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Management of Educational Facilities and Infrastructure to Support the Quality of Learning (Multi-Site Study at SMK Krian 2 and SMK YPM 1 Taman Sidoarjo)

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A B S T R A C T

The management of educational facilities and infrastructure is a crucial factor in supporting the quality of learning, particularly at the vocational high school level (*Sekolah Menengah Kejuruan/SMK*), which emphasizes skills- and practice-based learning. This study aims to describe and analyze the management of educational facilities and infrastructure in supporting learning quality through a multi-site study at SMK Krian 2 and SMK YPM 1 Taman Sidoarjo. This research employed a qualitative approach with a multi-site study design. Data were collected through in-depth interviews, observations, and documentation studies. Data analysis was conducted through data reduction, data display, and conclusion drawing. The findings indicate that the management of facilities and infrastructure at SMK YPM 1 Taman has been implemented systematically, in a well-planned manner, and based on inventory data, enabling it to optimally support the quality of learning. Meanwhile, the management of facilities and infrastructure at SMK Krian 2 still faces challenges, particularly in data-based planning, scheduled maintenance, and the documentation of monitoring and evaluation activities. Cross-site findings reveal that careful planning, clear division of responsibilities, and continuous monitoring and evaluation are key factors for successful facilities and infrastructure management in improving the quality of learning at vocational high schools.

Keywords: *Facilities and Infrastructure Management, Learning Quality, Vocational High School (SMK), Multi-Site Study*

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INTRODUCTION

Education has a strategic role in preparing quality, competent, and highly competitive human resources. Schools as formal educational institutions are not only required to carry out the learning process, but also provide a conducive, safe, and relevant learning environment to the needs of students. One of the important factors that determine the success of the educational process is the availability and management of educational facilities and infrastructure. Educational facilities and infrastructure include all facilities that are used directly or indirectly in the learning process, such as classrooms, laboratories, practice workshops, learning equipment, and other supporting facilities. The availability of adequate facilities and infrastructure must be balanced with good management so that these facilities can be used optimally and sustainably. Unplanned management has the potential to cause various problems, such as damage to facilities, waste of budget, and low effectiveness of the use of learning facilities.

The role of facilities and infrastructure is increasingly crucial at the Vocational High School (SMK) level because learning at vocational schools emphasizes mastery of skill competencies and work practices according to the field of expertise. The existence of laboratories, practice workshops, production equipment, and other supporting facilities is the main prerequisite for achieving the goal of vocational education, which is to produce job-ready and competent graduates. Various previous studies have highlighted the importance of the management of educational facilities and infrastructure. Sari and Nugroho (2020) show that

systematic facility management increases the effectiveness of learning in vocational schools, while Lestari (2019) found that data-based planning and periodic maintenance are determining factors for the success of facilities and infrastructure management. Hidayat and Kurniawan (2021) emphasized that continuous monitoring and evaluation can prevent damage to facilities and budget waste, while Rahmawati (2020) highlighted the role of facilities and infrastructure management in supporting the implementation of competency-based curriculum in vocational schools. In addition, Nurkhamidah (2019) identified that some vocational schools still manage facilities reactively, thereby hindering the quality of learning and work readiness of students.

From the findings of previous research, it can be seen that most studies emphasize the internal management aspect of schools, but there are still few studies that compare the practices of managing facilities and infrastructure in more than one school with different characteristics. Therefore, this study comes with a novelty in the form of a multi-site study approach, which allows cross-practice analysis of facilities and infrastructure management in two vocational schools with different conditions, namely SMK Krian 2 and SMK YPM 1 Taman Sidoarjo. This approach is expected to provide a comprehensive overview of the management practices of educational facilities and their contribution to the quality of learning.

Based on this background, this study aims to describe the management practices of educational facilities and infrastructure at SMK Krian 2 and SMK YPM 1 Taman Sidoarjo, analyze the contribution of facilities and infrastructure management to the quality of learning in the two vocational schools, and identify key factors of success and obstacles in the management of cross-site facilities and infrastructure.

METHOD

This study uses a qualitative approach with a multi-site study design. The qualitative approach was chosen because it allows researchers to deeply understand the phenomenon of managing educational facilities and infrastructure in the natural context of schools. The multi-site study design was used to compare and analyze the management practices of facilities and infrastructure at two research sites.

