

Empowering Communities Based on Local Wisdom by Transforming Seashell Waste into Valuable Art

Pemberdayaan Masyarakat Berbasis Kearifan Lokal dengan Mengubah Limbah Kerang menjadi Karya Seni Bernilai

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Abstract

This community service activity was conducted in Sidamukti Village, Pandeglang Regency, Banten Province. Known for its coastal area, Sidamukti Village is home to a predominantly fishing community. The fishermen harvest various seafood, including clams, a type of seashell commonly used for its edible meat. While the fish is sold and the clam meat is consumed, the shells are often discarded as non-biodegradable waste that pollutes the environment. To address this issue, the PKM team from Universitas Trisakti explored an alternative approach by transforming seashell waste into valuable art. These activities employed the ABCD (Asset-Based Community Development) method, involving four key steps: 1) Observation; 2) Planning; 3) Implementation; and 4) Evaluation. The outcomes included the creation of handcrafted items such as necklaces, brooches, curtains, and lamps. As a result, the village community, particularly women, has become more empowered, and potentially generating additional income to support their families and enhance the local economy.

Keywords: ABCD method, Community service, Economic empowerment, Seashell waste, Seashell crafts, Sidamukti Village

Abstrak

Kegiatan pengabdian kepada masyarakat ini dilaksanakan di Desa Sidamukti, Kabupaten Pandeglang, Provinsi Banten. Desa Sidamukti dikenal sebagai daerah pesisir dengan mayoritas penduduk bermata pencaharian sebagai nelayan. Para nelayan di desa ini menangkap berbagai jenis hasil laut, termasuk kerang. Namun, setelah daging kerang dikonsumsi, cangkangnya sering dibuang dan menjadi sampah yang sulit terurai serta mencemari lingkungan. Untuk mengatasi masalah ini, tim PKM dari Universitas Trisakti memberikan pelatihan tentang cara mengubah limbah kerang menjadi barang kerajinan yang bernilai jual. Kegiatan ini menggunakan metode ABCD (Pengembangan Masyarakat Berbasis Aset), yang meliputi empat langkah utama: pengamatan, perencanaan, implementasi, dan evaluasi. Hasil dari kegiatan ini adalah pemanfaatan limbah kerang menjadi kerajinan yang dapat dijual, seperti kalung, bros, tirai, lampu, dan lain-lain. Kegiatan ini membuat masyarakat desa, terutama para wanita, menjadi lebih mandiri dan berpotensi menghasilkan pendapatan tambahan bagi keluarga serta meningkatkan ekonomi lokal.

Kata kunci: Metode ABCD, Pelayanan Masyarakat, Pemberdayaan Ekonomi, Limbah Kerang, Kerajinan Kerang, Desa Sidamukti

1. INTRODUCTION

Currently, coastal communities around the world face serious environmental issue due to the accumulation of non-biodegradable waste, as highlighted in a study by Mihai et al., (2022). This issue encompasses various types of waste, including plastic debris, metal objects, and natural materials such as clam shells. The presence of non-biodegradable waste poses a multifaceted threat to coastal ecosystems and the communities that depend on them (Ati et al., 2023).

According to Popović et al., (2023), shell waste make a large contribution to marine waste. Although clam shells can disintegrate over time, if the amount are too large it will overload the natural decomposition process (Qu et al., 2022). Apart from that, shells scattered as rubbish disrupt the local ecosystem, making it dangerous for the health of marine biota (El-Naggar, 2020). This situation emphasizes the importance of comprehensive waste management and global cooperation to overcome various environmental problems faced by coastal communities.

Sidamukti Village is a coastal area located in Pandeglang Regency, Banten Province. This village is facing problems in waste management, especially marine waste. Most of the resident in this area depends on fishing as their main livelihood (Nurhaida et al., 2023). Fishermen go to sea every day to catch fish and clams, a type of seashell commonly used for its edible meat. The fish caught are sold, while s clams, after the meat is consumed, the shells are often thrown away. These shells become waste that is difficult to decompose and cannot biodegrade and accumulate along the coast. As a result, piles of shell waste cause serious environmental problems for marine ecosystems and coastal habitats.

