



TEMPEH NUGGET INNOVATION: CREATIVE STEPS TOWARDS EMPOWERED STUDENTS

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Received 20 December 2024; Received in revised form 05 January 2025; Accepted 26 January 2025

Abstrak

Pengabdian masyarakat yang dilaksanakan oleh tim pengabdian yang bertujuan untuk memberdayakan santri Pondok Pesantren Mamba'ul Hisan Sidayu Gresik melalui kegiatan pendampingan pengelolaan nugget tempe. Metode yang digunakan dalam pelatihan terbimbing dilaksanakan secara luring maupun daring melalui media youtube. Pelatihan diikuti oleh 12 santri. Dimulai dari persiapan pada bulan November sampai kegiatan pelatihan di bulan Desember. Pelatihan pembuatan nugget tempe yang dilaksanakan di Pondok Pesantren Mamba'ul Hisan memberikan dampak positif yang signifikan bagi para peserta, khususnya para santri. Hasil evaluasi menunjukkan bahwa 82% peserta berhasil memahami materi yang disampaikan, dan 85% mampu menerapkan keterampilan praktek dengan baik. Melalui pelatihan ini, santri tidak hanya mendapatkan pengetahuan baru, tetapi juga mampu menghasilkan produk inovatif berupa nugget tempe. Produk ini menjadi nilai tambah dalam pengolahan bahan tempe, sekaligus membuka peluang bagi santri untuk mengembangkan usaha mandiri. Keberhasilan pelatihan ini menunjukkan efektivitas pemberdayaan santri yang dilakukan, sehingga mereka menjadi individu yang lebih berdaya dan siap berkontribusi dalam pemberdayaan ekonomi pesantren dan masyarakat.

Kata Kunci: *Pengabdian Masyarakat; Pelatihan Membuat Nugget Tempe; Santri Berdaya.*

Abstract

The community service is carried out by a team of community service that aims to empower the students of the Mamba'ul Hisan Sidayu Gresik Islamic Boarding School through tempeh nugget management assistance activities. The methods used in the guided training are carried out offline and online through YouTube media. 12 students attended the training. Starting from preparation in November to training activities in December. The tempeh nugget-making training held at the Mamba'ul Hisan Islamic Boarding School had a significant positive impact on the participants, especially the students. The results of the evaluation showed that 82% of the participants managed to understand the material presented, and 85% were able to apply practical skills well. Through this training, students not only gain new knowledge but are also able to produce innovative products in the form of tempeh nuggets. This product is an added value in the processing of tempeh ingredients, as well as opening opportunities for students to develop independent businesses. The success of this training shows the effectiveness of the empowerment of the students so that they become more empowered individuals and ready to contribute to the economic empowerment of the pesantren and the community.

Keywords: Community Service; Training in Making Tempeh Nuggets; Empowered Students.

INTRODUCTION

Soy-based foods, such as tempeh, have long been known as one of the most nutrient-rich and affordable sources of plant-based protein (Aryanta, 2020). Soy-based foods, such as tempeh, have long been known as one of the most nutrient-rich and affordable sources of plant-based protein (Fajri, 2021). Tempeh has advantages in terms of protein, fiber, and natural probiotics, so it has great potential to be developed as an innovative food ingredient that meets the nutritional needs of the community (Mawati dkk., 2017). Innovations in processing tempeh into ready-to-eat products, such as nuggets, provide opportunities to create added value and increase the competitiveness of local products (Suprihartini, 2021). In this context, the empowerment of education-based communities, such as students in Islamic boarding schools, is one of the strategic approaches to encourage the development of local-based food innovation (Pinasti, 2020).

However, the existing reality shows that many students in Islamic boarding schools do not have adequate entrepreneurial skills, including in processing local food ingredients into products of high economic value (Alifa, 2021). This is often due to a lack of access to practical training and a limited understanding of the potential for diversification of tempeh-based products (BSN, 2014). Various community services have been carried out to empower the pesantren community, such as entrepreneurship training, food processing, and the introduction of appropriate technology (Widiastoeti & Kiak, 2018). Even so, most of the existing services focus more on conventional products, so the potential for product innovation such as tempeh nuggets has not been explored optimally (Putri, 2024).

Based on the analysis conducted by the team, there are still minimal entrepreneurship training activities held at the Islamic boarding school. Only a team from IAI Daruttaqwa has ever provided training to students. The lack of knowledge of students about entrepreneurship, the lack of knowledge of students in processing tempeh, the lack of knowledge of students in making innovative products that will be the superior products of students of the Mamba'ul Hisan Islamic Boarding School. Therefore, in this activity, nuggets made from tempeh will be made to add superior products that will be produced by students (Aryani, 2023), Tempeh was chosen as a raw material for making nuggets because it has a fairly high fiber content in tempeh (Permatasari & Rahayuni, 2013).