The research locations are SMK YPM 1 Taman and SMK Krian 2 Sidoarjo. The research subjects include school principals, deputy principals in the field of facilities and infrastructure, heads of workshops or laboratories, productive teachers, and education personnel who are directly involved in the management of school facilities and infrastructure. The selection of subjects was carried out purposively by considering the involvement and understanding of the research object.

Data collection techniques were carried out through in-depth interviews, observations, and documentation studies. Interviews are used to obtain information related to planning, procurement, utilization, maintenance, as well as monitoring and evaluation of facilities and infrastructure. Observations were made to see the physical condition of the facilities and their use in the learning process. The documentation study was carried out by examining planning documents, inventories, and facilities and infrastructure management reports.

Data analysis is carried out through three stages, namely data reduction, data presentation, and conclusion drawn. The validity of the data is maintained through triangulation of sources and techniques so that the data obtained has a high level of credibility.

FINDINGS AND DISCUSSIONS

Results

Table 1. Management of Facilities and Infrastructure at SMK YPM 1 Taman and SMK Krian 2

Management Aspects	SMK YPM 1 Taman	SMK Krian 2
Procurement planning	Based on inventory and curriculum needs; Structured	It is not yet fully data-driven; situational
Utilization of facilities	Scheduled, optimal to be used according to the learning schedule	Uneven; Some facilities are not optimally used

Maintenance	Preventive and corrective	Reactive (after damage has occurred)
Monitoring & Evaluation	Periodic and documented	Done informally; Not systematically documented
Management coordination	School management meeting discusses needs	The division of tasks is not entirely clear

Table 1 shows a comparison of the practice of managing facilities and infrastructure in two vocational schools with different characteristics, based on the results of observations, interviews, and documentation.

Discussion

The results of the study show that there is a significant difference in the practice of managing facilities and infrastructure between SMK YPM 1 Taman and SMK Krian 2. At SMK YPM 1 Taman, planning for the procurement of facilities and infrastructure is carried out systematically and based on inventory data and curriculum needs for each skill program. Each expertise program compiles a list of practical facility needs, which is then compiled by the deputy principal for facilities and infrastructure to be discussed in the school management meeting. This practice reflects the principles of education management that emphasizes needs-based planning, transparency, and coordination between school units. With data-based planning, SMK YPM 1 Taman is able to ensure that every facility provided is relevant and supports the competencies taught in the classroom and laboratory. These findings are in line with Sari and Nugroho (2020), who stated that systematic management of facilities and infrastructure has a positive impact on learning effectiveness, and Lestari (2019) who emphasized the importance of data-based planning to maximize the use of school facilities.

The use of facilities at SMK YPM 1 Taman is also carried out on a scheduled basis according to the learning schedule, so that laboratories and practical workshops can be used optimally by productive students and teachers. This schedule management not only avoids conflicts of use between skill programs, but also ensures that facility maintenance can be carried out without disrupting the learning process. On the maintenance side, the school implements a preventive and corrective maintenance system, which involves regular checks and immediate repairs when minor damage is found. This allows the facility to remain viable and extend the life of the school's assets. This preventive maintenance system corroborates the findings of Hidayat and Kurniawan (2021), who emphasize that planned and continuous maintenance prevents facility damage, reduces repair costs, and improves the quality of learning.

Monitoring and evaluation at SMK YPM 1 Taman are carried out regularly and are well documented. The condition of the facility and its utilization are regularly evaluated to determine the priority of repairs and procurement of facilities for the next period. This approach allows schools to conduct more targeted planning, identify additional needs, and ensure that existing facilities truly support competency-based curriculum goals. These findings affirm the research of Rahmawati (2020), which shows that continuous monitoring and evaluation are important factors in supporting the quality of learning, especially in vocational schools.

On the contrary, the practice of managing facilities and infrastructure at SMK Krian 2 shows several significant obstacles. The planning for the procurement of facilities in this school is not fully based on structured inventory data, so it is still situational and adjusts to budget conditions. This irregularity in planning causes some expertise programs to have inadequate or inadequate facilities, so that the use of facilities and infrastructure becomes less than optimal. This result is in line with the findings of Nurkhamidah (2019), who stated that reactive facility management can hinder the quality of learning and work readiness of students. This condition emphasizes the importance of data-based planning as the foundation for effective management of facilities and infrastructure.