This problem needs to be resolved seriously and requires support from various stakeholders. The Penta Helix model is highly recommended in this context because it offers an approach that includes involving various key stakeholders to address problems effectively. This model was developed by emphasizing the importance of collaboration between five key stakeholders, namely: government, private sector, academics, society and media. It is hoped that effective collaboration between these five stakeholders will be able to overcome problems in a more holistic, inclusive and sustainable manner in various social, economic and environmental problems (Nurhaida et al., 2024). To overcome the waste problem in Saidamukti Village, the Community Service team (called the PKM team) from Universitas Trisakti initiated a waste management program in collaboration with village officials, Sidamukti residents, and supported by the company's Corporate Social Responsibility (CSR) program.

Previous research and activities show that seashell waste can be processed in various ways and can be used as decoration, for example: artistic crafts and architectural decoration. It can also be used as cutting tools and a source of lighting. This means that if the waste is processed properly it can become something useful for the ecosystem and society (Gadgihalli et al., 2017; Padhi, 2021). Abubakar et al., (2022) stated that using seashell waste as material for making handicrafts is the right method to utilize this available fishery resource. This approach not only addresses environmental problems but also creates economic opportunities for communities. Furthermore, Mahendra et al., (2023) emphasizes the utilization of seashell waste allows these craft products to be preserved as quality works of art. Against this backdrop, the PKM team has initiated a program to train local residents in creating crafts from seashell waste.

This article presents a community-based program that has been implemented in Sidamukti Village, Pandeglang Regency, Banten Province. The primary goal is to overcome the waste problem by implementing innovative waste management practices. Specifically, the target of this activity is to equip the community with the skills to make arts and crafts by making products made from shells in a variety of shapes and functions that that can be sold in the market.

2. METHOD AND MATERIALS

This community service activities were carried out by following ABCD (Asset Based Community Development) method. ABCD method is a well-established framework for empowering communities (Mathie & Cunningham, 2003). This method is grounded on the idea that every community, regardless of the obstacles faced, possesses strengths within its people, organizations and institutions. These resources can be harnessed internally to advance community development (Forrester et al., 2020). Furthermore, in ABCD method communities

would have to identify and use important resources for the betterment of their lives. According to García (2020) the focus lies on three main principles; acknowledging everyone's potential, nurturing strong community bonds, and starting with what's already in hand.

The strategy in implementing the ABCD method consists of four main elements (Al-Kautsari, 2019). Initially, the *Problem-Based Approach* that aims to increase awareness and understanding the issues faced by the community, as well as the steps needed to address them. Secondly, the *Needs-Based Approach* that is prioritizes satisfying basic needs such as food, clothing, and shelter before engaging in empowerment initiatives. Thirdly, the *Right-Based Approach* which is provides financial support and other forms of material assistance necessary for starting self-sustaining businesses or meeting urgent needs. Fourth, the *Asset-Based Approach*, that leverages the inherent potential within the community itself. This potential includes resources, intelligence, concern, participation, and mutual cooperation.

This method entails four main steps: observation, planning, implementation, and analysis.

1. **Observation.** In the observation stage, the PKM team seek to know more about the aspirations and needs of the communities by interacting with them closely. Through listening to their aspirations, it is possible for team to observe the challenges and problems experienced by every individual in society; **else** identify assets, abilities, and potential opportunities that exist.
2. **Planning.** Based on the information obtained during the observation stage, the team develops a comprehensive strategy in partnership with communities, village officials, and relevant stakeholders. It is decided strategy that will be implemented for dealing with seashell waste is to recycle it into economically valuable art products.
3. **Implementation.** The implementation of this plan involves providing hands-on training to teach communities how to transform seashell into crafts such as jewellery, bracelets, decorations, ornaments, and other crafts.
4. **Evaluation.** Upon completion of the implementation stage, a comprehensive evaluation was conducted to assess the effectiveness and impact of the community service delivery. This evaluation involved observations and interviews to gather feedback from participants and stakeholders. The findings were analyzed to identify strengths, weaknesses, lessons learned, and areas for improvement.

