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DEVELOPING ENTREPRENEURIAL MINDSET THROUGH THE 'YOUNG LELEPRENEUR' COLLABORATIVE LEARNING MODEL AND CURRICULUM INTEGRATION AT CENDERAWASIH II SENIOR HIGH SCHOOL

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Abstract

SMA Cenderawasih II in South Tangerang faces dual challenges, including students' low understanding of nutrition and the economic limitations of their families. The Community Service Team from the Graduate School (SPS) of Universitas Terbuka (UT) took the initiative to implement a collaborative learning model called "Young Lelepreneur." This model was specifically designed by integrating catfish farming curriculum into school activities in close coordination with SMA Cenderawasih II. The community service program at SMA Cenderawasih II, South Tangerang, successfully enhanced students' knowledge, skills, and entrepreneurial character through practice-based catfish farming activities (learning by doing). Through a series of preparation, technical training, and implementation stages, students not only gained a theoretical understanding of basic biology and fishery management but also applied it directly in the field from pond construction and feed management to water quality control. This activity strengthened the synergy between the school, the community service team, and the students in realizing contextual and applicable learning. Monitoring and evaluation results indicate that this program has the potential to become a practice-based learning model that can be integrated into entrepreneurship and applied biology curricula. Furthermore, the development plan of the "Young Lelepreneur" program serves as a strategic step toward creating an educational ecosystem focused on innovation, economic independence, and school community empowerment.

Keyword: SMA Cenderawasih II, Catfish Farming, Entrepreneurship, Community Service, South Tangerang

INTRODUCTION

The development of high-quality and competitive human resources (HR) is a fundamental prerequisite for national progress. Senior High School (SMA) students represent future assets that must be prepared holistically, encompassing balanced nutrition, knowledge enhancement,

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skill development, and the cultivation of creativity (Emilia and Mulyana, 2016). Ironically, amid these efforts, data reveal significant nutritional issues among adolescents, particularly the low consumption of fish as an essential source of protein (Ervina et al., 2025). Nutritional deficiencies, especially in protein, may hinder physical growth and potentially affect students' cognitive development in the long term (Munawir et al., 2023). This condition not only impacts individual health but also obstructs the formation of high-quality human resources (Munawir et al., 2024a).

One innovative solution to address nutritional problems while simultaneously developing practical skills and an entrepreneurial mindset is catfish farming activities. Catfish (Clarias sp.) is one of the most accessible sources of animal protein, offering high nutritional value at an affordable price. It contains a high level of protein (approximately 17–20%), healthy fats, and various essential micronutrients such as calcium, phosphorus, and vitamin D (Justisia, 2016). Catfish farming not only provides knowledge about aquaculture techniques but also fosters a deeper understanding of the nutritional benefits of catfish, which is rich in protein. Moreover, it equips students with practical skills ranging from fish care to marketing (Setiyowati et al., 2024). Beyond that, this activity has the potential to serve as an entrepreneurial incubator, offering students valuable hands-on experience in managing a small-scale business.

Based on observations, SMA Cenderawasih II in South Tangerang faces dual challenges, namely the students' limited understanding of nutrition and their families' economic constraints. The majority of students come from low-income families whose parents work as laborers, street vendors, or other informal sector workers. This condition often results in inadequate family nutrition and limited access for students to participate in self-development programs outside the formal curriculum. Therefore, introducing catfish farming as a medium for learning and entrepreneurship is highly relevant and strategic for this school.

Through catfish farming activities, students not only learn about the biological and ecological aspects of freshwater fish, but also acquire practical skills that can serve as a foundation for future entrepreneurship. This activity aligns with the experiential learning approach, in which hands-on experience enhances conceptual understanding, technical competence, and productive work attitudes. Catfish farming using the biofloc system, for instance, enables water efficiency, promotes fish growth, and reduces environmental waste an approach that is highly relevant to the concept of green entrepreneurship (Hartono et al., 2024).

As a manifestation of the Tri Dharma of Higher Education, Universitas Terbuka (UT) is committed to making a tangible contribution to improving community welfare, as stipulated in Law No. 12 of 2012, Article 1 Paragraph 9. The Community Service Team from the Graduate School (SPS) of Universitas Terbuka (UT) and the Bandung Institute of Technology (ITB) took the initiative to implement a collaborative learning model called "Young Lelepreneur." This model was specifically designed to integrate the catfish farming curriculum into school activities in direct coordination with SMA Cenderawasih II. Through this approach, students are expected not only to gain theoretical knowledge and practical skills, but also to develop an independent and creative entrepreneurial spirit, enabling them to become agents of economic transformation for themselves, their families, and their surrounding communities.

