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EMPOWERING STUDENTS IN MARGINALIZED ENVIRONMENTS THROUGH AGRIPRENEURSHIP LITERACY BASED ON CULTIVATION OF MICROGREENS: A CASE STUDY OF AN INDONESIAN VILLAGE IN THAILAND

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ABSTRACT Students in the Kampung Indonesia community in Nonthaburi, Thailand, face limited land and limited access to economic independence in an urban, migrant environment. Meanwhile, the healthy food market in Thailand is booming, providing opportunities for premium agricultural products like microgreens. This Community Service (PKM) activity aims to improve agribusiness literacy and students' practical skills in cultivating microgreens as a high-value urban farming solution. The training implementation method is carried out through a participatory workshop method which includes the transfer of knowledge of nutritional theory, cultivation practices using plastic waste media, and business calculation simulations (pricing) for the local Thai market, activities are carried out in a hybrid manner. The results of the activity showed an increase in student understanding, as evident in the activities during the event. Students successfully transformed their perception of agriculture from a traditional activity to a modern, low-capital, high-return business opportunity. This program proves that microgreens cultivation is highly relevant as an economic empowerment strategy for marginalized communities abroad due to its land efficiency and fast harvest cycle, while also supporting independent food security for Indonesian students in Thailand.

KEYWORDS: *Microgreens; Agripreneurship; Indonesian Village; Thailand, Urban Agriculture.*

1. INTRODUCTION

The agribusiness sector is the backbone of the Southeast Asian economy, with Indonesia and Thailand being two key players in regional food supply. As fellow agricultural countries, both face similar challenges in maintaining food security, particularly amidst the threat of the climate crisis and shrinking productive land due to massive urbanization. In this era of rapid technological development and urbanization, it is crucial for us to understand and utilize land optimally (Humaira, L., Susdiyanti, T., Yahya, S., Basalamah, M. S. I. A., Basalamah, I., & Jafar, A. N. 2024).

However, the most fundamental challenge today is not simply limited land, but rather a human resource regeneration crisis in the agricultural sector. Younger generations in urban areas or densely populated cities tend to feel disconnected from their food sources and view agribusiness as less prestigious, traditional, and physically exhausting.

In Thailand, the shift in youth interest to the industrial and service sectors in urban areas is particularly pronounced, despite the country being known as a global hub for agricultural innovation. The number of farmers has declined consistently over the past three decades. In 1980, farmers accounted for 65.65% of the total workforce, falling to 44.28% in 2000. In 1990, there were 19 million farmers (63.4% of the total workforce), but by 2011, there were only 16.1 million left (Sri Hery Susilowati, 2016). The lack of exposure to modern agribusiness at the secondary school level (junior and senior high schools) has left students unaware of the economic potential inherent in agricultural management. Therefore, an innovative educational approach relevant to the lifestyles of millennials and Gen Z is needed to reintroduce a new face of agriculture.

Urban farming has emerged as a strategic solution to bridge this gap. One of the most applicable models for school students is microgreen cultivation. Microgreens are young vegetables produced from vegetable seeds that have two fully developed cotyledons and have emerged young true leaves (Kingsley et al., 2020). Microgreens can be harvested 7-14 days after germination with a plant height of 2.5-7.6 cm, depending on the species (Allegretta, I. et al., 2019; Xiao Z et al., 2012). Microgreens are vegetables harvested during the early growth phase (7–14 days after sowing) and have a much higher nutrient concentration than mature vegetables. Microgreens are claimed to be rich in nutrients. Research conducted by Xiao Z et al. (2012) on 25 microgreens such as red cabbage, cilantro, and Garnet spinach showed that microgreens contain ascorbic acid, carotenoids, phylloquinone, and tocopherol. The nutrient concentration in microgreens is also higher when compared to mature leaves according to the USDA National Nutrient Database. The advantage of microgreens lies in their ease of cultivation, which does not require large areas of land, large capital, or heavy agricultural equipment, making them very suitable for students to implement in school or home environments in urban areas or in marginalized environments.

In addition to cultivation, agripreneurship, or agricultural entrepreneurship, is also an important component of this education. Accordingly, several determining factors for entrepreneurial competence in the home industry are formal education, motivation, and cosmopolitanism (Maad, F., Humaira, L., & Susanto, H. (2017). Introducing microgreens to the younger generation not only educates but also motivates them to embrace agriculture not just as ornamental plants or for personal consumption, but as a high-value lifestyle commodity. Currently, microgreen demand for urban areas like Jakarta is still supplied from areas outside Jakarta, such as Bekasi, Bogor, and even Bandung (Imas Wildan Rafiqah, Fetty Dwi Rahmayanti, 2022). Under these conditions, students are expected to be able to identify digital business opportunities in the downstream agricultural sector. Innovation and motivation are needed to encourage community interest in optimally managing their urban land (Sumarliani, S., Yuniwati, E. D., Dahliani, L., Sebayang, N. S., Hawayanti, E., Susdiyanti, T., & Humaira, L. 2024). Through this training, the economic potential of value-added innovation is introduced as the main attraction of modern agribusiness.

