



Cultivating Knowledge and Health

Empowering Students with Medicinal Plant Education at SDN Kedunghalang 03 Bogor

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ABSTRACT

This community service project, conducted at SDN Kedunghalang 03 Bogor, aimed to educate fifth-grade students about Family Medicinal Plants (*Tanaman Obat Keluarga* or TOGA). The event, held in the school's auditorium, included presentations, discussions, and interactive games using audiovisual aids, followed by a hands-on planting session. Led by a lecturer and six students from the Bumi Siliwangi Bandung Academy of Pharmacy, the program sought to instill knowledge about the types, benefits, and cultivation methods of medicinal plants. The students' enthusiastic participation highlighted the success of the initiative, fostering a deeper understanding and appreciation for TOGA. The practical sessions, which involved planting, fertilizing, and caring for medicinal plants, were complemented by demonstrations of how to process these plants into healthy drinks. The program not only enhanced the students' botanical knowledge and practical skills but also promoted environmental stewardship and health awareness within the school community. The involvement of the school principal and teachers further underscored the importance of the initiative, contributing to its overall success and lasting impact.

Keywords

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Introduction

Indonesia is one of the world's agrarian countries, blessed with a rich diversity of flora. Numerous types of plants thrive in Indonesia's fertile soil, thanks to its tropical climate and diverse ecosystems. These plants are not only valuable as food sources or ornamental plants, but many also possess significant medicinal properties. The healing abilities and positive effects of certain plants as medicinal remedies have been recognized long before scientists discovered various chemical-based medicines [1]. Empirically, our ancestors have long utilized these plants for health restoration. Indigenous knowledge and traditional practices in Indonesia have identified and employed a wide array of plants for their therapeutic benefits. For centuries, communities have relied on natural remedies derived from plants to treat various ailments and maintain overall well-being [2]. This rich tradition of herbal medicine continues to be an integral part of Indonesian culture, blending seamlessly with modern medical practices.

Many of these medicinal plants have been scientifically validated, confirming the wisdom of traditional uses. For example, the leaves of the moringa tree (*Moringa oleifera*) are known for their high nutritional value and potential to treat malnutrition [3], while ginger (*Zingiber officinale*) is widely used to alleviate digestive issues and reduce inflammation [4]. Additionally, the turmeric plant (*Curcuma longa*) is renowned for its anti-inflammatory and antioxidant properties [5]. The continued exploration and documentation of Indonesia's plant-based medicinal knowledge are crucial. Such efforts not only preserve cultural heritage but also contribute to the global understanding of natural medicine. By integrating traditional knowledge with modern scientific research, there is potential to discover new treatments and health benefits that can aid humanity worldwide.

Medicinal plants can be cultivated at home, a practice commonly known as a "living pharmacy" or "family medicinal garden." These homegrown medicinal plants, referred to as *Tanaman Obat Keluarga* (TOGA) in Indonesian, are highly valued for their therapeutic properties [6]. A medicinal plant, or TOGA, is any plant cultivated domestically that possesses health benefits. Medicine, in general, is defined as a substance or mixture of substances intended for use in diagnosing, preventing, reducing, alleviating, or curing diseases or symptoms of diseases, injuries, or physical and mental disorders in humans or animals, and for enhancing the beauty of the human body or its parts. Cultivating TOGA at home offers numerous advantages [7]. Firstly, it provides easy access to natural remedies for various health issues without the need to purchase over-the-counter medications. This is particularly beneficial for minor ailments such as colds, headaches, and digestive problems, where home remedies can be highly effective. Secondly, growing medicinal plants at home ensures the availability of fresh, organic ingredients, free from

harmful chemicals and pesticides. This not only enhances the efficacy of the remedies but also promotes overall health and well-being.

Moreover, the practice of cultivating medicinal plants at home fosters self-reliance and a deeper connection with nature. It encourages individuals and families to take an active role in their health care, empowering them with the knowledge and resources to address common health issues naturally. This can be especially empowering in rural or remote areas where access to conventional medical facilities may be limited. Several plants are commonly grown in a TOGA garden due to their well-known medicinal properties. For instance, aloe vera is widely used for its soothing and healing properties, particularly in treating skin conditions such as burns and cuts [8]. Lemongrass is another popular choice, known for its ability to alleviate digestive problems and reduce fever [9]. Similarly, the pandan plant is often used to treat high blood pressure and provide relief from joint pain [10].