Although various community services have been carried out to improve entrepreneurial and food processing skills in the pesantren community, there are significant differences in approaches to this service. Community service from Irdalisa et al., (2023), It focuses more on basic entrepreneurship training such as



business management and marketing without emphasizing specific product innovation based on local ingredients. Community service from Werdiningsih dkk, (2023) Focusing on large-scale tempeh production as the main commodity, but not exploring the diversification of tempeh-based products into innovative foods such as nuggets. Meanwhile, the community service Ibadurrahman et al., (2024), prioritize the development of food processing technology, but without the active involvement of participants in creating new products with high economic value.

These three dedications show the importance of a holistic approach that includes not only entrepreneurial empowerment, but also specific product innovations that have competitiveness in the market. Therefore, this service offers a unique approach with a focus on training in processing tempeh into nuggets as an innovative product, while integrating entrepreneurial aspects to empower students comprehensively.

The purpose of this service is to create creative steps in empowering students through tempeh nugget innovation, so that they have practical skills and competitiveness in the field of entrepreneurship. Through this program, it is hoped that students can become agents of change who are not only able to develop locally-based superior products, but also contribute to strengthening the economy of the pesantren and the surrounding community.

MATERIALS AND METHODS

The training on making tempeh nuggets was attended by 12 female students. Training activities will be held in September-December 2024. Instilling creative and innovative ideas through entrepreneurship to students so that they have provisions after returning from the cottage. The ability to be creative and innovate is very important for students to be able to develop to face various challenges of the times. This approach aims to empower Santi through training in making tempeh nuggets so that it can improve the skills of students in processing nutritious food, as well as equipping students to later be used as small business opportunities with tempe-based products.

The stages used in the implementation of tempeh nugget making training are as follows: (1) In the initial stage, the team prepares for the training at the training location. (2) Conveying an understanding of the benefits of tempeh for health by the team coordinator. Explaining to the students the nutritional content in tempeh, such as protein, vitamins, and minerals that are beneficial for body health. Providing clear insight to students about the benefits of tempeh as a healthy and affordable food. (3) The team prepares materials and tools that will be used for the practice of making tempeh nuggets. Explain what ingredients are used, such as tempeh, flour, kitchen spices, and other complementary ingredients and tools needed. (4) Training on making tempeh nuggets by the community service team. The implementation of the training began with a presentation of material for

an initial understanding of the process of making tempeh nuggets delivered by the team coordinator and continued by team members in the practice of making them. (5) The implementation of the tempeh nugget making training has been completed and the teams left the training site to return to their respective homes. (6) The team monitors the results of the training on making tempeh nuggets to students who have participated in the training. In the monitoring to ensure whether the students are really able to practice making cassava nuggets correctly. The flow of this community service activity is explained in Figure 1.

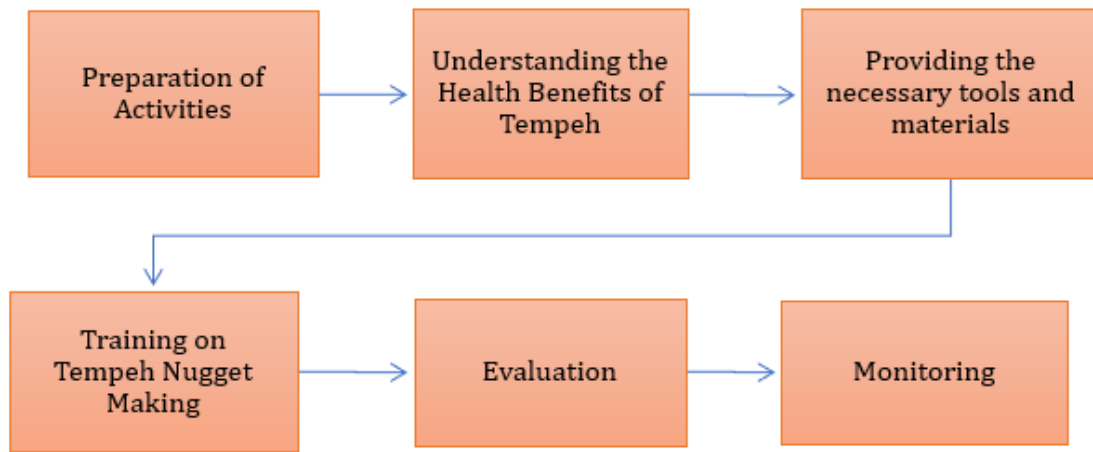


Figure 1. Implementation Method

Monitoring is carried out by looking at the results of the test of students' ability to understand the making of tempeh nuggets by providing pre-test and post-test questions on the knowledge of making tempeh nuggets. In addition, the service team also conducted interviews with participants about the satisfaction and usefulness of this activity with the interview instruments described in Table 1.