Based on this background, this International Community Service (PKM) program was implemented to equip cross-cultural school students, especially community students in the Indonesian Thai village known as Koh Panyee, which is inhabited by more than 1,680 residents of Javanese descent, and the majority of whom are Muslim (Gita Yulia, 2024), with an understanding of the importance of regional food security through microgreens cultivation practices. This activity aims to transform students' perceptions of agriculture, improve practical skills in farming on limited land, and encourage the growth of a spirit of youth entrepreneurship based on sustainable food. In line with this, farmer regeneration to modernize agriculture can be achieved by providing agricultural education to the younger generation (Marpaung, N., & Bangun, I. C. 2023). Through this educational collaboration, it is hoped that synergy will be created between ASEAN countries in creating a generation of "green heroes" who are ready to safeguard food sovereignty in the future.

2. METHOD

The implementation method for this International Community Service (PKM) activity is designed to provide a comprehensive learning experience, combining cognitive theory and psychomotor practice. The implementation stages are divided into three main phases: preparation, implementation, and evaluation.

2.1. Target Audience and Location

This activity targets cross-cultural students or students from other countries at the junior and senior high school levels in the Indonesian Village in Nonthaburi, Thailand. Participants were selected because they represent Generation Z in marginalized communities with high access to

technology but limited exposure to practical agribusiness activities. The activity was conducted in a hybrid format, both offline and online, using the Zoom Meeting platform.

2.2. Implementation Stages

This PKM activity is carried out through four systematic stages as follows:

1. Preparation Phase: In this phase, the implementation team coordinated with partners in Thailand to determine the schedule and technical details of the implementation. Additionally, the "Urban Farming Microgreens" material module was developed, communicative presentation media were created, and evaluation instruments were developed in the form of interactive pre- and post-test questionnaires.
3. Theoretical Education Stage (Knowledge Transfer): The material is delivered using an interactive lecture method. The material covers the urgency of regional food security, an introduction to a simple Smart Farming system, microgreen nutrition, and agripreneurship business opportunities in the global market.
4. Practical Demonstration Stage (Skill Enhancement): The team provides a visual demonstration of the steps in microgreen cultivation, from seed selection and preparation of the growing medium from recycled materials, sowing techniques, and hygienic harvesting methods. Students are encouraged to observe each process in detail through tutorials and live demonstrations.
5. Discussion and Business Workshop Stage: Students are divided into small groups to discuss creative marketing ideas for microgreens. This stage aims to hone business analysis skills and creativity in adding value to agricultural products.

2.3. Data Collection and Analysis Techniques

To measure the success of the program, data was collected using two methods, namely: Quantitative Method by means of a questionnaire given before (pre-test) and after (post-test) the presentation of the material which was carried out interactively. The questionnaire covered indicators of knowledge about urban farming, cultivation techniques, and entrepreneurial interest (using a Google Form). The second method, a qualitative one, involved participant observation during the Q&A session and workshop discussions to gauge participants' depth of understanding and enthusiasm.

3. RESULT AND DISCUSSION

3.1. Implementation of Activities

PKM activities in Thailand are carried out in a Hybrid manner, namely Offline and Online through the Zoom Meeting platform with: Topic: PKM International VIII (Thailand) Kampung Indonesia Nonthaburi, Praset Islam Mosque. April 19, 2026, Time: Apr 19, 2026 09:30 AM Bangkok, Join Zoom Meeting Zoom Meeting

https://telkomsel.zoom.us/j/91613255955?pwd=vXMc759Gknqn4BylVw5ZRgCSqgWaom.1

View meeting insights with Zoom AI Companion

https://telkomsel.zoom.us/launch/edl?muid=6828be2c-0ec9-4c26-ae8e-ae70e3b6bcd5

Meeting ID: 916 1325 5955, Passcode: 615322, The event on April 19, 2026, went smoothly. The presentation session, held via Zoom, covered the topic "Be a Young Thai Agripreneur With Microgreens," as follows:

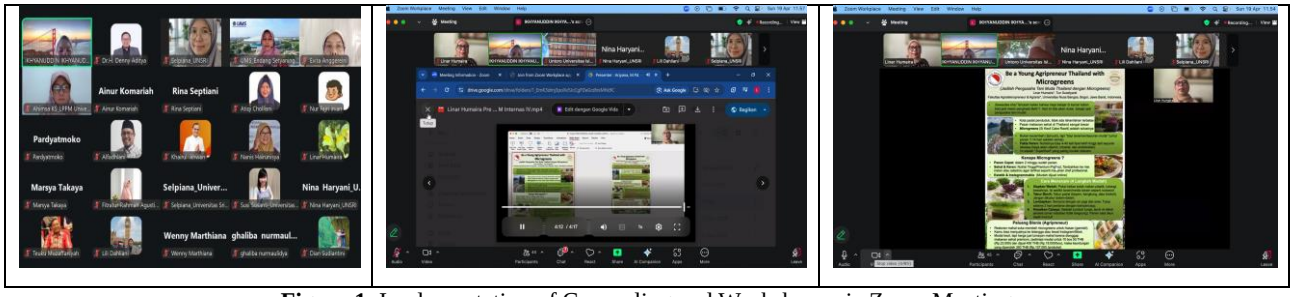

Figure 1. Implementation of Counseling and Workshops via Zoom Meeting

3.2. Improving Student Knowledge and Literacy

Based on data collected through interactive pre-test and post-test instruments, there was a significant increase in student literacy regarding the concept of urban agribusiness. Before the activity began, most students associated agriculture as a traditional sector requiring large areas of land and a long growing process. However, after the presentation on microgreens, students' understanding transformed.

Participants' average understanding improved, as evidenced by their reactions throughout the activity, indicating that the material presented was well-received despite being delivered online. Students began to understand that modern agribusiness can be conducted in limited spaces or on marginal land by utilizing simple technology and effective time management.

3.3. Transformation of Perceptions towards the Agricultural Sector

One interesting finding from this discussion was the shifting stigma surrounding agricultural professions. Through interactive discussions, junior and senior high school students in Thailand demonstrated a strong interest in the concepts of superfoods and sustainability.

Microgreens are an effective educational medium due to their "clean" and "aesthetic" nature, which is very suitable for the lifestyle of generation Z. Participants' responses showed that they are more open to considering agribusiness as a future career path when the sector is linked to aspects of health, technology, and product innovation. This aligns with the research findings of Sumarliani S. et al. (2024) that innovation and motivation are needed to encourage public interest in managing urban land. Furthermore, it aligns with the theory that introducing agriculture to school-age children should emphasize innovation to break the chain of negative stigma associated with the primary sector.

3.3. Agripreneurship Ideas Workshop Results

In the workshop session, students were given the challenge of formulating the added value of microgreens products. Some creative ideas that emerged from the students of Kampung Indonesia Thailand included: Local Branding related to the packaging of microgreens with environmentally friendly stickers for the target market of healthy restaurants in Bangkok; then Edible Gift related to the use of microgreens as healthy gift hampers marketed through social media; and Home-Kit related to the sale of independent planting packages (starter kits) for fellow students.

Students' ability to identify market segments shows that the spirit of entrepreneurship (agripreneurship) can be fostered by providing examples of commodities that are relevant to their daily environment.

3.4. The Relevance of Food Security in a Cross-Cultural Context

This activity also served as a means of educational diplomacy between Indonesia and Thailand. Despite the language differences, food security challenges in urban areas share common patterns. Discussions demonstrated that students in both countries share a shared awareness of the importance of household food self-sufficiency.

It is hoped that the implementation of microgreen cultivation in Thai schools will not remain a mere hobby, but will become the first step in building collective awareness among ASEAN youth to maintain regional food stability. The students' active participation demonstrates that cross-cultural collaboration in agribusiness has significant potential for further development in the future.

6. CONCLUSION

This international Community Service (PKM) activity in Thailand successfully achieved its goals of improving agribusiness literacy and fostering agripreneurship among students at cross-cultural schools in Thailand. Based on the evaluation results, it can be concluded that:

1. This microgreens cultivation education model is effective in transforming students' perceptions of agriculture. The practical, clean, and fast-harvesting nature of the cultivation is highly relevant to the characteristics of the urban youth.
2. There is an increase in students' understanding of the simple concept of smart farming, the added value of agricultural products, and the important role of agribusiness in maintaining ASEAN regional food security.
3. Interactions during the workshop showed that students have high creative abilities in packaging healthy food-based business ideas that are competitive in the urban market.

This activity proves that language and cultural barriers are not a barrier to transferring agribusiness knowledge, as long as the methods used are interactive and applicable.

Suggestion

For the sustainability of the impact of this program, the community service team suggests the following:

1. Curriculum Integration: Partner schools in Thailand are expected to integrate microgreens practices into extracurricular activities or science subjects as a means of continuous sustainable food education.
2. Follow-up Assistance: It is necessary to establish a community or online discussion forum between the lecturers, students, and student participants to monitor the success of independent cultivation carried out in their respective homes.
4. Commodity Development: For subsequent PKM activities, it is recommended to introduce variations of urban or other marginal environment commodities, such as a simple aquaponics system or the use of organic waste as liquid fertilizer, to broaden students' insight into the circular economy.

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