The benefits of a family medicinal garden extend beyond health. It can also contribute to the sustainability and biodiversity of the environment. By cultivating a variety of plants, individuals help maintain ecological balance and support the local ecosystem. Additionally, these gardens can serve as educational tools, teaching children and communities about the importance of plants and natural resources in promoting health and well-being. Community service in the form of the application of TOGA at SDN Kedunghalang 03 Bogor aims to provide students with knowledge and awareness related to their school environment and healthy living habits within the community. This initiative equips students with an understanding of the benefits and uses of medicinal plants, along with the methods for processing and cultivating these plants. The primary objective of this program is to integrate practical education with environmental stewardship. By introducing students to the concept of TOGA, they learn the significance of medicinal plants and their role in promoting health and well-being. The program emphasizes the importance of utilizing natural resources for maintaining health, encouraging students to adopt and propagate sustainable practices in their daily lives.

Methods

The Community Service activity was carried out at SD Negeri Kedung Halang 03, located at Jl. Pesantren Rt 01 Rw 06, Kedunghalang, Kec. Bogor Utara, Kota Bogor, Jawa Barat. This activity was conducted by a team consisting of one lecturer and assisted by six students from the Bumi Siliwangi Bandung Academy of Pharmacy. The participants included 80 fifth-grade students, along with the school principal and teachers who also contributed to the event.

Students receive comprehensive training on identifying various medicinal plants, understanding their therapeutic properties, and learning the techniques for effective cultivation

and maintenance. This hands-on approach not only enhances their botanical knowledge but also instills a sense of responsibility towards nature and community health. They are taught how to grow these plants in home gardens, ensuring a steady supply of fresh and organic medicinal resources. The activity involved experiential learning through the joint planting of TOGA. The implementation method was divided into five stages:

1. Delivering material on the types and benefits of medicinal plants: This provided foundational knowledge and raised awareness about the potential uses of various plants.
2. Explaining how to plant medicinal plants: Clear instructions and demonstrations ensured that students could replicate the planting process.
3. Offering a simple application of managing and processing medicinal plants into a beverage: This practical application connected theoretical knowledge with real-world uses.
4. Conducting hands-on practice in planting medicinal plants: Direct involvement in planting reinforced the learning experience and provided practical skills.
5. Explaining how to care for the medicinal plants that have been planted: Ongoing care and maintenance were emphasized to ensure the plants could thrive and provide benefits.

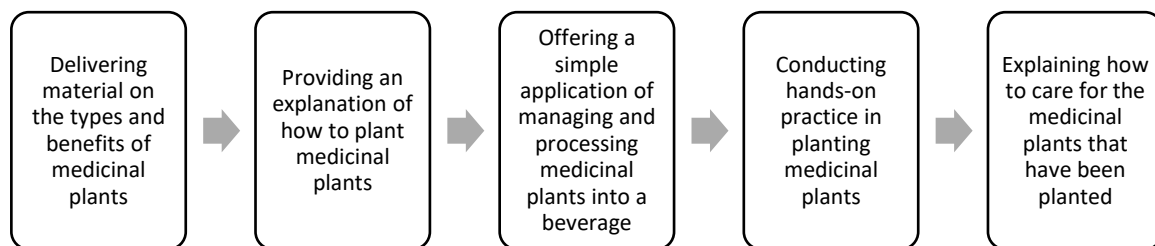


Fig. 1. The implementation stages

Results and Discussion

A. Implementation

The Community Service activity at SD Negeri Kedung Halang 03 on May 30, 2022, was a comprehensive educational event aimed at instilling knowledge about medicinal plants among fifth-grade students. The event took place in the school's auditorium, where the sessions were conducted through presentations, discussions, and interactive games using audiovisual equipment. This engaging approach ensured that the students were actively involved and could easily understand the material presented.