Table 1. Participant Satisfaction Interview Instrument

No.	Aspects	Indicator
1	Motivation and Participation	Participants' motivation in participating in mentoring activities The level of participant involvement during the training process, both in discussions and hands-on practice Participants' willingness to continue developing skills after the activity is completed
2	Impact of Activities	Participants' perception of the benefits of mentoring activities for their skill development Participants desire to produce and market tempeh nuggets independently or in groups Participants' perception of the potential of

No.	Aspects	Indicator
3	Constraints and Evaluation	tempeh nuggets as a business opportunity Obstacles felt by participants during the training process Participant input for future improvement of mentoring activities The success rate of the training in helping participants understand and practice the material

RESULTS AND DISCUSSION

The implementation of tempeh nugget making training at the Mamba'ul Hisan Islamic Boarding School involves a series of strategically designed stages to empower students through local food-based innovations. The following is an analysis of the service activities that have been carried out:

Training Preparation

Before the implementation of the training took place, in order to prepare for the activity, it could be carried out smoothly and successfully. So the community service team conducted a coordination meeting led by the team coordinator. In the meeting, a schedule of activities and the division of tasks were made that were conveyed by the team coordinator. In addition to the task of exploring input and suggestions from team members for the successful implementation of the training, the trainees can understand and practice what is conveyed by the team as documented in figure 2.

This step is an important key to ensuring that the training facility supports the smooth running of activities, both in terms of the availability of space, materials, and tools. Choosing a representative and comfortable location is an aspect that needs to be considered so that participants can learn effectively.



Figure 2. Team Coordination Meeting

Initial Understanding

Next, the stage of assisting in making tempeh nuggets to students. The initial delivery of material was delivered by the coordinator of the community service team by providing an understanding to the students about the content in tempeh. The content in tempeh is such as protein and other vitamins that are beneficial for body health. Besides that, it also provides an understanding to students about the benefits of tempeh as a healthy food and affordable price. Besides that, it also provides knowledge about alternative processing of tempeh, besides being fried, it can also be processed into tempeh nuggets.

Practice Readiness

After the opening of the training was carried out by the team coordinator, the materials and tools for making tempeh nuggets were prepared. So the next process of making tempeh nuggets was delivered by team members and students of the Sharia business management study program. The team explained how the process of making nuggets starts from the necessary ingredients and tools used for the tempeh nugget-making process figured on Figure 3.



Figure 3. Presentation of Materials by Team Members

The making of tempeh nuggets using the ingredients used is very easy to obtain and the price is also very affordable for anyone. The ingredients that need to be prepared for making tempeh nuggets include: tempeh, eggs, celery, carrots, garlic, salt, sugar, pepper powder, green onions, flavorings and cooking oil. After the ingredients have been prepared for making tempeh nuggets, it is also necessary to prepare raw materials to be used to make nugget dough, namely wheat flour, water and bread flour. In addition, packaged tomato sauce is also prepared to complement after the nuggets are ready to be served. The ingredients in making tempeh nuggets that have been prepared, then the tools that will be used to make the nuggets are needed, including: stove, pan, basin, spatula, knife and cutting board, blender, strainer, nugget mold.

Training Implementation

The core training involves two main activities, namely the presentation of the material by the team coordinator and hands-on practice by the participants guided by the team members. This stage demonstrates an active learning approach that integrates theory with hands-on experience, so that participants can understand not only the steps to make, but also the techniques to produce quality tempeh nuggets. The success of this stage is reflected in the high enthusiasm of the participants during the practice.

Team members practiced how to make tempeh nuggets with the following steps: mashing the steamed tempeh; mixing the ingredients, mixing the refined tempeh with other ingredients that have been prepared, preparing a baking sheet lined with plastic so that the dough is not sticky can be greased with a little oil. Put the tempeh batter in the pan and flatten the surface. If not using a baking sheet, shape the dough manually using plastic to taste, the nugget dough is steamed until cooked through (about 20-30 minutes). Allow to cool, then remove from the mold or remove from the plastic, slipping the steamed nuggets into the wet dough (a mixture of water and flour). Roll the nuggets in the breadcrumbs until the entire surface is covered, heating a generous amount of oil. Fry the nuggets until golden yellow and perfectly cooked, drain the nuggets from the oil, then serve warm with chili sauce, tomato sauce, or mayonnaise to taste. The results of the student training are documented in figure 4.



