

Management of Infrastructure in Vocational High Schools

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ABSTRACT

This study aims to explore the management of educational facilities and infrastructure at Christian Private Vocational High School, Christian Education Foundation in Manado, Evangelical Christian Church in Minahasa, with a specific focus on the Computer and Network Engineering department. The research is grounded in the reality that many key learning facilities—such as computer laboratories and internet networks—have not been managed effectively. However, the availability of appropriate resources is essential to support technology-based learning, especially in vocational education settings. A qualitative approach was used, with data collected through in-depth interviews, direct observation, and document analysis. The findings reveal that although planning for facility procurement has taken place, there are still significant challenges in the areas of organization, implementation, and supervision. The lack of a structured management system and limited technical personnel have led to poorly maintained facilities. Moreover, the involvement of teachers and students in reporting issues and maintaining equipment remains minimal. This study highlights the importance of applying the POAC management principles (Planning, Organizing, Actuating, and Controlling) in the administration of school infrastructure. The results are expected to serve as strategic input for the school, helping to create a more supportive and efficient learning environment that prepares students to compete in a technology-driven workforce.

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INTRODUCTION

Facilities and infrastructure are very important to achieve educational goals.(Aminusyai et al. 2024)The presence of adequate facilities and infrastructure not only helps the educational process but also creates a comfortable environment for

students and educators. Management of educational facilities and infrastructure is the process of procuring, utilizing, and supervising equipment and infrastructure used to facilitate high-quality education. In the context of education, facilities include learning tools such as books, computers, and teaching aids, while infrastructure includes physical facilities such as school buildings, classrooms, laboratories, libraries, and sanitation facilities.(Ananda and Banurea 2017).

Facts on the ground show that many educational institutions, especially in remote areas, continue to face various problems related to the availability of resources and facilities. According to data collected by the Ministry of Education, Culture, Research, and Technology, most schools in Indonesia lack basic facilities. There are decent classrooms, access to technology, and adequate sanitation.(Aprilia, Afindi, and Saputra 2024)This condition is exacerbated by the differences in schools in urban and rural areas, which causes differences in education.

Limited facilities and infrastructure directly affect the learning process. Students often have to learn in inadequate conditions. This includes cramped classrooms, poor learning devices, or even none at all, especially for vocational education.(Yoto, Widiyanti, and Murhadi 2024)This can reduce students' desire to learn, limit teachers' creativity in conveying information, and ultimately affect learning outcomes. In addition, poor sanitation conditions can affect students' health, which affects their attendance and concentration at school.

To address this issue, the government has implemented a school digitalization program as well as the Special Allocation Fund (DAK) for school construction and rehabilitation. DAK is given to one school in the relevant year and then stopped to be given again in the following year, which makes it considered as irregular assistance. However, the same school can receive different physical assistance according to the school's needs if the number of classroom damages in the previous year has not been met. However, the main obstacles to the equalization of educational facilities are still the lack of supervision, ineffective operations, and the inability to reach locations in remote areas.(Sari et al. 2019).

Article 31 of the 1945 Constitution legally regulates educational facilities and infrastructure, which states the right of every citizen to receive an education. The government is responsible for developing and organizing a national education system that enhances faith, piety, and noble morals to educate the nation's life. In this case, the government is responsible for ensuring equal and quality access to education. In addition, Regulation of the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia Number 22 of 2023 concerning Standards of Facilities and Infrastructure in Early Childhood Education, Elementary Education Level, and Secondary Education Level is very important to ensure that educational facilities meet national standards.

Facilities and infrastructure are very important to support the learning process, especially in vocational schools such as the Computer and Network Engineering (TKJ) department. Adequate facilities will improve the quality of learning and make graduates ready to work in the world of work.(Megasari 2014).

Researchers found that there were many problems in the management of facilities and infrastructure at SMKS Kristen YPKM (Manado Christian Education Foundation) GMIM Manado in the TKJ department. Some of them are the lack of hardware and software, which allow the use of the latest technology. Many computers used in the learning process experience problems such as devices that do not function

properly due to lack of maintenance, less sophisticated operating systems, and low specifications. In addition, internet network facilities often experience problems, which makes the digital-based learning process difficult.

