Voice of Community (VOC)
Journal of Community Service and Engagement
Vol: 05, No. 03, December 2025, Hlm. 33-49
p-ISSN: 2656-6990 | e-ISSN: 2656-6974
homepage: http://journals.ums.ac.id/indx.php/voc

Enhancing Lempangang Village Youth Skills in Electronic Equipment Repair for Technological Independence

Muhammad Akil[1*], Faisal Syafar[2], Edy Sabara[3], Faisal Najamuddin[4]
Universitas Negeri Makassar, Indonesia[1,2,3,4]
Corresponding Email* : muhammadakil@unm.ac.id

Article Info:

Submitted: 06 November 2025
Revised: 06 December 2025
Accepted: 10 December 2025
Publisher: 15 December 2025

Keywords: Enhancing, Lempangang Village Youth, Electronics, Repair, Multimeter.

Abstract

The household electronic appliance maintenance and repair training for the Lempangang Village Youth Organization (Karang Taruna) aims to improve the technical skills of the community, particularly young people, in identifying and repairing damage to household electronic appliances. Through this training, participants gained knowledge and practical skills in using measuring tools such as multimeters, replacing damaged components, and performing preventative maintenance on irons. The training results showed a significant improvement in participants' skills, as evidenced by a 9.04% increase in pre- and post-test scores. In the pre-test, participants' average scores were around 60%-70%, indicating sufficient basic understanding, but with some areas for improvement. After the training, participants' post-test scores increased to 80%-90%, reflecting a clear improvement in their ability to independently repair electric irons. Furthermore, this training opened new business opportunities in the field of electronic appliance repair services, had a positive impact on local economic empowerment, and reduced electronic waste by extending the lifespan of existing appliances. The program also raised awareness about the importance of maintaining electronic appliances in the household. As a suggestion, expanding training materials and using digital technology to support further learning can increase the impact of this training, as well as expanding community participation through partnerships with various parties.

1. Introduction

The Lempangang Village Youth Organization (Karang Taruna) is a youth organization that plays an active role in social and economic activities in the community, particularly in the area of youth empowerment. Most of its members are young people of productive age with diverse educational backgrounds, ranging from high school graduates to university graduates. However, most lack the specific technical skills to increase employment opportunities or become entrepreneurs.

As a developing village, Lempangang Village faces various economic challenges, particularly limited employment opportunities for youth. As a village-level youth organization, Karang Taruna must be able to take a leading role in addressing various community issues such as employment, education, and social welfare, through innovative and collaborative programs (Nurlinah and Haryanto 2024)(Rukanda, Nurhayati, and Ganda 2020). One very feasible and easy career opportunity for the public is to become a household electronics technician. The primary reason is the increasing use of household electronics such as fans, irons, and rice cookers, leading to a growing need for technicians for maintenance and repair (Pencheva et al. 2024)(Parajuly et al. 2024)(Laitala et al. 2021), However, the community's skills in maintaining and repairing these devices are still low. As a result, many damaged electronic devices are abandoned or thrown away, leading to economic waste and increasing e-waste (Sidin et al. 2024). As a member of the youth community, members of the youth organization must have special skills in maintaining and repairing electronic devices.

Some of the main problems faced by the Lempangang Village Youth Organization (Karang Taruna) related to the maintenance and repair of electronic devices include:

- Lack of technical skills in repairing simple electronic devices, resulting in many damaged devices going unrepaired and ending up as waste.
- High costs of electronic repairs, leading people to prefer buying new devices over repairing old ones.
- Limited business opportunities for youth, due to limited technical skills that can be developed into income sources.
- Lack of access to technical training, both from the government and the private sector, to improve the skills and economic independence of village youth.

Similar activities have been carried out by several academics to expand their service to remote areas of society where there is a great need, particularly in improving knowledge and skills in the field of electronic equipment repair and maintenance. One example is Sari et al., (2022) The post-test concluded that the community still did not fully understand the dangers of submerged electrical equipment. Therefore, the recommendation was to provide extended training on simple repairs with the assistance of technicians/facilitators.

