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# Hotspot Management Training Using Mikrotik RouterBoard to Support Independent Internet Access for the Community

Dedi Setiadi<sup>1\*</sup>, Riduan Syahri<sup>2</sup>, Febriansyah<sup>3</sup>, Debi Gusmaliza<sup>4</sup>, Risnaini Masdalipa<sup>5</sup>

<sup>1,2,3,4,5</sup>Informatics Engineering Study Program, Pagar Alam Institute of Technology, Pagar Alam City, Indonesia

Email: <sup>1\*</sup> [dedisetiadi1212@gmail.com](mailto:dedisetiadi1212@gmail.com), <sup>2</sup> [syahririduan@gmail.com](mailto:syahririduan@gmail.com), <sup>3</sup> [febriansyahh1213@gmail.com](mailto:febriansyahh1213@gmail.com),

<sup>4</sup> [debigusmaliza13@gmail.com](mailto:debigusmaliza13@gmail.com), <sup>5</sup> [risnainipga@gmail.com](mailto:risnainipga@gmail.com)

\*Corresponding author Email: [dedisetiadi1212@gmail.com](mailto:dedisetiadi1212@gmail.com)

## Abstract

Currently, the internet has become one of the basic needs for society, one of which is in the field of education. Where many students or college students are constrained in participating in learning or searching for materials due to internet access constraints, so hotspot creation training is needed. The creation of this hotspot aims to ensure that all activities that require internet access can run smoothly. The training is carried out through community service activities as a solution to problems that occur in the community. The stages of implementing this community service consist of 4 (four) stages, namely the first stage of preparation by conducting surveys and interviews, the second stage of training implementation is carried out by delivering materials and practicing hotspot creation, the third stage is an evaluation by giving questionnaires to participants to determine the understanding of each participant, and the fourth stage is making reports and publications as outputs of community service activities. Based on the evaluation that has been carried out, it is known that the level of understanding and knowledge of the training participants has increased significantly. Before participating in the training, only 50% of participants knew about computer networks, increasing to 95%. Before participating in the training, only 5% of participants had ever created a hotspot with a Mikrotik router board, increasing to 90%. Before participating in the training, only 5% of participants were able to configure Mikrotik, increasing to 90%. Before the training, only 5% of participants were able to create a hotspot using a Mikrotik router board, increasing to 80%. Before the training, only 50% of participants understood the functions of the internet and hotspot, increasing to 95% after the training.

**Keywords:** hotspot, internet, mikrotik, training, router board

## 1. INTRODUCTION

Jarai District is an administrative area in Lahat Regency, located approximately 68 kilometers from the city center. This district comprises 11 villages, one of which is Aromantai Village. Its relatively remote geographical location does not necessarily hinder technological development in the region. This is evident in the increasing use of internet access by the local community. In daily life, the internet has become a vital part of supporting various activities, including communication, education, and the economy. The people of Aromantai Village, in particular, have demonstrated their ability to adapt to technological developments by utilizing internet access to meet their information needs and increase productivity. This situation presents excellent potential for further development through various IT-based mentoring and training programs..

The internet is a global computer network capable of connecting millions of devices worldwide.(Christy et al., 2023) Through the use of communication protocols, these devices can exchange data and information quickly and efficiently, enabling interaction without the constraints of time and space. The rapid development of the internet has made it a crucial infrastructure in modern life. In the context of education, the internet serves as a rich and easily accessible learning resource for both pupils and students.(Yasin, 2025) A variety of learning materials, scientific references, and interactive media are widely available to support a more independent and flexible learning process. However, the internet cannot completely replace the role of teachers or lecturers.(Huraerah et al., 2024) The role of educators remains crucial in guiding, directing, and providing in-depth understanding to students, so that the learning process can proceed optimally and effectively.

In today's digital era, the internet has become a primary necessity in people's lives, including in education. (Putri, 2023) Its existence is no longer merely a complement, but has become a crucial tool supporting various learning activities. The internet serves as a provider of vast learning resources, providing various links to references, materials, and learning media that can be accessed online anytime and anywhere. (Martin et al., 2022) In addition to being a source of information, the internet also makes a significant contribution to improving the quality and quantity of interactions in the learning process. Through various digital platforms, communication between teachers and students, or between lecturers and students, can be more intensive, flexible, and interactive. (Malay et al., 2025) This allows for more effective discussion, collaboration, and information exchange, making the learning process more dynamic and adaptive to technological developments. (Mansyur et al., 2025)