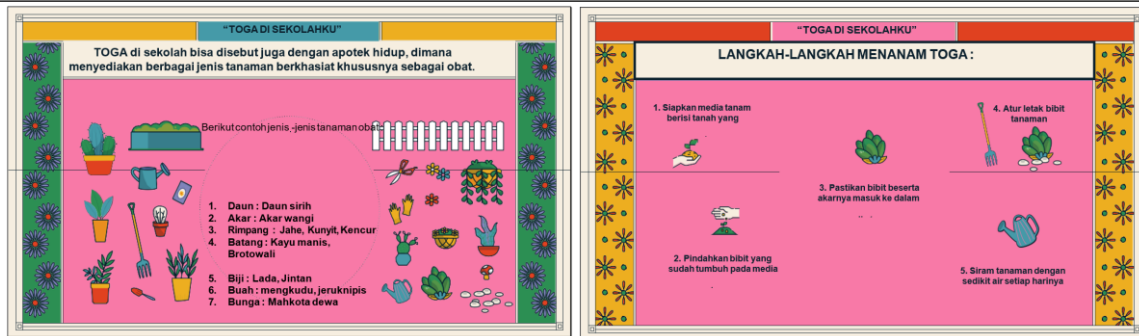


Fig. 2. The material for the presentation session

The activity began with a counseling session, where the team delivered information about various types of medicinal plants and their benefits. This was done through a detailed presentation that used visuals and examples to make the content more relatable and memorable for the students. Following the presentation, there was a lively discussion session where students could ask questions, leading to a dynamic two-way communication. The students of SDN Kedung Halang 03 were very enthusiastic, showing great interest and eagerness to learn about medicinal plants.



Fig. 3. The discussion session

After the informative session, the students participated in a hands-on practice activity. They were guided step-by-step on how to plant medicinal plants, including the proper techniques for planting, fertilizing, and caring for the plants to ensure they grow healthily.



Fig. 4. The hands-on activity

The practical session was conducted in groups, with each group focusing on different types of medicinal plants. This group activity not only taught them about plant care but also encouraged teamwork and collaboration. The community service event included an introduction to products made from medicinal plants. The team demonstrated how to process these plants into health drinks, providing a practical application of the knowledge they had gained. This demonstration was particularly engaging, showing the students the tangible benefits of medicinal plants and how they could be used in everyday life.

The school principal and teachers also participated actively in the event, contributing to the discussions and helping guide the students during the practical sessions. Their involvement highlighted the importance of medicinal plants and supported the overall learning experience. The event was a collaborative effort, executed by a team of one lecturer and six students from the Bumi Siliwangi Bandung Academy of Pharmacy. Their expertise and guidance were instrumental in making the event successful and educational.

B. Evaluation

After the completion of this outreach program, the students of SDN Kedunghalang 03 Bogor gained a deeper understanding of the various types of TOGA, their benefits, and the methods of cultivating these plants in their daily lives. The evaluation of the program revealed that the students participated with great enthusiasm and joy, bringing tremendous energy and motivation to the school environment. This positive attitude was evident in the way they engaged with the activities and interacted with the material presented.

The counseling session successfully introduced the students to different types of medicinal plants and their uses. The interactive presentation, supported by audiovisual aids, made the information accessible and interesting. The subsequent discussion and Q&A session allowed students to clarify their doubts and engage more deeply with the topic. The students' active participation indicated a high level of interest and curiosity, which is crucial for effective learning. During the practical session, the students demonstrated their eagerness to apply what they had learned. They followed the instructions carefully on how to plant, fertilize, and care for medicinal plants. Working in groups, they showed excellent teamwork and collaboration, which not only enhanced their learning experience but also fostered a sense of community and shared responsibility.

The introduction to products made from medicinal plants, such as health drinks, further captivated the students' interest. This hands-on demonstration connected theoretical knowledge with practical application, reinforcing the relevance of medicinal plants in everyday life. The students were particularly excited about this part of the activity, as it provided them with tangible examples of how these plants could benefit their health. The involvement of the school principal and teachers was also a significant factor in the program's success. Their active participation and support underscored the importance of the initiative and encouraged the students to take it seriously. Their guidance during the practical sessions ensured that the activities were conducted smoothly and safely.



Fig. 5. The community service team and teachers

Conclusion

The program's impact on the students was overwhelmingly positive. They were inspired to take an active role in greening their school grounds and cultivating medicinal plants. The enthusiasm and energy generated by the program have the potential to create a lasting culture of

environmental stewardship and health awareness within the school community. The outreach program at SDN Kedunghalang 03 Bogor was highly successful in achieving its objectives. It provided the students with valuable knowledge about TOGA, instilled practical skills in plant cultivation, and fostered a sense of responsibility towards the environment. The students' enthusiastic response and the support from the school staff highlight the program's effectiveness and its potential for long-term benefits.

Conflict of Interest

The authors declare that there is no conflict of interest.

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