IMPLEMENTATION OF WI-FI BASED INTERNET NETWORK CONNECTION AND TRAINING FOR TEACHERS OF STATE VOCATIONAL SCHOOL 1 LINTONG NI HUTA

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Abstract

Computer networks are needed in various fields, including in schools. Computer networks are needed for the efficiency and effectiveness of cost and equipment use. SMK Negeri 1 Lintong Ni Huta, one of the State Vocational Schools in Humbang Hasudutan Regency, as an IT-based Vocational School or one that manages the RPL and TKJ Departments, should utilize Computer Networks as a means and infrastructure in the teaching and learning process and services to students. However, in reality, this has not been implemented due to a lack of understanding and not understanding the function and advantages of a computer network. That is the reason why it is important to carry out this community service at SMK Negeri 1 Lintong Ni Huta.
Keywords: Computer Network, State Vocational School 1 Lintong Ni Huta

Abstract

Computer networks are needed in various fields. including at school. Network Computers are really needed for efficient and effective use of costs and equipment. Lintog Ni Huta Vocational School is one of the IT Vocational Schools in Humbang Haunjungan Regency, as an IT-based or other vocational school managing the RPL and TKJ Departments should utilize Computer Networks as facilities and infrastructure in the teaching and learning process and service to students. However In reality, it has not been implemented due to lack of understanding and not understanding the function and the advantages of a computer network. that is the reason why it is important to do devotion This is at Lintong Ni Huta Vocational School. .
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INTRODUCTION

Computer networks facilitate collaboration between computer users. Networking allows for quick and easy data transformation between computers. This allows for effectiveness and efficiency, ultimately increasing productivity. This school computer network system is not mandatory for every school. However, it can serve as a reference for developing a computer network, taking into account the school's needs and limitations.

Some materials may be useful for developing computer networks in schools, including:

1. Understanding and importance of computer networks in schools.
2. Planning and selection of network models for schools.
3. Implementation of school computer networks.
4. Internet and intranet networks for schools. Thus, LAN computer network system training for IT vocational school students, who are the school's learned resources, is expected to enable them to design, manage, repair, and maintain LAN computer network systems in their schools.

The objectives of this research program are:

a. Students can master building LAN computer networks so that they can be useful to the school.

b. Providing meaningful provisions so that students can pass the competency exam with better results.

Benefits of the Activity The expected benefit of this activity is to provide knowledge to students in particular and the school in general. To apply the computer network system in administration and teaching and learning systems at school.

Community Service Output The implementation of this activity is expected to provide knowledge to students, especially students of SMK Negeri 1 Lintomg Ni Huta and generally the school about how LAN computer networks actually work and what uses can be done using computer networks. So that knowledge about computer networks is not only given to students so they can pass the competency exam but can also be applied in teaching and learning and in the school administration system.

METHOD

Activity Realization

Activity Type & Schedule, and Activity Location

Implementation Method The implementation of this activity was carried out for one day, starting with the socialization of the importance of LAN Computer Networks, preparation of facilities for LAN computer networks in collaboration with the Principal and continued with LAN computer network training for students of SMK Negeri 1 Lintong Ni Huta, This activity is not only closed to students, but also teachers and the community at the school. In the Laboratory, 8 PCs are provided that have been installed with Windows XP.

RESULTS AND DISCUSSION

LAN computer networks facilitate collaboration between computer users. With a computer network, data transformation between computers can be done easily and quickly. Therefore, effectiveness and efficiency can be achieved, which ultimately increases productivity. Computer technology has penetrated various fields, including education. Most schools have computers to speed up administrative and academic work processes. Some even utilize computer technology to support the learning process. Computers are used as a medium to convey scientific concepts more interesting and easily understood by students. Not only that, currently many schools have computer networks that integrate local networks with intranet and internet networks. Even cellular telephone technology is used for the learning process and school services to parents and the community outside the school. This computer network system for schools does not have to be absolutely implemented in every school. However, it can be used as a reference for developing computer networks by considering the needs and limitations of the school. Several materials that may be useful for developing computer networks in schools include: - Definition and importance of computer networks in schools. - Planning and selection of network models for schools. - Implementation of school computer networks. - Internet and intranet networks for schools. A computer network is a group of hardware such as PCs, printers, and other equipment that are connected to each other and each of them has communication interactions.

In general, there are two types of network models: peer-to-peer and client/server. Peer-to-peer computer networks typically involve fewer than 10 computers (stations). This network system lacks a network security concept. Security depends on each computer connected to the network. Each computer has equal access

and can share resources such as applications, folders, printers, CD-ROMs, and other equipment.

A client/server computer network involves an infinite number of computers (stations), offers a higher level of security, and is centralized in the server computer. The server computer manages the access rights of each computer to the network. In this network model, each computer can also share resources.

Both of the computer network models above can be implemented in schools. The choice of network model will naturally depend on the school's needs and limitations. Below is a comparison table of peer-to-peer and client/server network models.

a. Required components A computer network has several components, including: Minimum 2 computers - Cables connecting the computers. If the computer network uses wireless technology, there must be a connecting medium between the computers and the wireless access point. - Network Interface Card (NIC) installed on each computer.