The management of facilities and infrastructure continues to fail. Because there is no organized management system, data collection, maintenance, and replacement of damaged devices are difficult. As a result, students cannot access the facilities that are supposed to help them learn. In addition, the situation is made worse by the fact that schools, teachers, and technicians do not collaborate in maintaining facilities and infrastructure. (Sambodo 2019).

Previous studies have examined the management of educational facilities and infrastructure in the context of the effectiveness of overall school facility management. Several studies have shown how important the availability of facilities and infrastructure is to support learning and how facility management impacts the quality of education, although there are differences in some aspects.

The Computer and Network Engineering (TKJ) Department relies heavily on well-managed practice laboratories and technology to support learning, the management of vocational school facilities and infrastructure is still rarely a subject of research. Most previous studies have talked more about the availability of facilities without studying how the POAC (Planning, Organizing, Actuating, and Controlling) management function is applied in the management of facilities and infrastructure. In fact, the implementation of POAC is very important to ensure that available facilities can be well planned, well managed, used optimally, and supervised to avoid damage or other damage. The benefits and impacts of facilities on learning are also discussed in previous studies. However, they did not find obstacles in facility management or strategic solutions to improve their use.

METHOD

In this study, the method used is qualitative research. This study uses a qualitative approach with the aim of gaining a deeper understanding of how facility and infrastructure management is implemented at SMKS Kristen YPKM (Manado Christian Education Foundation) GMIM Manado in the Computer and Network Engineering (TKJ) department, which includes processes such as planning, procurement, utilization, maintenance, and supervision.

In this study, the data collection methods used include observation, interviews, and documentation. The research location is at SMKS Kristen YPKM (Manado Christian Education Foundation) GMIM Manado

The data collection techniques used in this study used various methods, such as in-depth interviews, observation, and document analysis, which were then validated through a triangulation process to ensure the accuracy and reliability of the data.

RESULT AND DISCUSSION

Infrastructure Planning

The results show that SMKS Kristen YPKM GMIM Manado conducts planning of facilities and infrastructure with the principal, teachers, and laboratory technicians. This planning includes the collection of software and hardware needed to support practical learning in the Computer and Network Engineering (TKJ) department. However, documentation and interview results show that planning is more reactive and dependent on the Special Allocation Fund (DAK), without long-term projections that depend on the latest information technology advances.

Observations show that some of the devices used still lack specifications and their operating systems have not been updated, which hinders the learning process. According to Suhardi (2018), educational planning must be prepared by considering future needs and based on a systematic needs analysis so that the facilities provided are truly relevant and support educational goals. (Suhardi 2018)

It can be concluded that the planning of facilities and infrastructure of SMKS Kristen YPKM GMIM Manado has been running, but still needs to be improved by using a more strategic and data-based approach to meet future needs. Long-term planning that relies on analysis of technological progress trends in the field of Computer and Network Engineering (TKJ) is one way that improvement can be achieved. For example, educational institutions can regularly investigate industry standards such as the need for cloud computing laboratories, network security, or the Internet of Things (IoT).

There needs to be a proportional availability of facilities with student growth to ensure that the analysis of the projection of the number of students for the next five years also needs to be carried out. The results of internal surveys, such as questionnaires on facility needs filled out by teachers and students, must support planning to obtain accurate information about the resources needed for learning practices. In addition, educational institutions can create a Laboratory Development Master Plan (RIPL) for the Computer and Network Engineering (TKJ) department. This plan will gradually include the objectives of updating hardware, software, and technician training. Furthermore, the results of the analysis must be included in the School Activity and Budget Plan (RKAS) each year. Systematic planning based on strategy and data is expected to make the facilities and infrastructure at SMKS Kristen YPKM GMIM Manado meet current needs and answer the challenges of educational technology developments in the future.