Table 1 provides a summary of activity plan and success indicators of our community development.

Table 1. Activity Plan and Success Indicators

No.	Activity Plan	Success Indicators
1.	The first step involved coordinating with the implementation team members and partner.	The agreement on activities and the form of partner participation was formulated and documented in the form of a Memorandum of Understanding (MoU).
2.	The procurement of Appropriate Technology (TTG) includes a seashell cutter (bench grinder), a seashell hole drilling machine, and other supporting tools for crafting handcrafted items.	The available Appropriate Technology (TTG) includes a seashell cutter (Bosch bench grinder) and an Original Scroll Saw Woodworking Machine.
3.	Handover of Appropriate Technology (TTG).	The transfer of equipment includes seashell cutter (bench grinder), a seashell hole drilling machine, and other supporting tools for crafting handcrafted items.

No.	Activity Plan	Success Indicators
4.	Training in designing various creations from clam shell waste.	Improvement of participants' skills in applying the training outcomes to design various products from seashell waste.

3. RESULTS AND DISCUSSION

3.1 Training in Designing Various Creations from Seashell Waste

The training process consists of a systematic sequence of sessions, beginning with an introduction and concluding with an evaluation. All targeted to participants' learning and skill progress. The activities are described as follows:

Introduction to Seashell: In the first part of the training, the facilitators begin by giving participants an introduction to seashell. This topic explains species, types, physical characteristics (such as size and texture), and their applications in handicrafts. Various interesting facts about the history of shells which have long been used in artistic crafts were explained by the facilitator. They also showed various examples of shell crafts from various cultural backgrounds. This topic is a warm-up to motivate interest and inspire participants to be creative with what they will learn.

Safety Precautions: This is a reminder for participants to always be alert during the session. They are advised to follow applicable procedures by using personal protective equipment such as gloves and glasses to avoid risks and injuries due to friction from sharp objects, especially the edges of the shell. Through this early warning, the facilitator hopes that the learning environment will remain safe and comfortable.

Equipment and Materials: Participants were introduced to various equipment and basic materials for making handicrafts from shells, including how to use them. Equipment commonly used includes scissors, knives, small saws for cutting and shaping. Meanwhile, special equipment such as drills for making holes, sandpaper for smoothing, and paint or varnish for finishing. Apart from that, several types of adhesive were also introduced to attach shells and other decorations. This explanation helps participants understand how to use tools and materials properly.

Design Inspiration: To inspire participants, the facilitator showed various examples of seashell crafts, such as jewelry, room decorations, ornaments, key chains and other accessories. By showing existing examples, it is hoped that participants will be able to think creatively and innovatively, as well as imagine their own ideas to design unique seashell crafts.

Cleaning and Preparing: The clam shells must be cleaned first to be created. The facilitator gives instructions on how to clean the shell thoroughly, such as removing dirt, odor or dust that can affect product quality. Participants are also taught how to smooth the sharp and rough edges of clam shells so that they are safe when used. Additionally, it emphasizes the importance of consistency in size and shape, as this can influence the appearance and functionality of the design.

Cutting and Shaping: To get the desired shape and texture, the shells must be processed first. The facilitator shows various methods such as cutting, drilling and carving. They were also given the opportunity to try it themselves so they would understand and be more skilled in using the tool in an easy and effective way. It is hoped that participants will become more confident in creating unique, complex and imaginative designs.

Assembly and Stringing: Participants get a detailed tutorial on how to assemble the piece of seashell by gluing and tying them together. They use standard glue or hot glue; the binding uses wire and nylon thread. Participants are also taught how to use it properly, through demonstrations to ensure all components are connected safely and securely. Participants were

asked to look more closely at which parts had been put together and which had not yet reached the complete assembly stage. Apart from assembling functionality, they are guided in how to assemble things that can increase artistic look, transforming it into a marketable piece of art.