Other activities were also conducted at various locations to improve the community's knowledge and skills in maintaining and repairing household electronic equipment. In Sumber Sari Village, training was provided to housewives on how to maintain electronic equipment based on manuals and practical repair skills, such as addressing common problems like short circuits (Jaya et al. 2024). At the Nurul Ikhlas Modern Islamic Boarding School, training also focuses on understanding the dangers of electric shock and how to avoid them, as well as skills in repairing electrical household appliances (Islami and Zaus 2024). Meanwhile, in Pare-Pare and Gowa, similar training was provided to the community and children in social institutions, covering maintenance and repair techniques for household electronic equipment, including the use of electrical measuring instruments and workshop management (Wahrini and Hasbi 2023)(Muliadi and Alifiyah 2020). With this training, it is hoped that members of the Lempangang Village Youth Organization will not only have skills that are useful for their own lives but will also be able to contribute to helping the surrounding community in maintaining and repairing electronic devices more effectively.

2. Methods of Implementation

2. 1. Program Implementation Stages

The implementation of the "Electronic Equipment Maintenance and Repair Training for the Lempangang Village Youth Organization" activity will be carried out through several systematic stages so that the solutions offered can run effectively and provide sustainable impacts. Figure 1. Below shows block diagram of the programme implementation method in this community service.

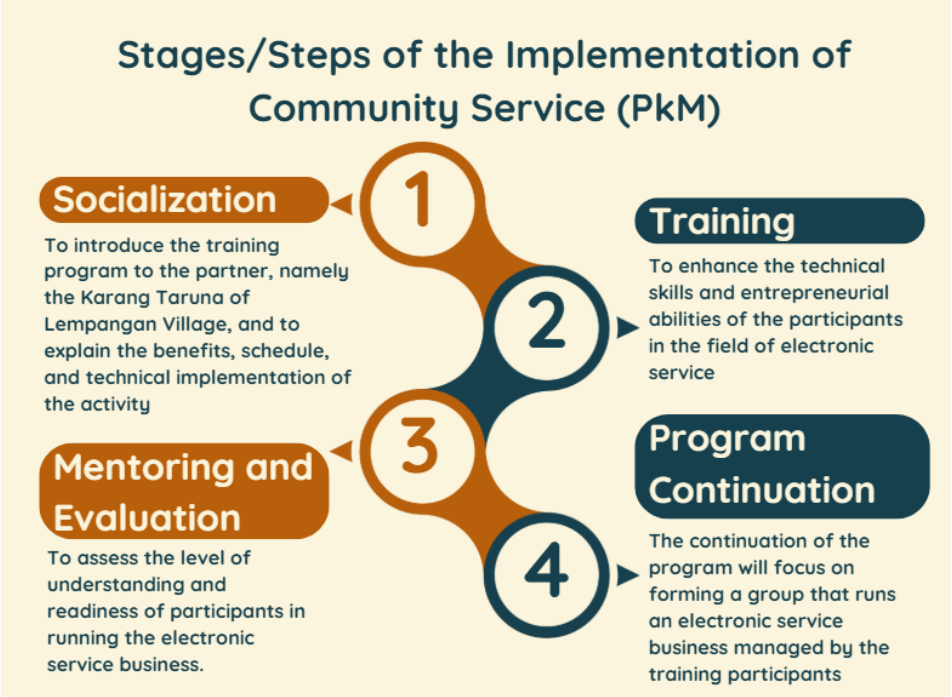

Figure 1. Block Diagram of the Programme Implementation Method

2.1.1 Socialisation

This initial stage aims to introduce the training programme to partners, namely the Lempangang Village Youth Organisation, and explain the benefits, schedule and technical implementation of the activities. The steps for the socialisation activities are as follows:

- Hold meetings with Karang Taruna administrators and village officials to convey the objectives and benefits of the programme.
- Disseminate information through social media, flyers, and direct communication with prospective participants.
- Identify participants' needs in terms of their initial level of understanding of electronic device repair.
- Collect preliminary data on participants' socio-economic conditions to map their entrepreneurial potential after training.

