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Analysis Of ICT Laboratory Management Through SOP Implementation (Comparative Study at Karsa Mulya Vocational School and MAN Palangka Raya City)

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ABSTRACT

Information and Communication Technology (ICT) facilities are a crucial component in supporting learning activities in schools. The implementation of effective Standard Operating Procedures (SOPs) is the key to ensuring efficient and orderly management of ICT laboratories, as well as ensuring the sustainability of facility use (Astriyani et al., 2024). This study aims to analyze the management of Information and Communication Technology (ICT) laboratories at SMK Karsa Mulya and MAN Palangka Raya City through the implementation of Standard Operating Procedures (SOPs). This study uses a qualitative descriptive method with a comparative case study approach. Data collection was carried out through observation, interviews, and documentation. The results of the study show that both schools have implemented SOPs in managing ICT laboratories, but there are differences in the scope and level of implementation. These differences are influenced by several factors, such as management support, personnel awareness, and resource availability. This study concludes that consistent implementation of SOPs can improve the effectiveness and efficiency of ICT laboratory management. This study provides recommendations for other schools to develop and implement comprehensive SOPs in managing ICT laboratories.

Keywords: ICT laboratory management, comparative study.

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INTRODUCTION

The rapid development of information and communication technology (ICT) has changed the educational landscape. ICT laboratories as supporting learning facilities are becoming increasingly important in equipping students with skills that are relevant to the demands of the times (Azhar et al., 2023). In order for ICT laboratories to function optimally, good and effective management is needed. One effort to improve the quality of ICT laboratory management is to implement Standard Operating Procedures (SOPs). SOPs are clear and systematic guidelines regarding the steps that must be taken in carrying out an activity (Hutauruk et al., 2022). Many studies have been conducted on ICT laboratory design, focusing on various aspects such as planning, implementation, and evaluation. Several studies have shown that implementing SOPs can improve laboratory efficiency and effectiveness. However, there are several challenges in implementing SOPs, such as lack of

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commitment from managers, lack of resources, and inadequate evaluation of the effectiveness of SOPs (Suslistya & Mahadewi, 2023). When compared to previous studies, this study has several differences. First, this study compares the implementation of SOPs in two different types of schools, namely SMK and MAN. Second, this study not only examines the existence of SOPs, but also the level of implementation and the factors that influence it. The third study was conducted in the city of Palangka Raya to provide more specific information about the operating conditions of ICT laboratories in the area.

The following research problems are based on the background mentioned above: First, how is the SOP implemented in the management of ICT laboratories at MAN Kota Palangka Raya and SMK Karsa Mulya? Second, what variables influence different levels of SOP implementation in the two schools? and the following hypotheses can be proposed in relation to the research problems mentioned earlier: H1: ICT laboratory management in SMK Karsa Mulya and MAN Kota Palangka Raya differs in the level of SOP implementation. H2: A number of variables, including management support, staff awareness, and resource availability, influence differences in SOP implementation. The objectives of this study are to: First, analyze the implementation of SOP in ICT laboratory management in SMK Karsa Mulya and MAN Kota Palangka Raya. Second, identify factors that influence differences in the level of SOP implementation in the two schools. Third, provide recommendations to improve the quality of ICT laboratory management through more effective SOP implementation.

METHOD

Research methods are general strategies for collecting data, analyzing data, and drawing conclusions to address research problems (Ruhansih, 2017). The research method used is a qualitative descriptive method with a comparative approach. This type of method aims to describe and compare social or cultural phenomena in a natural context. In other words, researchers try to understand and describe an event or condition as it is, then compare it with similar events or conditions in different places or times (Ali et al., 2022). Data collection techniques use observation, interviews and documentation.

Meanwhile, To compare them, this study will conduct observations, interviews, and data collection from two or more examples (in this case, SMK Karsa Mulya and MAN Kota Palangka Raya). The aim is to gain a deeper understanding of how the two schools implement Standard Operating Procedures (SOP) in managing information technology (ICT) laboratories, as well as the elements that influence the differences and similarities found (Fikri, 2020). In other words, this technique allows this study to draw conclusions that are relevant to a broader context and provide a comprehensive and in-depth picture of ICT laboratory management practices in both schools.