Figure 4. Results of Making Ready-to-Eat Tempeh Nuggets

The delivery of material and practices for making tempeh nuggets to students was carried out directly at the location and through youtube media. This is because based on the team's consideration to remember and make it easier for students to understand the theory and practice given by the team, students understand and can practice how to make tempeh nuggets. So, YouTube media can help lecturers optimize the delivery of learning materials. The delivery of material on YouTube is illustrated in Figure 5.



Figure 5. Youtube Media Community Service Team

Monitoring and Evaluation

The monitoring stage is an important component in assessing the program's success. The service team conducted evaluations through pre-tests and post-tests to measure the improvement of participants' understanding, as well as interviews related to the satisfaction and benefits of the activity. The analysis of the results showed a significant improvement in the participants' abilities, both in understanding the material and practicing making tempeh nuggets. This was shown based on the results of the pre-test and post-test conducted on the students participating in the training, the results were obtained that the students' knowledge about entrepreneurship from the results of the pre-test was 15% and the post-test increased by 82%. After participating in the training to make tempeh nuggets, there was a change in entrepreneurial knowledge that was initially and previous skills 20% and after the training 85%. Entrepreneurial knowledge is increasing and the skills of students in making products are also increasing. With this training, students become empowered, and the superior products of the boarding school increase. This training can improve the quality of human resources in Islamic boarding schools.

In addition to evidence of the success of the program from increasing students' knowledge about making tempeh nuggets, the service team also conducted interviews with several participants. From the results of the interview, it was obtained that the majority of participants had high motivation to participate in the training on making tempeh nuggets. The students stated that this training provided new insights that were very useful, both in terms of theory and practice. Most of the participants expressed their enthusiasm for developing the skills gained in this training, especially because they saw the great potential of tempeh nugget products as a business opportunity. The participation rate of participants was also very good, as evidenced by their active involvement in discussion sessions and hands-on practice.



This training has a significant positive impact on participants. Most of the participants stated that this activity succeeded in increasing their knowledge about the nutritional content of tempeh and how to process it into a product of high economic value. In addition, the students see tempeh nuggets as a potential business opportunity to be developed, both individually and in groups. Some participants even revealed plans to start small-scale production in the pesantren environment as a first step to applying the skills they have learned.

Although this training went well, several obstacles were identified from the interview results. One of the main obstacles conveyed by the participants was the limitation of practice time, which was not enough to master all stages of making tempeh nuggets optimally. In addition, several participants expressed the need for further assistance so that they can be more confident in producing tempeh nuggets independently. This input is an important concern for the development of similar programs in the future, especially in providing longer practice time and developing advanced mentoring programs to support the sustainability of participants' skills.

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Overall, the results of the interviews showed that the training in making tempeh nuggets has provided significant benefits for participants, both in improving skills and motivation to develop innovative products. However, improvements in the duration of practice time and the provision of follow-up assistance are needed to ensure the sustainability of the benefits of this program. This program not only succeeded in empowering students but also opened up new opportunities for them to contribute to strengthening the economy of the pesantren and the surrounding community. At the end of the mentoring activity, a photo of the participants was carried out which is documented in Figure 6.

Supporting factors in tempeh nugget-making training activities are the support from various parties, especially the Rector of IAI Daruttaqwa who has provided budget facilities for the realization of this community service, the stakeholders of Islamic boarding schools who have provided places and facilities for the implementation of tempeh nugget making training activities. The students were very enthusiastic in receiving material on understanding entrepreneurship and practice in making tempeh nuggets. Meanwhile, what is an obstacle to the implementation of this program is the difficulty of gathering a large number of students because the schedule of activities at school and the cottage is very dense.



Figure 6. Training Participants in Making Tempeh Nuggets

The students were very enthusiastic about participating in the training on making tempeh nuggets. In the training, female students participating in the training were directly involved in the process of making nuggets. As an evaluation, the team scheduled on the last day of the training that all students who participated in the training must be able to practice the process of making nuggets until they are finished. Practical learning is also given to make innovative products. The results of making tempeh nuggets that have been practiced by the team taste very good, the taste is no less delicious than the nuggets made from chicken. Santri is very happy because they have learned to make nuggets from very cheap tempeh ingredients and the quality is also very tasty.