2.1.2 Training

This core stage aims to improve participants' technical and entrepreneurial skills in the field of electronic servicing. The training activities are as follows:

- Technical training in the maintenance and repair of electronic devices
- Introduction to basic electronic components and the working principles of household electronic appliances.
- Practical use of measuring and electronic servicing tools such as multimeters and soldering irons.
- Basic repair techniques for fans, irons, and rice cookers.
- Hands-on repair practice using case studies of damaged electronic appliances.
- Entrepreneurship training
- Small business management in the field of electronic servicing.
- Marketing techniques for electronic servicing both offline and online.
- Basic financial record-keeping for service-based businesses.
- Development of training modules and video tutorials to support participants in understanding the training material more independently.

2.1.3 Assistance and Evaluation

After the training, participants will be assisted in applying the skills they have acquired and evaluated to determine their level of understanding and readiness to run an electronic service business. The steps involved in this activity are as follows:

- Monitoring participants' skill development through electronic device repair practice at their respective homes.
- Evaluating participants' skills through practical tests and case studies on electronic device repair.
- Providing assistance to participants who wish to start an electronic repair business independently or in groups.
- Compiling training outcome reports based on participants' level of success in understanding and applying the material.

2.1.4 Program Sustainability

To ensure that this training has a long-term impact, the sustainability of the programme will focus on establishing electronic service-based business groups managed by the training participants. The steps involved in this activity are as follows:

- Formation of electronic service business groups for participants interested in running this business independently or jointly.
- Preparation of simple business plans to support business sustainability.
- Regular assistance in technical and business aspects to ensure business continuity.
- Collaboration with village governments or related parties for further development, such as service tool assistance or business capital programmes.

2. 2. Partner Participation

The participation of partners in this programme is crucial to ensuring the success and sustainability of the activities. Since the planning stage, the Lempangang Village Youth Organisation has played an active role in identifying training needs that are appropriate to the conditions and interests of its members. They also helped to register participants who would take part in the programme and prepare suitable locations for the training, such as the village hall or multipurpose room.

During the training, partners actively participated in both theoretical and practical sessions. Participants not only received technical material on electronic device repair, but also carried out hands-on practice by bringing damaged electronic devices from their homes. Discussions and experience sharing among members were an important part of the learning process, resulting in an exchange of information that enriched their understanding. In addition, partners also learned to manage electronic service tools and materials and practised simple repair service recording systems, both manually and digitally.

2. 3. Program Evaluation

The implementation of this programme was evaluated in stages to measure the effectiveness of the activities and their impact on participants and the community. The initial

evaluation was conducted through observation and pre-testing to determine the participants' level of understanding prior to the training, while the evaluation during implementation included monitoring the participants' active involvement in the theoretical and practical sessions. After the training, post-testing and interviews were conducted to measure the improvement in their technical skills in repairing electronic devices. In addition, the success of the programme is also assessed based on the participants' ability to apply the skills they have acquired by offering repair services in their neighbourhood. Feedback from participants and partners is collected to evaluate aspects that need to be improved in future training sessions. With this evaluation, it is hoped that the programme can continue to be developed and provide sustainable benefits for Karang Taruna and the community of Lempangang Village.

3. Results and Discussion

3. 1. Provision of Training Materials

In the initial stage of the activity, participants were given training material on the basics of maintaining and repairing household electronic appliances, with a special focus on electric irons. The purpose of the learning material provided was to improve the skills and knowledge of Karang Taruna members so that they would be able to maintain and repair electronic appliances independently. In addition, this training aimed to help members save on household expenses by extending the life of existing electronic appliances. Through this session, participants were also given an explanation of the components of electric irons and the use of electronic measuring instruments, such as multimeters, which are important for diagnosing and repairing damage. Finally, this material was designed to encourage Karang Taruna members to be able to solve everyday problems independently and practically, by utilising the skills they have learned in their daily lives.

