

Optimization of the Computer Laboratory in Supporting the Learning Process at SMP IBS Al-Hamra, Malang Regency

¹Rifqi Ramadhani*, ¹Muhammad Rofiq

¹Institut Teknologi dan Bisnis Asia, Indonesia

*Corresponding author

Email: rofiq@asia.ac.id

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Abstract

Purpose: The aim of this research is to improve computer laboratory management in the context of education. The focus is on enhancing the efficiency and effectiveness of resource utilization and improving students' learning experiences in the computer laboratory environment. This research also aims to identify the challenges faced by the computer laboratory and develop strategies to improve the quality of learning, producing excellent and competitive competencies.

Method: The method used in this study is a descriptive qualitative approach. The research techniques include observation and interviews to analyze user needs, evaluate infrastructure, and model sustainable management.

Practical Applications: This research can provide insights for computer laboratory administrators, technicians, and educational managers. The recommended strategies can improve the accessibility and availability of computer resources, thereby enhancing students' learning experiences.

Conclusion: By optimizing the management of computer laboratories, an approach focused on resource efficiency can create a dynamic learning environment. Through the identified practices, educational institutions can improve technology services and significantly support students' academic development.

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Introduction

Education plays a crucial role in improving the quality of human resources (HR). In the midst of current development trends, the advancement of Science and Technology (S&T) is rapidly increasing. Therefore, the human resources required must possess good quality and the ability to master and utilize knowledge and technology effectively and efficiently (Septian & Siti, 2017).

Management is an important aspect in life to ensure the smooth running of processes. In the context of education, effective management by educational institutions can have a positive impact on students and help them grow into individuals who are eager to learn.

The management of computer laboratories in education is vital to enhance efficiency, effectiveness in resource utilization, and the learning experience for students. A computer laboratory is not just a room equipped with hardware and software; it is an environment where students and educators interact by utilizing technology for learning purposes.

The role of teachers or instructors is crucial, particularly as a source of knowledge for students. However, this often leads to a teaching process that is verbalistic or lecture based. The use of the lecture method by teachers often results in limited time to provide guidance to students, which can eventually hinder students' ease of learning (Ilyas, 2021).

Computer laboratories play an important role as a primary tool in producing outstanding students. Therefore, a comprehensive evaluation of adequate facilities, including the availability of computer hardware, is necessary. In terms of administration, several factors must be considered, including the rules that need to be followed in the computer laboratory.

This study aims to explore and improve the management of computer laboratories. With good management, quality service will also be achieved, supporting the learning process (Putri & Marlina, 2019). Using a descriptive qualitative approach, this research will involve data collection techniques such as observation and interviews to analyze user needs, evaluate infrastructure, and design a sustainable management model.

Thus, this approach aims not only to improve management but also to strengthen the foundation of quality education that is relevant to current demands. In today's digital era, the use of technology in education is essential, and effective management of laboratories will be key to optimizing the potential of technology in innovative learning processes and practical education.

Method

In this study, a descriptive qualitative method is used, aiming to deeply and comprehensively understand the development of technology. The research location is at SMP IBS Al-Hamra, Malang Regency. This school is also equipped with various facilities and infrastructure to support a good learning process. This method can be conducted by reading, noting, and processing research materials. The method through literature review aims to find the core principles in acquiring and building a mindset and theoretical foundation. Therefore, the researcher can categorize and use various literature studies in the field. By conducting a literature study, the researcher is expected to gain a deeper and broader understanding of the issues to be investigated.

Result

The quality of education in a nation is a determining factor for the nation's success, and one of its main aspects is the quality of educators, particularly teachers. The innovation introduced by a teacher in the field of education has the potential to bring about new changes in the learning process. In efforts to encourage students' enthusiasm for learning, it is important for teachers to utilize information technology as outlined in Permendiknas No. 16 of 2007. In the learning process conducted in the computer laboratory, only the laboratory

room head and the librarian are responsible for supervision. This was observed when the researcher watched the teaching and learning process in the computer laboratory at SMP IBS Al-Hamra.

The procurement planning has been implemented for the last two years. However, SMP IBS Al-Hamra faced a shortage of units in the middle of the 2023 academic year. Currently, computer updates and the procurement of several laptop units have been carried out. Evaluation is conducted by the principal, teachers, and laboratory head to review laboratory usage and control deficiencies in each computer.

1. Computer Laboratory Configuration: The process of setting up the computer lab has been completed, allowing the installation of various applications, including the ANBK exam application, Corel Draw, Windows activation, reinstalling Windows, and Microsoft Office.
2. Installation of SSD and Replacement of HDD: The installation of SSD has significantly improved system performance and responsiveness. Boot times and application loading have decreased, enhancing the efficiency of computer use in the laboratory.
3. Cloning HDD and Installing MS Office: The cloning process duplicates the contents of a hard drive onto another hard drive, making both identical. Additionally, installing Microsoft Office was done to enhance the functionality of computers for student or teacher productivity in the computer lab.
4. Assisting Teachers During Exams: The researcher assists teachers or students in case there are technical issues during exams.