FINDINGS AND DISCUSSION

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A. Analysis of ICT laboratory management at Karsa Mulya Palangka Raya Vocational School

management of laboratory space infrastructure includes; lab space planning, organization of lab space infrastructure, coordination of lab space infrastructure, implementation of lab space infrastructure and control of lab space infrastructure. Meanwhile, management in general consists of four aspects, namely: planning, organizing, implementing, and supervising (Khafid & Fahmi, 2022). In this case, the laboratory at SMK Karsa Mulya Palangka Raya also applies this.

Figure 1. LAB 1 of Karsa Mulya Vocational School, Palangka Raya (Acer ICT LAB)

Figure 2. 2nd LAB of Karsa Mulya Vocational School Palangka Raya (MacBook ICT LAB)

At SMK Karsa Mulya Palangka Raya, there are two ICT laboratories that are usually used by students to practice subjects related to ICT, especially Visual Communication Design (DKV) and Multimedia subjects.

Based on the results of direct observation to the school, the management of the ICT laboratory at SMK Karsa Mulya Palangka Raya has been carried out well. However, there are still some shortcomings in the management of the laboratory. For example, the study shows that the SOP for managing the ICT laboratory at SMK Karsa Mulya Palangka Raya was carried out well, but there are still weaknesses, such as lack of equipment maintenance and lack of training for staff. This shows that the ICT laboratory at SMK Karsa Mulya Palangka Raya will face many problems and challenges if it is not implemented properly. Further efforts are needed to improve the quality of ICT laboratory management in order to provide the best contribution to student learning. Schools should prioritize regular training and continuous improvement in ICT laboratory management procedures (Abrori & Muali, 2020). With Thus, the ICT laboratory can work well and help students learn in the fields of IT and communication.

B. Implementation of SOP in ICT laboratory

Central to ICT laboratory management is the Standard Operating Procedure (SOP). SOP provides clear and detailed guidance on how each activity in the laboratory should be carried out. With the SOP, each member of the laboratory will have the same understanding of their respective duties and responsibilities, so that work can run more efficiently and effectively (Mardianto et al., 2023). In a laboratory environment, things will be structured and

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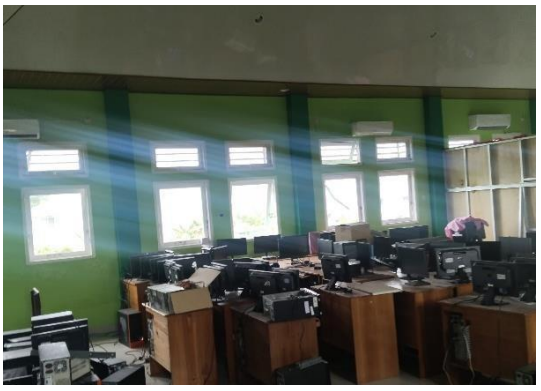
consistent if good SOPs are implemented. To improve service and reduce errors or equipment damage, every procedure, from borrowing equipment to handling technical problems, will follow the same workflow. In addition, standard operating procedures (SOPs) serve as a tool to maintain laboratory security. SOPs protect users from work accidents and maintain data confidentiality (Ulya, 2024).

Field facts from observations at SMK Karsa Mulya regarding the written SOP for ICT laboratories have been implemented, but the K3 poster and laboratory fire extinguisher have not been installed. Therefore, schools must immediately implement SOPs in ICT laboratories according to the field facts that have been collected. Although the written SOP has been implemented, the K3 poster and fire extinguisher still need to be installed immediately. This will protect and safeguard laboratory users and improve the overall quality of ICT laboratory management (Solichin & Painem, 2022). By following these steps, it is hoped that the ICT laboratory can function properly and provide the greatest contribution to student learning.

C. Comparison with MAN schools in Palangka Raya City

The ICT laboratory at MAN Kota Palangka Raya school has various sophisticated technological devices. However, it may not be optimal to implement SOPs and improve safety through the installation of K3 posters, fire extinguishers, and computer layouts and room conditions that are still not efficient. The installation of K3 posters will remind users of the importance of safety when using the facility. The available fire extinguishers will also improve emergency response in case of fire in the laboratory. An ideal computer layout will also make users work more comfortably and efficiently (Misdarpon & Fatori, 2013). All these steps will help develop a conducive learning environment and encourage technological advancement in the laboratory. Although all these steps are taken, in the case of a fire in the ICT laboratory, there is no clear and organized evacuation system. This can hinder effective emergency response and increase the risk of material loss or injury (Di et al., 2024). Putting up posters alone is not enough to ensure the safety of laboratory users when using the facility without adequate OHS training.