Figure 2. Material acceptance process

The first material presented was an introduction to the importance of household electronic appliances in everyday life. Participants were given an understanding of how these electronic appliances help improve efficiency in daily life, as well as the importance of caring for and maintaining electronic appliances so that they continue to function properly and last a long time. This introduction aimed to raise awareness of the functional and economic value of electronic appliances in the household.

In addition, the material continued by introducing various types of household electronic appliances that are commonly used in everyday life. Some of the types of electronic appliances discussed included fans, irons, rice cookers, televisions, washing machines, and refrigerators. Each type of appliance has a function that is very helpful in household activities. For example, fans serve to provide comfort by circulating fresh air in enclosed spaces, while irons are used to smooth clothes, which is an important necessity in daily life. Rice cookers make the process of cooking rice faster and more practical, while televisions are a source of entertainment and information for families.

Participants were also taught how each electronic device works and what they need to pay attention to to ensure its longevity. Understanding the various types of electronic devices is crucial so that participants not only understand their functions and uses but also

how to maintain and repair them if they break down. With this knowledge, Karang Taruna members are expected to become more independent in managing and maintaining the household electronic devices around them.

The purpose of this material, which introduces the main components and examples of damage to household electronic devices, is to provide participants with a deeper understanding of the essential parts of electronic devices and the types of damage that can occur. By understanding key components such as cables and plugs, switches, electric motors, heating elements, temperature controllers, capacitors, and transistors/ICs, participants are expected to be able to recognize and diagnose common damage to household electronic devices more quickly and accurately. This knowledge will enable participants to perform repairs independently, reduce reliance on expensive service providers, and extend the lifespan of existing electronic devices. Furthermore, this material also aims to maintain the safety of electronic devices by helping participants avoid potential hazards such as fire or electric shock due to component damage. This understanding of components and damage also involves the use of electronic measuring instruments, such as multimeters, which are essential for diagnosing device problems. Overall, this material aims to equip participants with practical and applicable technical skills, enabling them to effectively and efficiently troubleshoot electronic device problems in their daily lives.

3. 2. Electronic Equipment Maintenance and Repair Practices

In the maintenance and repair practical session, participants were given the opportunity to focus on repairing an electric iron, a common household electronic appliance. Irons are a device that frequently experiences problems, such as not heating, uneven heating, or even complete failure. In this practical session, participants were taught the proper steps for diagnosing and repairing iron problems.

The practical session began with opening the iron and inspecting the main components, such as the heating element, cord, plug, and thermostat. Participants were taught how to check that the heating element was functioning properly and how to measure the element's resistance using a multimeter to determine if there was any damage. If the heating element was damaged, participants were taught how to replace it with a new one. Furthermore,

participants were taught how to inspect and replace worn or frayed cords and how to repair damaged switches or temperature controls.

Figure 3. Electric Iron Maintenance and Repair Practices

To make repairs easier for laypeople, the material also covers minor repair procedures that can be carried out without requiring in-depth technical skills. For example, if an iron does not heat up, participants can be taught how to check and clean the switch contacts, as irons often malfunction simply because the switch is dirty or worn out. In addition, participants can also try replacing damaged plug cables with new ones, which is a simple repair that can be done with basic tools such as a screwdriver and electrical insulation.

Apart from repairs, participants are also taught how to perform preventive maintenance on irons, such as cleaning the iron plate from scale or dirt that sticks to it, as well as how to set the right temperature so that the iron can work optimally. They are also taught how to care for the iron's internal components to make them last longer, such as preventing rust on the heating element and keeping the cable from breaking easily. Through this hands-on practice, participants are expected to not only understand how to repair a broken iron but also gain skills that can be used to care for electronic appliances so that they last longer, reducing economic waste and increasing independence in dealing with damage to household electronic appliances.