This research has successfully shown that efficient computer laboratory configuration is crucial in supporting various activities, including Computer-Based National Assessment (ANBK) exams, installing Corel Draw design applications, and helping students sharpen their design skills. The installation of SSDs was a valuable step in improving the overall performance of computers.

Constraints in Optimizing the Computer Laboratory as a Learning Support for Students: Constraints are factors or conditions that hinder or obstruct the achievement of objectives. Factors that become constraints in managing the computer laboratory include delays in the disbursement of funds, which hinder the improvement of the laboratory's quality. In the computers themselves, there are several issues such as malfunctioning mice or keyboards, frequent black screens or blue screens, but these can be fixed by the laboratory head. The final constraint is the students, who are mostly unfamiliar with using applications on computers such as Word or PowerPoint, and thus the instructor must start teaching from scratch.

The Important Role of Optimizing the Computer Laboratory in Supporting Student Learning at SMP IBS Al-Hamra: The facilities and infrastructure in every educational institution are essential. One of them is the computer laboratory, which is currently crucial in increasing students' interest in learning in the digital era. This is supported by the extracurricular robotics program every Saturday, which is popular among students. The computer laboratory has become more effective as a supporting tool for every lesson being taught.

Discussion

The research results indicate that an efficient computer laboratory configuration is crucial for supporting various learning activities, including ANBK exams and the installation of design programs like Corel Draw. Proper configuration ensures the optimal and effective use of computers in the learning process.

Figure 1. Computer Setup

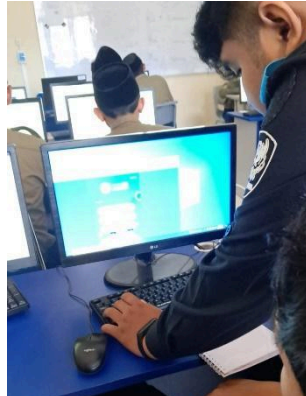


Figure 2. Installing ANBK Application



The installation of SSD has been proven to significantly improve system performance by reducing boot times and application loading times. Replacing the HDD with an SSD is a valuable step in improving computing efficiency in the lab and providing a better user experience.

The process of cloning computers and installing Microsoft Office helps ensure consistent configurations on computers and enhances their functionality for student and teacher productivity. These steps support the efficient use of the computer laboratory in the learning process.

Periodic inspection of each computer in the laboratory is essential to ensure optimal working conditions and prevent potential errors or issues. This proactive step helps maintain the proper functioning of the computer laboratory. Assisting teachers or students during the ANBK exam is also an important part of the computer laboratory manager's role. This demonstrates commitment to the smooth running of the learning process and supports students' success in the exam.

Figure 3. ANBK Assistance



Challenges such as unmet budgets, technical issues with computer hardware, and a lack of student understanding of how to use computer applications are obstacles that need to be addressed in managing the computer laboratory. Appropriate measures are required to overcome these challenges and ensure the smooth continuation of the learning process.

The computer laboratory plays a very important role in supporting student learning at SMP IBS Al-Hamra. Adequate infrastructure and extracurricular programs like robotics help increase students' interest in learning in the digital era. The computer laboratory is an effective tool to support learning in various subjects. Therefore, effective management of the computer laboratory not only ensures the availability of sufficient facilities but also includes proactive steps to maintain system performance, provide assistance when needed, and address obstacles that may arise during the learning process.

Conclusion

This study highlights the importance of effective management of computer laboratories in the educational context. It is evident that good management can enhance efficiency, effectiveness in resource utilization, and the learning experience for students in the computer laboratory environment. The research method used in this study is a descriptive qualitative approach, with data collection techniques such as observation and interviews. This approach helps analyze user needs, evaluate infrastructure, and design a sustainable management model. Several steps have been taken to improve the efficiency of the computer laboratory, including lab configuration, SSD installation, HDD cloning, periodic inspections of each computer, and assistance during the ANBK exam implementation. However, there are still challenges such as unmet budgets and technical issues with computer hardware. The computer laboratory plays an important role in supporting students' interest in learning. Adequate infrastructure and extracurricular programs, such as robotics, help increase students' interest in learning in the digital era. This study provides insights for administrators, computer laboratory technicians, and education managers to improve the accessibility and availability of computer resources. The recommended strategies can enhance students' learning experiences and support their academic development. Thus, effective and efficient management of the computer laboratory will be key in creating a dynamic learning environment and significantly supporting students' development.

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