METHOD OF IMPLEMENTATION

The method employed in this community service program was Active and Participatory Learning (Nursyamsu, 2018). The program was implemented using a participatory and educational approach, involving active collaboration between the community service team, the school administration, supervising teachers, and students of SMA Cenderawasih II, South Tangerang, as the primary partners. The activities were conducted over a period of three months, encompassing several stages: preparation, technical training, cultivation implementation, mentoring, and outcome evaluation. The main objective was to enhance awareness and decision-making capacity related to sustainable aquaculture practices (Munawir et al., 2021). The stages of community service activities are as follows:

1. Preparation Stage
   Coordination with the school to determine the location for the catfish farming pond construction in a strategic area easily accessible to students. The community service team conducted a field survey to assess environmental conditions, water availability, and site safety.
2. Technical Training Stage
   The training is conducted face to face using interactive methods and direct practice..
3. Cultivation Implementation Stage
   In the training phase, students conduct independent practice under the guidance of the community service team. The community service team conducts weekly visits and provides technical input. Each student group is responsible for one cultivation tank, fostering a sense of responsibility and ownership of the activity..
4. Mentoring and Evaluation Stage
   Mentoring and evaluation are carried out during the maintenance period until harvest (± 2.5 months).
5. Sustainability Stage
   To ensure the program's sustainability, a "Young Lelepreneur" group was formed, consisting of student representatives and a teacher mentor. This group is responsible for continuing the next cultivation cycle.

RESULTS AND DISCUSSION

Cenderawasih II Senior High School, South Tangerang, is a popular private school known for its strong commitment to developing the academic and non-academic potential of its students. This school is a favorite among parents because, in addition to offering a high-quality education, it also provides ample space for students to hone their creativity, critical thinking, and innovation through various extracurricular activities and hands-on learning projects. The conducive and participatory learning environment makes this school an ideal place to foster independent, creative, and entrepreneurial character in students. In this context, the community service program, which focuses on catfish cultivation combined with crop cultivation, is highly relevant and strategic. This program not only provides students with real-world experience in applied science and entrepreneurship but also builds awareness of the importance of food security and balanced nutrition from an early age.

Preparation Stage

The coordination and survey activities took place on May 1, 2025, at Jl. Komp. Kemlu Jl. Cendrawasih Raya No. 74, RT.4/RW.1, Pondok Karya Village, Pondok Aren District, South Tangerang City, Banten, and were attended by the Principal and several vice principals of participating schools. To reach the location of SMA Cendrawasih II, the PkM team from the Open University Head Office traveled a distance of approximately 15.5 km, with a travel time of approximately 1 to 1.5 hours. The journey passed through the busy Pamulang and Ciputat areas of South Tangerang. PKM Team Coordination and illustration are provided in Figure 1.

(a) (b)

Figure 1. (a) Coordination of the Open University PkM Team, and (b) PkM Team and Cendrawasih II High School

The preparation phase began with intensive coordination between the community service team, the principal, the supervising teacher, and student representatives to align on the goals, benefits, and mechanisms of the activity. The initial meeting also discussed the strategic location for the catfish cultivation pond, which should be safe, easily accessible to students, have access to clean water, and adequate lighting. Once the location was agreed upon, a field survey was conducted to assess technical conditions such as water source availability, drainage systems, and potential environmental disturbances.

The next stage was the program's socialization to the school community. This activity involved an interactive presentation to introduce the basic concepts of catfish cultivation, the nutritional benefits of catfish as a source of animal protein, and its relevance to developing students' entrepreneurial spirit. Through this activity, it was hoped that all parties would understand their respective roles and develop a sense of ownership of the program. Following the socialization phase, materials and equipment were prepared, including the purchase of fiber pond material for the main pond, PVC pipe for water channels, aerators to maintain oxygen levels, and quality catfish fry. The construction of a 2 x 3 meter cultivation tank with a capacity of approximately 500 catfish was carried out through mutual cooperation between the community service team and students. This process not only built physical facilities but also served as a direct learning medium (learning by doing) where students were trained to work together, familiarize themselves with pond structures, and understand the basic technical aspects of cultivation.

(a) (b)

Figure 2. (a) Development of Catfish Cultivation and Plant Cultivation (b) The PkM Team and SMA Cendrawasih II Team

Technical Training and Implementation of Catfish Cultivation

Technical training is an important part of the community service program, which aims to provide students of Cenderawasih II High School with practical knowledge and skills related to catfish cultivation. The technical training is conducted face-to-face using interactive lectures, demonstrations, and hands-on practice methods so that students not only understand the theory but also are able to apply it in real-life situations. This training covers a variety of topics, from an introduction to the basic biology and life cycle of catfish, to the needs of an ideal living environment, to the construction and maintenance of fiber ponds. In addition, students are taught about feed management, water quality control, disease prevention, and harvesting and post-harvest stages. Equally important, entrepreneurship materials are provided to foster students' awareness and interest in managing aquaculture products as a small business opportunity within the school and home environment.