Figure 4. The process of opening the iron cover

Learning how to maintain and repair household electronic appliances independently can also be done easily and for free through tutorials on YouTube. Many videos offer clear step-by-step guides, ranging from minor repairs such as replacing damaged cables or cleaning iron plates, to diagnosing more complex damage. To get started, make sure to choose tutorials from reliable sources, prepare the necessary tools and materials, and follow the instructions carefully. The advantage of learning through YouTube is the ability to pause and rewind videos, making it easier to understand each step. Additionally, performing repairs yourself can save costs, enhance independence, and provide a sense of satisfaction. However, safety must remain a priority, such as turning off the device before starting repairs and using necessary protective gear to avoid the risk of injury or further damage.

3. 3. Pre-Test dan Post-Test Result

To measure the effectiveness of the training, pre-tests and post-tests were conducted on the participants. Pre-tests were given before the training began to determine the participants' prior knowledge of electronic appliance maintenance and repair, especially electric irons. By understanding the participants' prior knowledge, the PkM team was able to adjust the material and explanations during the training to ensure that participants

obtained the information they needed to improve their skills in repairing household electronic appliances.

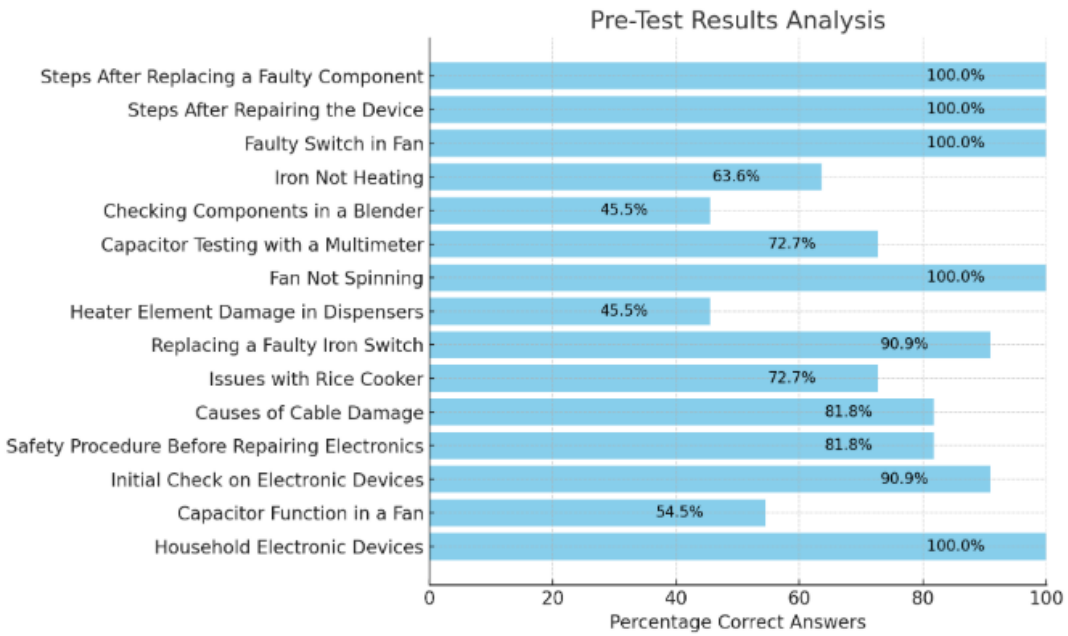

Figure 5. Pre-Test Results of Training Participants

The pre-test results showed that most participants had a good understanding of the basic aspects of maintaining and repairing household electronic appliances. Several questions, such as Household Electronic Appliances, Fan Not Turning, Signs of a Damaged Switch on a Fan, Steps After Repairing an Appliance, and Steps After Replacing a Damaged Component, showed maximum results with 100% correct answers. This shows that participants have a very good understanding of household electronic appliances, safety procedures during repairs, and the appropriate steps to take after repairing or replacing appliance components.