- Switches are used to transmit data from one computer to another. Hubs can also be used in place of switches. However, data transmission quality is still better using a switch.

- Software to manage the network system on each computer.

- Server if a controlled network system is required.

b. Network Cable

There are two types of commonly used network cables. The first type is twisted pair, also known as 10BaseT. This cable is similar to a telephone cable but has 8 wires twisted into 4 pairs. The second type of cable is thin-coax, also known as 10Base2. This cable resembles the coaxial cable commonly used to connect video recorders to TVs. Of the two types of cables above, the most frequently used is the 10BaseT cable. 10BaseT cables have high data transmission quality and are easy to handle network damage. 10BaseT cables are connected from computers to switches or hubs. If there are 5 computers in the network, then 5 strands of 10BaseT cable are needed. Each computer is individually connected to the switch or hub to form a network with a star topology. When using a 10BaseT cable, several other components are needed, namely: - Connectors/cable shoes known as RJ-45. - Cat5e patch panels and wall outlets used as cable terminals connecting rooms in the school to the network center. - Wall-mounted cabinets used to protect cable terminals.

c. Network Interface Card (NIC)

Network Interface Cards are often called network cards or LAN cards. NICs connect computer systems with network cables to form a computer network system. Every computer connected to a network must have a NIC. Commonly used network cards are 10/100 NICs that operate between 10Mbps and 100Mbps. Computers connected to a network with wireless technology must use a wireless card. d. Hubs and Switches Hubs are devices used to connect computers and other devices in a network. The function of a hub is to direct information in the network so that it reaches its destination. However, to obtain good data transformation quality, a switch can be used to replace a hub. Hubs and switches have the same function of directing information in a network. However, switches have more value than hubs. With a switch, each connection gets a fixed bandwidth and operates at full speed. Unlike a hub, bandwidth is shared for each connection, so printers and other devices in the network will experience a slow data transmission process. It can even cause data collisions in the network and end up with data corruption.

e. Computer Network Design in Schools To build a computer network in schools, several things must be considered:

- The school's needs are the first consideration that can be used as a benchmark for computer network development. The extent to which the school needs a computer network so that it can be used to its full potential.

- Budget is the second consideration supporting the creation of a computer network in a school. The need for a complex and extensive computer network will naturally require significant costs. It's best to build a computer network piecemeal to avoid wasting money.

- Network modeling is the planning stage for developing a computer network in a school. A network model that meets the school's needs allows the network system to be used more effectively.

- Network components, is the implementation stage of a computer network.

The selection of network components must be adjusted to the conditions of the school, including the shape of the building, the layout of the building/room, the distance between buildings, and ease of future development. A computer network center can be designed as shown in the image above. The network center has one or more servers that can be used by computers in the network and an internet connection that can be accessed through the local network. If the computer with the printer installed is not connected to the network, then only the computer with the printer can print. In order for other computers to use the printer on a computer, the computer with the printer installed must be connected to the network and share the printer. The weakness of this model is that if the computer with the printer installed experiences problems or is inactive, then other computer users in the network cannot use the printer.

To overcome the previous problem, any printer, scanner, or other equipment that can be used by other computers on the network should be connected directly to the network. To connect a printer or scanner directly to the network, it must be assigned an IP address by adding a network printer or scanner module. The computer lab design can be developed as shown in the image above. The computer layout can be adjusted to suit the room and learning comfort. If the room is tidy, wireless networking technology is the right choice. Wireless networking also makes it easier for teachers to move from class or room to room without disconnecting from the network.

LAN (Local Area Network) computer networks facilitate collaboration between computer users. Networking allows for quick and easy data transfer between computers. This increases effectiveness and efficiency, ultimately leading to higher productivity. Computer technology has penetrated various fields, including education. Most schools have computers to speed up administrative and academic processes. Some even utilize computer technology to support the learning process.

Computers are used as a medium to convey concepts. LANs facilitate collaboration between computer users. The existence of a computer network allows for data transformation between computers to be carried out easily and quickly. Therefore, effectiveness and efficiency can be achieved, ultimately increasing productivity. Computer technology has penetrated various fields, including education. Most schools have computers to speed up administrative and academic work processes. Some even utilize computer technology to support the learning process. Computers are used as a medium to convey concepts.

CONCLUSION

Based on the discussion in the previous chapters regarding LAN Computer Network Training, the conclusions that can be drawn from the series of research activities that have been carried out are:

1) SMK Teladan Medan is a school that wants to improve its administration and learning systems by applying a computer network system.

2) The response from the principal, teachers and students was very enthusiastic, all of which was reflected in the reciprocal communication with the students and the entire school community until the end of the research activity.

3) The school community's lack of knowledge about computer networks means that before introducing computer network systems, they are first taught the basics of computer networks.

4) Not all students have a quick-thinking mindset when it comes to learning, especially when it comes to understanding computer networks, perhaps due to a variety of factors. Therefore, we as trainers need to be smart enough to create a simple communication environment using easy-to-understand language.

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