Monitoring

The development of the tempeh-making training program is still carried out by the lecturer team in planning further training. Other places that are the target of the training are then planned to Islamic boarding schools in Gresik regency and outside Gresik regency. Monitoring the sustainability of the community service program in making tempeh nuggets is carried out continuously by the team, so that students who have participated in the training are still motivated to always innovate in making various products and can improve their quality so that they become empowered students.

The results of the interviews showed that the motivation of the students increased after participating in the training, which indicated the success of the program in building the confidence of the participants. This supports the intrinsic motivation theory put forward by Suparyadi, (2015), where a sense of achievement and new understanding can motivate individuals to continue developing skills. In this context, students not only understand the process of making tempeh nuggets but also begin to realize the business opportunities that can be generated from these products (Asri, 2022). The fact that some participants



have planned to produce tempeh nuggets independently shows a real positive impact, as also found in a study by Krisdiarto, (2023), which states that innovative product-based training can increase participants' economic independence.

However, the obstacles found, such as limited practice time and the need for follow-up mentoring, reflect common challenges in community service programs. Based on the findings in another service by Santoso et al. (2022), time constraints are often a factor that hinders participants from truly mastering new skills. Therefore, more flexible planning is needed, including additional practice time or the implementation of post-training mentoring to ensure the sustainability of skills. Further mentoring can also help participants in facing challenges that arise during business implementation, such as technical or marketing constraints, as suggested by the theory of continuous learning (Setiawan, 2021).

In addition, this program is unique compared to other services, namely focusing on innovating specific tempeh-based products, such as nuggets, which are rarely the main concern. Most similar programs tend to focus on processing tempeh as a basic product without significant diversification (Nofiyanto, 2020). Tempeh nuggets, as an innovative product, not only have great market potential because of their practical nature and are liked by various groups but can also compete with other fast food products. These findings are consistent with research by Zulaidah dkk., (2020), which states that local food-based product innovation can increase added value and competitiveness in the local and global markets.

From an economic perspective, this training also provides opportunities to develop entrepreneurship among students. Tempeh nuggets as a product of training have the potential to become a new source of income for Islamic boarding schools, both through mass production and local marketing (Tiarawati, 2017). This approach is in line with the concept of social entrepreneurship, where communities are not only empowered to meet economic needs but also to create a broader social impact (Warti'ah dan Afghor, 2024).

Thus, this training not only serves as a means of skill transfer but also as a holistic empowerment strategy. In the future, improvement measures are needed, such as strengthening further assistance, developing marketing networks, and continuous evaluation to ensure that this program has a long-term impact on students and the pesantren community. This program proves that locally-based product innovation, when integrated with community-based training, can be a strategic step to empower communities sustainably.

CONCLUSIONS AND SUGGESTIONS

The tempeh nugget-making training conducted by the IAI Daruttaqwa Gresik lecturer team which female students attended was very enthusiastic. As a result of the training, all trainees can understand 82% of the material and can practice 85% in making tempeh nuggets. Thus, students can make new processed

products from tempeh ingredients, namely tempeh nuggets. Tempeh nuggets are an innovative product produced by the students of the Mamba'ul Hisan Islamic boarding school, the superior products of the boarding school are increasing and the students are empowered.

Recommendations for the development of the next program should be recommended for lecturers who will carry out community service at Islamic boarding schools. This is because it is still very minimal done by lecturers who carry out service. This is to improve the ability of students in the cottage and can empower students. Student empowerment should be carried out continuously so that students have abilities in various fields. Entrepreneurial knowledge must also be possessed so that students have creative and innovative ideas in making a product.

ACKNOWLEDGMENTS

The implementation of the tempeh nugget making training for the IAI Daruttaqwa lecturer team has been running smoothly at the Mamba'ul Hisan Islamic Boarding School, so we the lecturer team would like to express our deepest gratitude to all parties who have supported the implementation of this training: (1) Mr. Dr. H. A. Syifa'ul Qulub, S.Ag, M.El as the Rector of IAI Daruttaqwa Gresik, who has provided motivation and funds for the realization of community service activities. (2) Head of LPPM IAI Daruttaqwa Gresik, who has given permission to the team to carry out community service activities. (3) Caretaker of the Mamba'ul Hisan Sidayu Gresik Islamic Boarding School, Mr. KH. Makinun Amin Muhammad who has provided a place for the implementation of community service. (4) The team of IAI Daruttaqwa lecturers and everything that we cannot mention one by one who are very supportive in the realization of the tempeh nugget making training.

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