Similar to SMK Karsa Mulya Palangka Raya, MAN Kota Palangka Raya also has two



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laboratories for information and communication technology (ICT).

Figure 3. 1st ICT Laboratory of MAN Kota *Figure 4. 2nd ICT Laboratory of MAN Kota*

Based on the observation results for the laboratory in MAN Kota Palangka Raya regarding the implementation of the laboratory management SOP is still not optimal and in its application. As in figure 3 above for the placement of computers is still not efficient, and K3 posters, laboratory fire extinguishers and projectors have not been provided or installed. As in figure 4 the condition of the laboratory has not been tidied up at the time of the observation, because the laboratory room used is a new room. Then the condition of the room and the completeness of the laboratory equipment in figure 4 is more complex than the first laboratory in figure 3 above.

D. Factors that influence the analysis of ICT laboratory management

At SMK Karsa Mulya Palangka Raya City and MAN Palangka Raya City, it can be divided into several categories, namely physical factors, technical factors, human factors, and policy factors.

- Physical factors include the condition of the laboratory building, electrical systems, and equipment used.
- Technical factors include evacuation systems, fire extinguishers, and personal protective equipment.
- Human factors include the knowledge and ability of laboratory users to deal with emergency situations.
- Policy factors include occupational health and safety policies implemented in schools.

Taking all these things into consideration, the management of ICT laboratories at SMK Karsa Mulya Palangka Raya and MAN Kota Palangka Raya schools can be optimized to improve the safety and health of users (Wijaya et al., 2024). Thus, schools can create a safe and healthy learning environment for all students and employees. Schools can ensure that their laboratories always comply with established safety and health standards, which will protect users and prevent accidents. Regular training will also raise awareness of the importance of safety and health in the laboratory, so that everyone can work together to create a safe learning environment (Husna et al., 2022).

E. Challenges in implementing SOP

Safety and health in the laboratory must also be considered comprehensively. One of the problems is ensuring that students and employees fully understand and comply with established procedures. In addition, regular monitoring and evaluation are needed to ensure that the established standard operating procedures (SOPs) are truly effective and can be

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implemented properly. To ensure that the learning environment remains safe and healthy for everyone, everyone in the school must work together to find and address all risks (Mardizal et al., 2024).

F. Recommendations for improving ICT laboratory management

From the results of the observations that have been made, several suggestions can be applied to improve the management of ICT laboratories in schools. First, it is necessary to improve the implementation of Standard Operating Procedures (SOPs). This includes regularly updating SOPs to suit technological advances and user needs, and properly socializing SOPs to all laboratory users, including students. In addition, it is necessary to conduct routine evaluations of the implementation of SOPs with valid and reliable instruments to measure their effectiveness. Second, resources must be more easily accessible. To obtain additional resource support, schools must submit budget proposals for the procurement of laboratory equipment and maintenance and collaborate with external parties, such as industry or universities. Finally, increasing employee awareness is very important. To improve the ability of teachers, laboratory assistants, and students in managing and utilizing ICT laboratories, intensive and ongoing training programs are needed (Husaeni et al., 2018). By implementing these recommendations, it is hoped that the management of ICT laboratories in schools can be more effective and efficient.

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CONCLUSION

Based on the results of the research that has been conducted on the management of ICT laboratories at SMK Karsa Mulya and MAN Kota Palangka Raya, it can be concluded that the implementation of Standard Operating Procedures (SOP) in both schools still needs to be improved. Although both have SOPs, there are differences in scope, level of compliance, and effectiveness of their implementation.

These differences are influenced by several factors, such as management support, personnel awareness, and resource availability.

Some important findings from this study include:

1. Differences in SOP Implementation: Both schools showed quite striking differences in the implementation of SOPs, especially in terms of completeness and compliance.
2. Inhibiting Factors: Lack of commitment, inadequate training, and rapid technological developments are the main obstacles in implementing SOPs.

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