Organizing Infrastructure Facilities

This study found that in terms of organization, there is no formal structure that specifically handles the management of facilities and infrastructure in schools. Management is carried out informally by teachers, technicians, and school staff. There is no written division of tasks or official standard operating procedures (SOPs). In addition, school documentation does not indicate the existence of a facility and infrastructure unit or a work team that has been officially formed.

This condition is reinforced by the findings of the audit which showed that there was no detailed technical task list related to the responsibility for maintenance and use of facilities. According to Ananda and Banurea (2017), organization in educational management is very important to ensure that everyone knows what they have to do, so that management can run well. (Ananda and Banurea 2017)

This lack of clarity in the organizational structure results in weak facility control and slows down the response to facility damage or repair.

Implementation of Facilities and Infrastructure

The Computer and Network Engineering Department (TKJ) uses facilities and infrastructure quite well. According to interviews with teachers and students, the computer laboratory is used according to schedule and helps students learn practice. Teachers are also responsible for regulating the use of facilities and ensuring that everything is used according to procedure.

Observation results show that there are limitations on how many computer devices students use compared to the number of students. As a result, students have to take turns during practice. In addition, the software used has not been fully updated, so some applications that are very important for computerization and network learning cannot run properly.

This shows that the implementation has not reached the maximum level of effectiveness. Sherly et al. (2020) stated that to implement effective infrastructure management, a person must have the ability to optimize every available facility to help achieve learning goals. (Sherly et al. 2020)

Facilities Supervision

There is no adequate supervision of the facilities and infrastructure of SMKS Kristen YPKM GMIM Manado. According to interviews with the principal and teachers, the school has standard operating procedures (SOPs) for laboratory use. However, there has been no routine and systematic supervision of the condition of the facilities and the implementation of the SOPs.

Observations show that there is no regular maintenance schedule. In addition, school documentation does not display periodic reports on the condition of facilities and infrastructure. Unlike routine inspections, computer or network failures are more often discovered after incidental reports from educators or students.

According to Anwar (2015), supervision in educational management must be carried out actively through periodic inspections and evaluation reports. This is done so that damage to facilities can be detected immediately and so that educational services continue to run as well as possible. Due to the weakness of this control function, educational facilities are used less effectively.

Management of Facilities and Infrastructure of SMKS GMIM YPKM Manado

Based on the results of interviews, observations, and documentation conducted by researchers, it can be concluded that the management of facilities and infrastructure at SMKS GMIM YPKM Manado has been running quite well. However, there are still several challenges that must be overcome to implement it comprehensively. The principal, teachers, and laboratory head participated in the inventory and analysis of learning needs to plan the needs of facilities and infrastructure. After that, this planning was applied when submitting assistance to the education office and other sources. However, there were several obstacles, including a limited budget, a priority queue system, and a procurement process that was not yet fully fast and responsive to the technical needs of the Computer and Network Engineering (TKJ) department.

In terms of procurement, schools already have basic facilities, such as computer laboratories and practical equipment, and they have received assistance from the Special Allocation Fund (DAK) for procurement. However, the hardware specifications are not yet fully in accordance with the latest technological advances, and there has been no significant cooperation with industry or external parties to improve technology-based facilities. Laboratory equipment is used well by students under the supervision of teachers and technicians. They also follow standard operating procedures (SOPs) when using them. However, there are still some access restrictions, and the supervision system is not running properly.

From the maintenance aspect, it is one of the weak points that needs to be improved. There is no routine maintenance schedule, and maintenance is only carried out when damage occurs. Repairs are often carried out by students as part of learning.

In addition, the head of the laboratory and teachers periodically check the condition of the facilities, but the results of the inspection have not been fully integrated into the long-term development plan. According to the report, supporting spaces such as additional practice rooms, UKS rooms, prayer rooms, circulation rooms, and sports parks are not available. This shows a lack of comprehensive educational facilities.

Overall, the management of facilities and infrastructure of SMKS GMIM YPKM Manado shows the school's commitment to managing and developing existing facilities. However, the school needs greater support from the foundation, education office, and other external stakeholders. In order for the learning environment to be the best and in accordance with the demands of technological progress and the current world of work, improvements are needed in the procurement of tools that are in accordance with the industry, regular periodic maintenance, and the availability of other supporting facilities.