The training was delivered by a community service team with expertise in fisheries and entrepreneurship, supported by science teachers as local mentors. Participants were divided into small groups to ensure effective learning and provide equal opportunities for hands-on practice. Through a learning-by-doing approach, students learned how to measure water quality, provide proportional feeding, and regularly record fish growth. This phase also served as a platform for practicing responsibility, teamwork, and precision in their work. With structured and applicable training, it is hoped that students will not only master catfish cultivation techniques but also develop entrepreneurial motivation and an awareness of the importance of animal protein sources for health and future economic independence.

(a) (b) (c)

Figure 3. (a) Fiber Pool Design from the PkM Team, (b) Implementation of feed selection for catfish cultivation, and (c) PkM Team Pool Maintenance Training

Cultivation Implementation is the core phase of community service activities at Cenderawasih II High School, where all the concepts and skills acquired through the training are applied in the field, as shown in Figure 4. At this stage, students work in groups to cultivate catfish under direct guidance from the community service team and accompanying teachers. The activity begins by filling the tarpaulin pond with water and adjusting the water quality to meet cultivation standards, including measuring pH, temperature, and dissolved oxygen levels. Once the water conditions are deemed optimal, catfish fry are stocked at a stocking density of approximately 250 per square meter. Students are then responsible for regularly feeding the fish three times a day, adjusted to the fish's body weight and growth phase. In addition, they also conduct routine checks on the fish's health, monitor for potential disease, and maintain pond cleanliness to maintain stable water quality.

Figure 4. Implementation of Teacher and Student Training at SMA Cenderawasih II

Each student group is required to regularly record the development of their fish, including growth data, survival rate, and daily feed consumption. This recording activity not only fosters discipline and accuracy but also helps students understand the importance of data in decision-making in production activities. The community service team conducts weekly visits to monitor progress, provide technical input, and ensure the cultivation process is proceeding according to plan. This approach is also designed to foster a sense of responsibility and ownership in the students' projects. Thus, the cultivation implementation phase is not simply a practical activity but also a contextual learning tool that combines scientific knowledge, technical skills, and entrepreneurial values, while strengthening students' spirit of cooperation and independence in managing productive economic activities based on local resources.

Figure 5. Documentation of the Final Activities with the PkM Team and Cenderawasih II High School South Tangerang

The results of monitoring and evaluation (M&E) indicate that the community service program through catfish farming activities at SMA Cenderawasih II, South Tangerang, has had a significant positive impact on improving students' knowledge, skills, and entrepreneurial attitudes. Based on observations and interviews, students demonstrated clear progress in their understanding of fish farming concepts from pond management, feed administration, and water quality control to the harvesting process. Most participants were able to accurately describe the stages of cultivation and showed good practical performance in the field. Beyond technical aspects, this activity also fostered students' awareness of the importance of animal protein from catfish as part of a balanced diet, which was previously less understood.

In terms of attitude, there was a noticeable increase in enthusiasm, responsibility, and teamwork among students throughout the activity. They were not only active in maintenance tasks but also began to show interest in developing small business ideas based on catfish harvests, such as food processing and simple marketing initiatives. Both the community service team and teachers noted that the program successfully nurtured creative and innovative young entrepreneurs.

Based on the M&E results, the school plans to make catfish farming a sustainable program integrated into the school curriculum, particularly within the subjects of entrepreneurship, applied biology, and practical arts. Furthermore, SMA Cenderawasih II aims to develop an extracurricular program called "Young Lelepreneur" as a platform for students who wish to

deepen their aquaculture and business management skills. Collaboration with the Department of Fisheries and the involvement of alumni are planned to strengthen the program's sustainability. Thus, the M&E findings not only demonstrate the effectiveness of the program in enhancing students' capacities, but also reveal its great potential to permanently integrate practice-based and locally rooted entrepreneurship education into the school's learning system.

CONCLUSION

The community service program at Cenderawasih II Senior High School, South Tangerang, successfully enhanced students' knowledge, skills, and entrepreneurial character through practical catfish cultivation activities (learning by doing). Through preparation, technical training, and implementation, students not only understood the basic theories of biology and fisheries management but also were able to apply them directly in the field, from pond construction and feed management to water quality control. This activity strengthened the synergy between the school, the community service team, and students in realizing contextual, applicable learning. In terms of attitudes, students demonstrated increased responsibility, cooperation, and awareness of the importance of food security and balanced nutrition. They began developing small business ideas based on catfish harvests, demonstrating the growth of a creative and independent young entrepreneurial spirit. Monitoring and evaluation results indicate that this program has the potential to become a practice based learning model that can be integrated into entrepreneurship and applied biology curricula. Furthermore, the planned development of the "Young Lelepreneur" program is a strategic step in creating an educational ecosystem oriented toward innovation, economic independence, and empowering school communities..

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