However, there were several questions that showed a lower level of understanding, with a correct answer percentage of less than 50%. Examples include questions about heating element damage in dispensers and components that must be checked in blenders, which each only received 45.5% correct answers. This indicates that participants may still need to deepen their understanding of more specific damage and internal components of electronic appliances.

On the other hand, several other questions, such as the Function of Capacitors in Fans and Damage to Rice Cookers, showed moderate results, with correct answer percentages of 54.5% and 72.7% respectively. This indicates that participants have a fairly good understanding, but still need further learning about certain technical components, such as capacitors and heating elements in electronic devices. Overall, the results of this pre-test show that participants have good basic knowledge, but there are certain areas that require more attention in future training, especially those related to technical components and more specific damage diagnosis.

After the training was completed, a post-test was conducted to measure the increase in participants' knowledge and skills after participating in the theoretical and practical material.

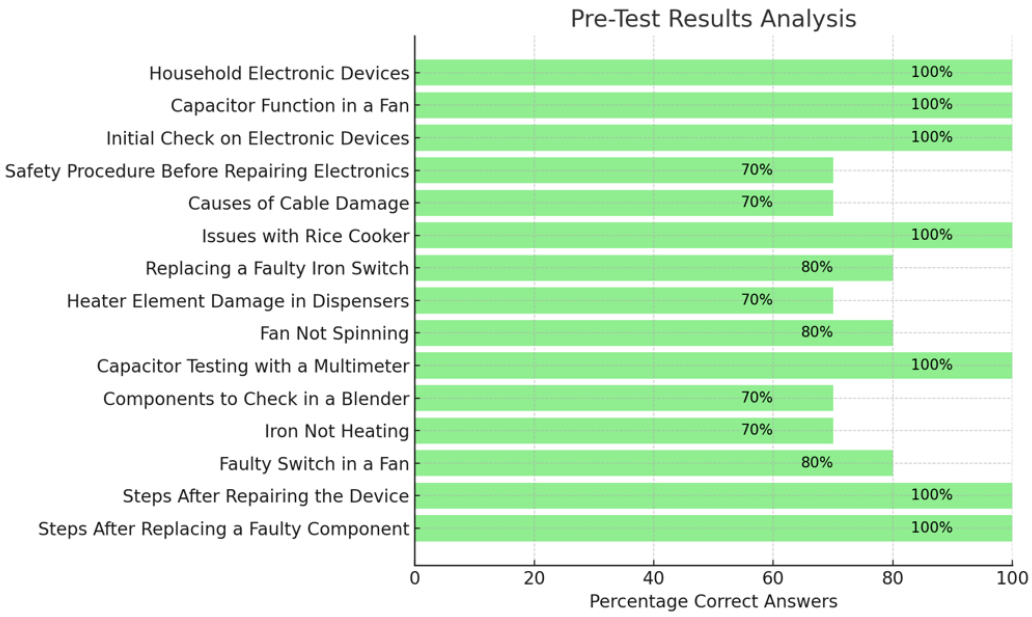

Figure 6. Post-Test results of PkM participants

The post-test results graph shows a significant improvement after training. Several questions, such as Steps After Repairing Tools, Signs of a Damaged Switch on a Fan, Testing Capacitors with a Multimeter, and Damage to a Rice Cooker, achieved 100% correct answers, indicating excellent understanding on the part of the participants. In addition, questions that previously had scores below 70%, such as "Safety Procedures Before Repairing Tools" and "Causes of Cable Damage," are now above 70%, indicating that participants' understanding has improved.

When compared to the pre-test results, where most participants had low scores on technical questions such as "Function of Capacitors" or "Damage to Rice Cookers," these post-test results show rapid progress. In the pre-test, some participants had difficulty recognizing technical components and proper repair procedures. However, after participating in the training, their understanding improved significantly, as reflected in the number of questions that were now answered correctly. This shows that the training successfully improved the participants' skills and knowledge in repairing household electronic appliances.