CONCLUSION

At SMKS Kristen YPKM GMIM Manado, the principal, teachers, and technicians are involved in the inventory of needs to plan facilities and infrastructure. Planning is based on department priorities, curriculum development, and field needs. In addition, the school receives assistance from the education office, foundations, and external parties. Although internal planning is going well, lack of funds and bureaucratic processes prevent the provision of all facility needs quickly and comprehensively.

Various parties, such as principals, teachers, technicians, and laboratory heads, have been involved in organizing resources for the management of facilities and infrastructure. The laboratory head serves as the main manager of the Computer Engineering and Networking department facilities. However, there is no special technical team that has been formally formed, and maintenance tasks are still carried out individually, including by students during practice.

To support learning activities, the management of facilities and infrastructure has been implemented quite well. Practical devices and computer laboratories are used almost every day for learning programs. Students make good use of the facilities after the SOP for use is implemented. However, optimal practical learning is still a challenge due to the limited number and specifications of devices and irregular maintenance.

Principals and teachers monitor and assess facilities and infrastructure through SOPs. Supervision is carried out before and after use of the facilities. However, this supervision has not been fully documented in its entirety, and little effort has been made to study the results of the evaluation. Strengthening the monitoring system and the involvement of everyone, including students, in maintaining and reporting the condition of the facilities is needed.

The principal, teachers, and students showed that the management of facilities and infrastructure in the Computer and Network Engineering (TKJ) Department of SMKS Kristen YPKM GMIM Manado has been running well. However, strategic planning, technical organizational structure, industry-based implementation system, and integrated supervision still need to be improved. These results are in line with the POAC theory, which states that clarity of management functions, stakeholder involvement, and an effective reporting system are factors that influence successful management.

REFERENCES

- Abdussamad, H.Zuchri. 2021. *Qualitative Research Methods*. Edited by Patta Rapanna. CV.Syakir Media Press.
- Ananda, Rusydi, and Oda Kinanta Banurea. 2017. *Management of Educational Facilities and Infrastructure*. Edited by Syarbaini Saleh. Medan: CV. Widya Puspita.
- Anwar, Sewang. 2015. *Educational Management*. Malang: Wineka Media. <http://www.pembelajaranvisioner.com>.
- Aprilia, Ermi, Afindi Afindi, and Henda Saputra. 2024. "The Case of Educational Resource Utilization." *Journal of Education, Language and Culture* 3 (4): 112–24. <https://doi.org/https://doi.org/10.55606/jpbb.v3i4.4615>.
- Harahap, Nursapia. 2020. *Qualitative Research*. Edited by Hasan Sazali. Medan: Wal ashri Publishing.
- Hermawan, Dani. 2021. *Facilities and Infrastructure Management*. Edited by Fiqru Mafar. *Journal of Economic Education and Economic Studies*. Vol. 2. Lumajang: Klik Media.
- Megasari, Rika. 2014. "Education to Improve Quality." *Journal of Educational Administration* 2 (1): 636–48.
- Rodliyah. 2015. *Educational Management: A Concept and Application*. Jember: IAIN Jember Press.
- Sambodo, Djoko. 2019. *Management of School Facilities and Infrastructure (MPPKS - SAR)*. Jakarta: Directorate General of Teachers and Education Personnel.
- Sherly, Leni Nurmiyanti, Hery Yanto The, Fifit Firmadani, Safrul, Nuramila, Nur Rahmi Sonia, et al. 2020. *Educational Management: A Review of Theory and Practice*. Widina Bhakti Persada Bandung. Bandung. <https://etheses.uinsgd.ac.id/40789/1/PRINTEDUCATIONALMANAGEMENT.pdf>.
- Suhardi. 2018. *Introduction to Management and Its Applications*. Yogyakarta: GAVA Media. www.gavamedia.net.
- Yoto, Widiyanti, and Didik Murhadi. 2024. *Challenges and Innovations in Vocational Education*. Medan: PT. Media Penerbit Indonesia.