The use of facilities at SMK Krian 2 is also uneven in all expertise programs. Some laboratories and practical workshops are not used optimally due to schedule limitations or lack of coordination between teachers and school management. In addition, the maintenance of facilities and infrastructure is reactive, carried out after damage has occurred, so it often

causes disruptions in the learning process. Monitoring and evaluation are still informal, relying on oral reports from teachers or workshop heads, without systematic documentation that can be the basis for future planning. These findings indicate that the availability of facilities alone is not enough to improve the quality of learning; a mature and sustainable management system is needed, in accordance with the principles of modern education management (Prasetyo, 2018).

Cross-site analysis shows that the success of facilities and infrastructure management is influenced by several key factors, namely data-driven planning, clear division of tasks, optimal utilization of facilities, and continuous monitoring and evaluation. SMK YPM 1 Taman has implemented these factors consistently, so that the use of facilities and infrastructure is able to support the quality of learning to the maximum. This affirms the research of Sari and Nugroho (2020) and Lestari (2019), which emphasize that careful planning, clear coordination, and continuous control are the keys to the effectiveness of school facility management.

In addition, the results of this study also show that good management of facilities and infrastructure has a direct impact on the readiness of student competencies. Adequate and well-managed facilities allow students to practice their skills optimally, improve their understanding of practice materials, and familiarize themselves with discipline in using the facilities. These findings are in line with the management theory of vocational education which states that school facilities are one of the strategic instruments to achieve competency-based learning goals (Fauzi & Rohman, 2022). Thus, the success of the management of facilities and infrastructure is not only a matter of the availability of facilities, but also how these facilities are managed to support the teaching and learning process.

On the other hand, the obstacles found at SMK Krian 2 confirm that even though the school has relatively complete facilities, irregularities in management can reduce the effectiveness of the use of facilities. This condition shows that there is a gap between the availability of infrastructure and the quality of its management. This finding is an antithesis to some previous studies that only emphasized the number of facilities as an indicator of success, for example Nurkhamidah (2019), so this study emphasizes that the managerial aspect is the main determining factor for the effectiveness of facilities in supporting the quality of learning.

In addition, this study contributes novelty by using a multi-site approach, which allows a comparative analysis of facilities and infrastructure management practices in two vocational schools with different characteristics. This approach suggests that systematic management in one school can be a model of best practice that can be adapted by other schools facing similar constraints. These findings confirm the importance of benchmarking in education management, which is studying good practices from other schools to improve the internal quality of their own schools.

Overall, this discussion emphasizes that effective management of facilities and infrastructure requires integration between data-based planning, optimal facility utilization, preventive and corrective maintenance, and continuous monitoring and evaluation. Schools that are able to manage these factors well will be able to improve the quality of learning and the readiness of students' competencies. On the other hand, schools that rely solely on the availability of facilities without a good management system will face obstacles in achieving educational goals.

Thus, the results and discussion of this research affirm the importance of facilities and infrastructure management as a strategic factor in vocational education, as well as providing a reference for other schools to improve facility management practices through a systematic and data-based approach. This research also emphasizes that the success of facility management is not only about the number and condition of facilities, but rather how the facilities are managed effectively, efficiently, and sustainably.

CUNCLUSIONS

The management of educational facilities and infrastructure has a strategic role in supporting the quality of learning in vocational schools. The results of the study show that systematic, planned, and data-based management of facilities and infrastructure is able to increase the effectiveness of the use of learning facilities. The difference in management practices at SMK YPM 1 Taman and SMK Krian 2 shows that the quality of management of facilities and infrastructure has a direct effect on the quality of learning.

Based on the findings of the study, it is recommended that schools strengthen planning for the procurement of facilities and infrastructure based on inventory data, implement scheduled maintenance, and carry out documented monitoring and evaluation. In addition, it is necessary to improve the competence of facilities and infrastructure managers so that the management of school facilities can run effectively and sustainably.

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