3. 4. Discussions

The training provided to Karang Taruna members successfully improved their knowledge and skills in maintaining and repairing household electronic appliances, especially electric iron. As indicated by the results of the pre-test and post-test, participants demonstrated significant improvement in their understanding of various electronic appliances, their components, and how to troubleshoot and repair common issues. The pre-test revealed that while participants had a good understanding of general household appliances, they lacked deeper knowledge about specific components, such as capacitors and heating elements. This gap in understanding was effectively addressed through the theoretical sessions and hands-on practices, as reflected in the post-test, where participants showed notable improvement, particularly in the technical aspects of repair, such as identifying component damage and using multimeters for diagnostics (Elfizon et al. 2019)(Muliadi and Alifiyah 2020).

The practical session, which focused on repairing electric irons, proved to be a key component of the training. By actively engaging in the process of diagnosing and repairing faults in the iron, participants gained hands-on experience that enhanced their confidence in carrying out similar repairs in their homes. Simple tasks such as cleaning switch contacts, replacing cables, and inspecting heating elements were taught in a way that made the repair process accessible even for those with no prior technical background. Additionally, the participants were encouraged to conduct preventive maintenance, which will help extend the lifespan of their household electronic appliances and reduce unnecessary expenses. This

practical approach not only enhanced their technical competence but also fostered a sense of independence, as participants became more self-reliant in managing everyday appliance issues.

Furthermore, the use of online resources such as YouTube tutorials highlighted the potential for continued learning beyond the training sessions. While the training itself provided a structured learning environment, the availability of free and accessible online resources allows participants to continue practicing and deepening their knowledge at their own pace. By selecting reliable sources and following step-by-step video guides, Karang Taruna members can further refine their repair skills and troubleshoot more complex problems that may arise in the future. Overall, the training successfully met its objectives of improving the participants' technical skills, fostering independence, and reducing reliance on expensive repair services, thus contributing to the empowerment of the community (More 2023).

4. Conclusion

Training in the maintenance and repair of electric irons has successfully improved participants' skills in identifying and repairing damage to household electronic appliances. By mastering basic repair techniques and the use of measuring instruments such as multimeters, participants can repair electric iron independently and improve work efficiency at home. Pre-test results indicate that most participants have a good basic understanding, particularly in terms of safety procedures and basic repair steps. Several questions received 100% correct answers, indicating excellent understanding by participants. However, several questions about heating element damage in dispensers and components to be checked in blenders showed lower results (45.5%), indicating a need for deeper understanding of specific components. After the training, post-test results showed significant improvement. Several questions that previously had low scores are now above 70%. Overall, the post-test results showed rapid progress, with an average increase of around 9.04% compared to the pre-test. This improvement is reflected in the number of questions that are now answered correctly, indicating that the training has succeeded in improving participants' technical skills and understanding of household appliance repairs.

5. Acknowledgements

We would like to express our deepest gratitude to all parties who have contributed to the implementation of this community service activity. We would like to thank the UNM Institute for Research and Community Service (LP2MP) and our partners at Karang Taruna Desa Lempangang for their active participation and enthusiasm throughout the entire series of activities. We would also like to extend our gratitude to the University of Makassar for its financial support under the UNM Central PNBP community service scheme.

6. Refererences

Elfizon, Elfizon, Oriza Candra, Syamsuarnis Syamsuarnis, and Mukhlidi Muskhir. 2019. "Peningkatan Life Skill Reparasi Peralatan Listrik Rumah Tangga Bagi Pemuda PSAABR Budi Utama Lubuk Alung Kab. Padang Pariaman." *JTEV (Jurnal Teknik Elektro Dan Vokasional)* 5(1). doi: 10.24036/jtev.v5i1.104755.