During online learning, students engage in various routine activities, such as independent study, completing assignments, and participating in learning activities or lectures through communication applications like WhatsApp. (Hidayah & Nasution, 2024) Furthermore, the use of video conferencing platforms like Zoom and Google Meet, as well as learning management systems like Google Classroom, are also crucial in supporting the continuity of online teaching and learning. (Nur et al., 2026) This situation requires significant adjustments, especially for educators. Teachers and lecturers are required to be more innovative and creative in designing and delivering learning materials to ensure they remain engaging and easy to understand, even when conducted online. (Mursalin et al., 2024) The use of various digital media, interactive methods, and adaptive learning approaches are key to creating an effective learning environment, ensuring that learning objectives can still be optimally achieved even without face-to-face meetings. (Hajar et al., 2024)

Based on the various problems previously described, a team consisting of lecturers and students of the Informatics Engineering Study Program at the Pagar Alam Institute of Technology took the initiative to carry out community service activities as a form of real contribution in providing solutions. This activity was designed in the form of hotspot creation training using Mikrotik RouterBoard devices, which is expected to be able to answer the community's need for easier and independent internet network access. (Syahputra & Wijaya, 2022) In the implementation of this training, participants were not only given a basic understanding of the concept of computer networks and their supporting devices, but were also equipped with systematic explanations and direct practice related to the steps for configuring hotspots using Mikrotik RouterBoard. (Santo Gitakarma et al., 2023) This approach aims for the community not only to understand theoretically, but also to have technical skills that can be applied directly. Through this activity, it is hoped that the community can understand the functions and benefits of network devices in more depth, and be able to implement them in everyday life, especially in building and managing hotspots independently to support internet access needs in their environment. (Mulyanto et al., 2025)

## 2. RESEARCH METHODOLOGY

The implementation method for community service activities is systematically structured with the aim of explaining in detail the stages involved in providing solutions to problems faced by the community. (Setiadi & Syahri, 2025) Each step is designed to be able to answer needs appropriately, effectively, and sustainably, so that the results of the activities are not only temporary, but also have a real impact on improving community knowledge and skills. The community service activities carried out by lecturers and students of the Informatics Engineering Study Program at the Pagar Alam Institute of Technology consist of four main stages, namely the preparation stage, the implementation stage, the evaluation stage, and the reporting stage. In the preparation stage, needs identification and activity planning are carried out, then continued with the implementation stage which focuses on program implementation in the field. (Stephanie, 2026) Next, the evaluation stage is carried out to measure the level of success of the activities and identify obstacles encountered, and ends with the reporting stage as a form of documentation and accountability for the activities that have been carried out. (Hamidani et al., 2026) The flow of the activity implementation stages can be seen in Figure 1.



**Figure 1.** Stages of Community Service Implementation

### 2.1. Preparation Stages

The stages of community service activities generally begin with an on-site survey. This survey aims to ensure that the training program runs optimally and meets community needs. In addition, interviews with village officials were conducted to gather in-depth information regarding issues faced in the field. Based on the interviews, it was discovered that the community still has limited knowledge regarding connection sharing techniques or internet access. Furthermore, their understanding of computer networks and the use of network devices to distribute internet access is also relatively low. This condition indicates a need to increase community capacity in the field of network technology. To address these issues, training and mentoring activities were conducted on hotspot creation using Mikrotik RouterBoard. This activity is expected to provide the community with understanding and practical skills in managing and sharing internet access independently, thereby supporting various activities, particularly in the fields of communication and education.

### 2.2. Implementation Stages

The implementation stage of community service activities is carried out by providing material related to the basics of computer networks and their supporting devices. In this stage, participants are introduced to the concept of networking, the function of each device, and its role in supporting internet connectivity. In addition to the theoretical delivery of material, the activity is also complemented by technical explanations followed by direct practice on the steps for configuring a hotspot using Mikrotik RouterBoard. This approach aims to ensure that participants not only understand the concept in general, but also are able to apply it in real life, so that the skills acquired can be used directly in everyday life.

### 2.3. Evaluation Stages

The evaluation phase was conducted to measure the participants' level of understanding after participating in a series of training and mentoring activities on creating hotspots using Mikrotik RouterBoard. This phase determined the effectiveness of the material presented and the participants' ability to implement the knowledge gained. The results of this evaluation also served as a basis for assessing the success of the activity and identifying areas that still needed improvement. Thus, the evaluation served not only as a measuring tool but also as a basis for improvement for similar activities in the future to achieve more optimal results.

