative descriptive approach with a participatory model within a Community Service Program (PKM). The research was conducted at SD Negeri 2 Kelayu Utara from September to November 2025. The participatory model was selected to ensure the active involvement of all stakeholders throughout the program implementation, including observation, planning, execution, and evaluation stages.

The participants in this study consisted of students of SD Negeri 2 Kelayu Utara who directly participated in the Family Medicinal Plants (TOGA) program activities, classroom teachers who guided students during planting, maintenance, and learning discussions related to medicinal plants, and school representatives, including the principal or program coordinator, who supported and supervised the implementation of the program.

These participants were chosen because they were directly involved in and experienced the implementation of the Medicinal Plants (TOGA) program and were therefore able to provide rich and relevant qualitative data related to students' environmental knowledge and awareness.

## 2.2 Data Collection

### 2.2.1 Instrument of Collecting Data

The main instruments used in collecting data were observation and interview guides designed based on several criteria, including the relevance of activities to the Family Medicinal Plants (TOGA) work program at SD Negeri 2 Kelayu Utara, the credibility of information sources such as teachers, students, and parents involved in the TOGA program, and the suitability of the information to ensure that the data obtained accurately reflected the most recent conditions of the TOGA program

In addition, a framework was also used to extract data, which helped researchers identify key themes, important findings, and previous researchers' opinions on the influence of the TOGA program on students' environmental awareness.

The sources used come from various types of publications, such as scientific journals, textbooks, research reports, conference articles, as well as official documents relevant to the TOGA program.

### 2.2.2 Techniques for Collecting Data

The data collection technique uses the purposive sampling method, which is to choose information sources deliberately because they are in accordance with the research objectives. Each selected piece of information is analyzed in detail, and relevant data is recorded, grouped, and categorized by topic.

The researchers collected data by focusing on patterns of student participation in the TOGA program at SD Negeri 2 Kelayu Utara, the impact of the TOGA program on students' environmental awareness both positive and negative and the strategies or solutions proposed by previous researchers to enhance students' environmental awareness through the implementation of the TOGA program.

### 2.3 Data Analysis

The collected data were analyzed using a descriptive qualitative method aimed at describing and interpreting phenomena in depth rather than relying on numerical or statistical analysis. The analysis involved theme coding to identify key patterns in everyday language use and their impact on students' language structure, interpretive analysis to examine the relationship between the use of everyday language and changes in students' Indonesian language skills, and data aggregation to synthesize findings from multiple data sources in order to develop a comprehensive understanding of the relationship between everyday language use and students' Indonesian language skills at the elementary level; through this approach, the study is expected to provide a complete and in-depth depiction of the complexity of the phenomenon under investigation.

## 3. Results

At SDN 2 Kelayu Utara, the Community Service Program (PKM) activities show an increase in the awareness and skills of elementary school students in planting and caring for medicinal plants. Before the program began, the school environment did not have a well-maintained medicinal garden, and students lacked a good understanding of the benefits of medicinal plants. In addition, students are rarely involved in planting and caring for plants. The learning atmosphere at school became more lively, green, and fun after the implementation of PKM activities that focused on the development of the Medicinal Plants program. Students become more concerned about the environment and have practical skills in growing and caring for medicinal plants.

Based on field observations, students showed high enthusiasm in participating in the Medicinal Plants mentoring session. Direct interaction between accompanying students and students encourages students to be more active in planting and caring for medicinal plants.

Figure 1. Medicinal Plant Planting Process

Planting and caring for plants that are carried out repeatedly help students understand the plant growth process and its benefits. Some students who were initially reluctant to plant began to dare to try and care for medicinal plants at school. The medicinal plants used partly have educational value about health and the environment, as well as the preservation of traditional medicinal plants. This contributes to strengthening positive character and preserving local wisdom in children from an early age. Students are involved in group activities planting and caring for plants so that the ability to communicate, share roles, and discuss plant care is more visible. The attitude of helping each other between friends in caring for plants was also observed during the activity.

Figure 2. Medicinal plant care process

PKM activities are carried out in several steps. This includes looking at the initial conditions of the school environment, creating a medicine garden design, using appropriate planting media, and providing medicinal plant seedlings that are appropriate for the age and interests of the students. In addition, teachers accompany students in planting and caring for plants several times a week. During this series of activities, students become more interested in growing and caring for medicinal plants and start coming early to school to help care for the plants. The results of the observation showed a significant increase in the students' ability to grow and care for medicinal plants.

The program produces outputs that include both physical and non-physical outputs. While physically, this location consists of an attractive and child-friendly medicinal garden, equipped with age-appropriate medicinal plants. Nonphysically, these activities increase students' interest and awareness of the importance of medicinal plants, increase their understanding of plant care, and foster students' courage to share knowledge about medicinal plants. This activity also creates a new culture of caring for the environment in schools where caring for plants becomes part of a fun daily routine.