Islami, Syaiful, and Mahesi Agni Zaus. 2024. "Pelatihan Perbaikan Alat Rumah Tangga Listrik Bagi Siswa SMA Pondok Pesantren Modern Nurul Ikhlas." *ARSY :Aplikasi Riset Kepada Masyarakat* 5(2):177–81.

Jaya, St Nawal, Wa Ode Siti Nur Alam, Gamal Abdel Nasser Masikki, Achmad Nur Aliansyah, Luther Pagiling, Bunyamin, Wa Ode Zulkaida, Indrayati Galugu, Nita Zelfia, Muh. Nadzirin Anshari Nur, and Asminar. 2024. "Bimbingan Teknis Pemeliharaan Dan Perbaikan Peralatan Elektronika Rumah Tangga Di Desa Sumber Sari Kecamatan Moramo Kabupaten Konawe Selatan Propinsi Sulawesi Tenggara." *Jurnal Pengabdian Masyarakat Ilmu Terapan* 6(1):64–70.

Laitala, Kirsi, Ingun Grimstad Klepp, Vilde Haugrønning, and Harald Throne-holst. 2021. "Increasing Repair of Household Appliances , Mobile Phones and Clothing : Experiences from Consumers and the Repair Industry." *Journal of Cleaner Production* 282(125349):1–13. doi: 10.1016/j.jclepro.2020.125349.

More, Pooja. 2023. "Integrating Professional Skills Training for Disabled Soldiers : A Pilot Study." *International Journal of Science and Research (IJSR)* 12(3):149–52. doi: 10.21275/SR23303130157.

Muliadi, and Alifiyah. 2020. "PKM Perawatan Dan Perbaikan Alat-Alat Rumah Tangga Listrik Untuk Mengatasi Dampak Covid-19 Di Kab. Gowa." *Jurnal Dedikasi* 2(22):159–65.

Nurlinah, and Haryanto. 2024. "Transmigration Village Development: The State and Community Organizations in Rural Indonesia." *Frontiers in Political Science* Volume 6-. doi: 10.3389/fpos.2024.1441393.

Parajuly, Keshav, Jana Rückschloss, James Green, Jef Peeters, Jessika Richter, Ruediger Kuehr, Michael Johnson, and Colin Fitzpatrick. 2024. "Product Repair in a Circular Economy Exploring Public Repair Behavior from a Systems Perspective." *Journal of Industrial*

Ecology 28:74–86. doi: 10.1111/jiec.13451.

Pencheva, Polina, Danielle Purkiss, Robert Hewlett, and Mark Miodownik. 2024. "Big Repair Project : Using Citizen Science to Better Understand the Factors a Ecting Household Maintenance and Repair of Home Appliances and Electronics across the UK." *Frontiers in Sustainability* 6(1562615):1–15.

Rukanda, Nandang, Sri Nurhayati, and Ganda. 2020. "Partisipasi Karang Taruna Terhadap Kegiatan Masyarakat Melalui Aksi Sosial." *Comm-Edu (Community Education Journal)* 3(2):144–55.

Sari, Lydia, Syah Alam, Indra Surjati, and Daisman P. Bayyu Aji. 2022. "Pelatihan Perbaikan Peralatan Elektronika Rumah Tangga Untuk Warga Terdampak Banjir, Kelurahan Tanjung Duren Jakarta Barat Lydia." *Jurnal Pengabdian Masyarakat Teknik* 5(1):53–58. doi: 10.24853/jpmt.5.1.53-58.

Sidin, Udin Sidik, Kholik Prasojo, Saharuna, and Massikki. 2024. "PKM Pelatihan Memperbaiki Alat-Alat Listrik Rumah." *Abdimas* 2(1):76–80.

Wahrini, Retyana, and Hasbi. 2023. "Pelatihan Memperbaiki Peralatan Listrik Rumah Tangga Pada Masyarakat Di Pare Pare Sulawesi Selatan." *Jumas : Jurnal Masyarakat* 02(2):77–83.