### 2.4. Reporting Stages

The final stage of this series of activities is the preparation of a report based on all the results of the community service implementation in Aromantai Village, Jarai District. The report contains the activity process, the results achieved, and various findings in the field as a form of documentation and accountability for the activities. After the report is completed, the activity continues with writing a publication manuscript in the form of a community service journal article. This aims to disseminate the results of the activity to a wider audience and provide a scientific contribution that can serve as a reference for the implementation of similar activities in the future.

### 3. RESULTS AND DISCUSSION

The community service activity held in Aromantai Village, Jarai District, focused on hotspot creation training using a Mikrotik RouterBoard, an effort to improve the community's knowledge and skills in computer networking. Twenty-five participants, consisting of local youth interested in learning networking technology, attended the activity. Five university students also actively assisted in mentoring participants throughout the training. This activity received full support from the sub-district, particularly from the Jarai Sub-district Head, who provided the sub-district hall as a venue. This support was a crucial factor in the smooth running of this community service activity. The training began with participant registration by filling out an attendance list, followed by an opening ceremony. The Jarai Sub-district Head then delivered remarks, demonstrating his support for the activity. The community service team then introduced themselves and outlined the primary purpose of the community service activity, ensuring participants understood the direction and benefits of the training. In the next session, the activity continued with a presentation of basic material related to an introduction to computer networks and their supporting devices. This presentation aimed to provide participants with a basic foundation before moving on to the practical phase of hotspot creation. The basic material covered various important concepts in computer networking, including :

#### 3.1. Internet

The internet is a global computing system that connects various hardware devices worldwide. (Aulia et al., 2023) Through this network, digital data and information can be sent and exchanged quickly and efficiently between devices and between users. Furthermore, the internet serves as a medium that connects individuals and communities by utilizing generally standardized communication technologies. With the support of this infrastructure, the internet is able to distribute various information systems widely and evenly, enabling access to information without geographical boundaries and supporting various activities in various areas of life.

#### 3.2. Computer network

A computer network is a collection of computer devices connected to each other through specific communication protocols and utilizing transmission media. (Adriansyah et al., 2023) This interconnectedness allows each device on the network to communicate with each other and exchange data effectively. With a computer network, users can share various resources such as information, applications, and hardware (devices). This not only increases work efficiency but also facilitates collaboration and resource management in environments, both small and large.

#### 3.3. Hotspot

A hotspot, more commonly known as Wi-Fi, is an area or location that provides wireless internet access, allowing devices to connect without cables. (Sinaga & Syahputra, 2024) This technology utilizes wireless networks to allow users to access the internet flexibly and conveniently. Hotspots can be easily installed in various locations, especially in public areas such as schools, campuses, offices, and other open spaces. Their presence makes it easier for people to access information and supports various digital-based activities more efficiently and conveniently.

#### 3.4. Mikrotik Router Board

The Mikrotik Router operating system is both an operating system and software designed to transform a computer into a network router. (Fauzi et al., 2023) Using this system, a computer can be used to manage data traffic, manage connections, and control network distribution as needed. Meanwhile, a RouterBoard is hardware specifically developed to function as a router and is equipped with the Mikrotik operating system. This device is designed to support more optimal computer network management, making it easier for users to configure, monitor, and manage networks efficiently and in an integrated manner.



**Figure 2.** Mikrotik Router Board

### 3.5. Winbox

Winbox is a utility or tool used for remote access to Mikrotik servers through a Graphical User Interface (GUI). (Ilahi & Samad, 2025) Winbox allows users to manage and configure Mikrotik devices more easily and intuitively. (Irhamulloh et al., 2025) Winbox offers convenience because users no longer need to manually enter commands or scripts via the command line. Instead, the entire setup process can be done by selecting and clicking through the menus provided in the GUI interface, making it more practical and suitable for beginners and users who want faster and more efficient configuration. Following the presentation of basic computer networking material, the activity continued with a hands-on practical session where participants were taught and guided in creating a hotspot using a Mikrotik RouterBoard. During this stage, participants not only acted as listeners but also actively participated in the configuration process to gain a deeper understanding of each step.