Finishing Touches: Once the product is successfully assembled, participants are asked to add the finishing touches to their creation. Various finishing processes are explained by the facilitator such as coloring, polishing so that the outer or inner side of the shell appears shiny, and also adding elements such as flowers, gems, beads and pearls. These techniques ensure that the final creations look beautiful, unique and professional.

Quality Control: At the quality control stage, participants are asked to carefully check every detail of the work again. Apart from being told how to inspect they are also taught how to deal with imperfections such as uneven edges, incomplete polishing, lack of visual appeal and excessive gloss, to ensure that the final product produced is in high quality. They were also told about the importance of maintaining a balance between symmetrical and asymmetrical designs to increase the product's attractiveness.

Creative Exploration: This session provides participants with the opportunity to create designs with their own ideas and imagination. They are free to express their creativity and talents independently, without guidance.

Feedback and Ideas: Finally, there is the feedback and idea sharing session, where each participant is given the opportunity to show the results of their work within the group. They are given feedback and a different perspective from other participants and receive valuable feedback. Each participant reflects on what they have learned, thereby enriching the learning experience they have gained. Figure 1. presents documentation in various sessions during the training process.



Figure 1. Documentation of training sessions

3.2 Monitoring and Evaluation

Before the training session begins, participants are observed for their ability to make seashell crafts. Through this pre-training observation, they explore their knowledge about various principles and methods, including types of shellfish, techniques, and steps for making seashell crafts. Apart from that, participants also observed how they used the tools. The facilitator provides feedback regarding their level of proficiency and identifies areas that need improvement for next steps.

After the training and practice sessions are completed, the facilitator conducts a review to assess how well the training improved the participants' skills. They show how participants select and clean shells, design and assemble them, and apply the finishing touches. Participants demonstrated how to make handicrafts in various stages. Facilitators and observers closely

observe how well participants use the techniques they have learned, focusing on proficiency and creativity.

Overall, the participants' ability to make seashell crafts increased significantly. Participants are skilled in selecting materials and using tools so they can complete seashell crafts with precision and aesthetic look. Additionally, participants demonstrated a higher level of creativity and originality with their own ideas and designs in their creations. This shows that this program not only provides practical skills but also empowers participants to express their creativity and ideas through seashell crafts.

The results of the participants' work shown proved the success of the training. Each piece they create reflects varying degrees of skill development and uniqueness. This work of art proves how the participants succeeded in turning shell waste into beautiful works of art. The results of this work show that this training not only provides practical skills but also encourages creativity and innovation in producing shell crafts (see Figures 2 & 3). At the monitoring session held a month later, the community service team was pleased to see the increasingly diverse creations of the participants, including hanging decorations, tissue boxes, mirrors and flower vases. This creation shows the creativity and enthusiasm of the participants in making works of art from seashell (see Figure 4).



Figure 2. Participants' creations: bracelet and keychain



Figure 3. The participants' creations : hat ornaments, necklace chains, and pendants



Figure 4. The participants' creations : tissue box, vases, mirrors, and hanging decorations

4. CONCLUSIONS

The conclusion of this activity is that training in transforming seashell waste into valuable artis is an effective way to overcome environmental problems while empowering and increasing local cultural creativity and economic value. By turning seashell waste into unique creations, this initiative fosters appreciation for nature through innovative methods that involve the community. However, further assistance and additional funding are still needed to expand this program and maximize its impact on local communities and the environment.

5. RECOMMENDATIONS

Based on the results of this activity, the suggestions and recommendations submitted are as follows:

1. To continue encouraging collaboration between educational institution, craftsmen and community members to explore other creative ideas and new techniques;
2. To organize educational programs and workshops to promote sustainable and environmentally friendly art techniques;
3. Recommend policies and incentives for seashell waste recycling integration initiatives and encourage sustainable artistic practices;
4. Promote environmentally friendly tourism and sustainable coastal village development through partnerships with tourism institutions, environmental organizations and local governments.

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