This program also brings a sustainable positive impact. In the short term, students show increased enthusiasm for planting and caring for medicinal plants and are more focused when attending lessons after planting sessions. Teachers also feel helped because the medicine garden is a supporting medium in thematic learning that encourages students to think critically and creatively. In the long term, this activity is expected to form a sustainable culture of environmental care in the school environment, improve students' academic achievement, and foster environmental care character from an early age.

Figure 3. TOGA programs that have been running

## 4. Discussion

Observations and interviews at SD Negeri 2 Kelayu Utara indicate that the Family Medicinal Plants (TOGA) program has a significant positive impact on students' environmental awareness and health-related understanding. Students actively participate in planting, caring for, and harvesting medicinal plants, reflecting a clear transformation from previously passive attitudes toward the environment to more responsible and proactive behaviors. This finding aligns with recent studies emphasizing that direct engagement in school-based gardening activities enhances students' environmental concern and ecological responsibility through experiential learning (Hidayati et al., 2021; Suciati, 2023). From the perspective of experiential learning theory, students construct knowledge more effectively when learning activities involve concrete experiences and reflection, as demonstrated by their increased awareness of environmental cleanliness and health practices.

Compared with earlier research on environmental education in elementary schools, the findings of this study reinforce and extend previous evidence that gardening-based programs are effective in fostering pro-environmental behavior. For instance, Dewinta et al. (2021) found that integrating environmental practices into daily school activities significantly improved students' environmental attitudes, while Yuendita and Dina (2024) reported that hands-on ecological programs strengthened students' sense of responsibility toward nature. However, the present study differs by emphasizing medicinal plants as learning media, which not only promote environmental awareness but also introduce students to health literacy and local medicinal knowledge. This dual focus supports Albantani and Madkur's (2018) argument—later reaffirmed by Novia (2022) that culturally contextualized learning materials are more meaningful and sustainable for students.

The observed behavioral changes also support social learning theory, which highlights the role of interaction and collaboration in shaping attitudes and behaviors. Group-based TOGA activities encouraged cooperation, communication, and mutual responsibility among students, consistent with findings by Asrial et al. (2021), who reported that collaborative environmental projects contribute to both character development and social skills. Unlike studies that primarily report short-term motivational outcomes, the TOGA program at SD Negeri 2 Kelayu Utara demonstrates potential long-term impact, as students voluntarily maintain plants and integrate environmental care into their daily routines.

Furthermore, this study underscores the importance of holistic and adaptive environmental education, where schools play an active role in designing contextual and practice-based curricula. Recent studies emphasize that environmental education is most effective when supported by collaboration among schools, families, and communities (Eva Agustina Rahma & Woro Kasih, 2023; Hardianti, 2019). In line with these findings, the TOGA program highlights the need for

parental involvement and community-based environmental activities such as tree planting campaigns or environmental literacy events to reinforce students' environmental habits beyond the school setting.

Overall, the discussion demonstrates that the TOGA program is not merely an environmental activity but a theoretically grounded educational intervention that integrates experiential learning, social interaction, and local wisdom. By situating the findings within recent empirical and theoretical studies, this research provides stronger scientific justification for the use of medicinal plant programs as a sustainable strategy for enhancing environmental awareness and student health at the elementary school level.

## 5. Conclusion

The establishment of a medicinal garden at SDN 2 Kelayu Utara through the Community Service Program (PKM) effectively increased students' interest, knowledge, and skills related to medicinal plants and environmental care. Students became more actively involved in planting and maintaining medicinal plants, and the garden functioned as an experiential and enjoyable learning medium supported by collaboration between teachers and students. The program contributed not only to improved environmental awareness and practical skills but also to the creation of a more comfortable, innovative, and experience-based learning environment that supports character development from an early age.

Despite its positive outcomes, this program has several limitations. First, the activity was implemented in only one elementary school, which limits the generalizability of the findings. Second, the duration of implementation and observation was relatively short, making it difficult to assess long-term impacts on students' environmental behavior. Third, the study relied mainly on qualitative observations and interviews without quantitative measurement to evaluate behavioral change more objectively.

The findings of this study have important implications for educational practice and policy. School-based medicinal gardens can be integrated into the elementary school curriculum as a contextual and experiential learning strategy to support environmental education, character building, and health literacy. Schools and local education authorities are encouraged to support similar programs by providing adequate facilities, incorporating environmental learning into school policies, and offering teacher training to strengthen the sustainability of environmentally based learning activities.

Future studies are recommended to involve a larger number of schools and diverse educational settings to enhance the generalizability of findings. Researchers may also apply mixed method approaches by combining qualitative and quantitative data to measure long-term effects

on students' environmental awareness and behavior. In addition, further research could explore the integration of medicinal garden programs with other learning subjects or local wisdom–based curricula to maximize their educational impact.

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