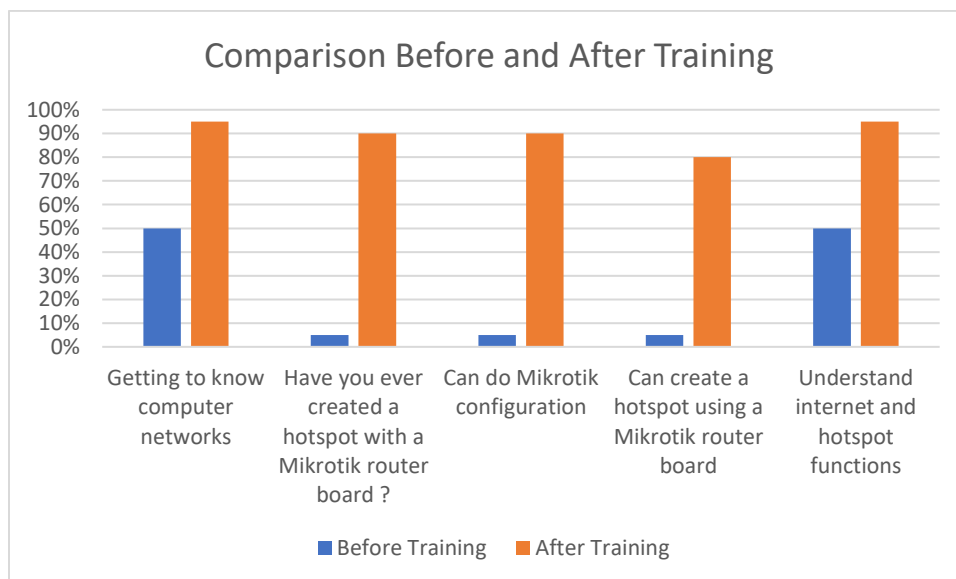
To ensure the smooth implementation of the practical, each participant was provided with supporting equipment such as a laptop, Mikrotik RouterBoard, UTP cable, and training modules. (Damanik et al., 2026) These facilities were provided to ensure an optimal learning process and ensure all participants were able to follow and practice each step effectively. During the practical, participants were guided through configuring a Mikrotik using the Winbox application. The process covered initial steps, such as logging into the device, followed by configuring a DHCP client to obtain internet access from an ISP, setting the IP address on the Mikrotik, configuring DNS, configuring NAT, and creating a DHCP server. Each step was explained systematically so participants understood the function and purpose of each configuration.

Furthermore, participants were also taught how to configure a Mikrotik hotspot step by step using Winbox. (Simarankir et al., 2022) This process begins with selecting the interface to be used as a hotspot, determining the IP address, setting up the IP pool, configuring the SMTP server, entering the DNS and DNS name, and finally, creating a username and password for hotspot access. With this hands-on approach, participants are expected to be able to independently implement the knowledge gained in their respective environments.

The evaluation of the community service activities was conducted after the entire training series on creating hotspots using the Mikrotik Router Board was completed. (Kurnia et al., 2023) The research team distributed questionnaires to all participants to complete, comparing their level of understanding before and after the training. Based on the evaluation results, it can be concluded that there was an increase in participants' understanding after the training. Before attending the training, only 50% of participants were familiar with computer networks, but after the training, that number increased to 95%. Furthermore, previously only 5% of participants had ever created a hotspot using a Mikrotik Router Board, and after the training, this figure increased significantly to 90%. Participants' ability to configure Mikrotik also increased, from 5% before the training to 90% after the training. Furthermore, the ability to create a hotspot using a Mikrotik Router Board increased from 5% to 80% after the training. Participants' understanding of the functions of the internet and hotspots also increased from 50% to 95%. Data on this increase can be seen in Table 1. And is displayed in the graph in Figure 3

**Table 1.** Evaluation

No	Description	Before Training	After Training
1.	Getting to know computer networks	50 %	95 %
2.	Have you ever created a hotspot with a Mikrotik router board ?	5 %	90 %
3.	Can do Mikrotik configuration	5 %	90 %
4.	Can create a hotspot using a Mikrotik router board	5 %	80 %
5.	Understand internet and hotspot functions	50 %	95 %



**Figure 3.** Comparison Chart Before and After Training



**Figure 4.** Implementation of Training

#### 4. CONCLUSION

Based on the implementation of training in community service activities held in Aromantai Village, Jarai District, it can be concluded that the training on creating hotspots using Mikrotik Router Boards makes it easier for the community to share internet access. Participants not only gained knowledge, but were also able to directly practice the process of creating hotspots. In addition, there was an increase in participant understanding after attending the training, which can be seen from the comparison of the graphs before and after the training. Before the training, only 50% of participants were familiar with computer networks, then increased to 95% after the training. Furthermore, participants who had created hotspots using Mikrotik Router Boards increased from 5% to 90%. The ability to configure Mikrotik also increased from 5% to 90%. The ability of participants in creating hotspots using Mikrotik Router Boards increased from 5% to 80%. In addition, understanding regarding internet and hotspot functions increased from 50% before the training to 95% after the training.

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