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INFRASTRUCTURE: A DESCRIPTIVE SURVEY OF CANDINGASINAN ELEMENTARY SCHOOL

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ABSTRACT

School effectiveness is strongly influenced by the adequacy and management of educational facilities and infrastructure. This study aims to assess the feasibility and availability of learning facilities at Candingasinan State Elementary School. A descriptive survey design was employed using interviews, questionnaires observations, and documentation. Data validity was ensured through methodological and source triangulation involving teachers and the school committee. Data were analyzed interactively through reduction, presentation, and verification stages. The findings show that facility management at the school has been implemented reasonably well; however, several facilities remain inad quate, particularly student restrooms, storage areas, and learning media such as projectors, OHP units, and whiteboards. Meanwhile, several infrastructure including classrooms, worship rooms, libraries, and laptops—are categorized as adequate to very adequate. These results highlight both challenges and opportunities for improving learning environments in rural schools. Strengthening policy support and developing facility management competencies are essential to ensure equitable and sustainable educational quality.

INTRODUCTION

Infrastructure is a key component in providing quality education. An educational institution is inseparable from its educational equipment, often referred to as facilities and (Nurmayuli, 2022). The concept of school infrastructure refers to all physical structures and additional services built to support quality education (Nasuna et al., 2022). Infrastructure is an educational tool that must be managed professionally (Rohmadi & Rahmat, 2024). Schools equipped with adequate educational facilities are well-equipped to provide quality educational services (Gbesoevi, Emmanuel Semako et al., 2025). Adequate infrastructure includes well-maintained classrooms, sanitation, lighting, heating, ventilation, and access to technology (UNESCO, 2020). These facilities will impact the quality of education.

Challenges related to inadequate facilities and infrastructure continue to hamper the creation of equitable and inclusive learning environments, particularly in rural areas. Several public schools face challenges such as outdated

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buildings, limited access to technology, inadequate building conditions, and so on. According to an analysis by the National Development Agency (Bappenas, 2020), approximately 75% of urban schools have libraries, while only 45% of rural schools do. Meanwhile, 60% of urban schools have computer laboratories, while only 20% of rural schools do.

The inadequacy of physical facilities remains a persistent challenge despite ongoing government interventions and stakeholder support by providing funding. Classrooms, computer labs, libraries, restrooms, dining rooms, and offices are some of the primary physical facilities needed in every institution (Krishnaiah et al., 2024). This situation reflects a structural disparity between rural and urban schools: public schools in rural areas receive little media attention, while urban schools with excellent infrastructure receive significant attention. According to (Sianipar et al., 2025), rural schools tend to be neglected by the government. Some schools experience infrastructure vandalism by criminals who exploit years of neglect by local education districts and school authorities (Ngidi & Ntinga, 2025).

School infrastructure challenges persist despite large-scale educational reforms (Adolfsson, 2024). The infrastructure situation at Candingasinan Public Elementary School is evident in the limited availability of teaching aids or learning media, resulting in inadequate use of these media during the learning process. The limited availability of textbooks in the library also hinders learning activities. Furthermore, computer laboratories and sports facilities are also lacking. Management of facilities and infrastructure has not been optimal, from inventory, use, maintenance, to disposal. Similarly, (Elpina et al., 2021) noted that the management of elementary school facilities and infrastructure has not been professionally managed by the school. The lack of educational facilities provided by the Indonesian government and community is currently contributing to the low quality of educational outcomes (Madhakomala et al., 2022). As is well known, a school can be considered effective if it has good school management and optimal student learning outcomes.

Existing efforts to address existing problems and create effective schools begin with existing school management (Masci et al., 2018). Schools can begin managing facilities and infrastructure, which includes the processes of planning, procurement, inventory, retention, maintenance, utilization, disposal, and arrangement (Kapologwe et al., 2020). Well-organized management of facilities and infrastructure is expected to result in schools that are effective, safe, habitable, and comfortable for all school members (Randan et al., 2025).

Previous research related to facility and infrastructure management conducted by (Refina & Madhakomala, 2024) found that facility and infrastructure standards are still categorized as low because only schools with good accreditation have complete facilities, while schools with good accreditation lack complete facilities. Furthermore, research results (Bello-Gomez & Avellaneda, 2023) indicate a good alignment between management and planning, with a 92.6% achievement rate. This result is not yet reflected in the quality of service and student outcomes due to suboptimal leadership and management of the management information system. Furthermore, research (Annisa et al.,2016) states that schools with good accreditation have adequate facilities and infrastructure. This finding is evident in the fact that 80.9% of schools with good enough facilities also have inadequate facilities and infrastructure, a 55.3% increase.

Given these challenges, this study seeks to evaluate the adequacy and availability of facilities and infrastructure at Candingasinan State Elementary School, addressing a gap in empirical assessments within rural elementary contexts. The focus or objective of this study is to specifically identify the level of adequacy and availability of facilities and infrastructure at Candingasinan State Elementary School. This research is a novel and important topic to discuss. The results can be used as a reference by several schools or readers regarding the implementation of facility and infrastructure management at the elementary school level.

METHODS

A descriptive survey design was used to assess the feasibility of school facilities and infrastructure. Th e

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study was conducted at Candingasinan State Elementary School in September 2025. Data were collected through interviews with teachers, the school treasurer, and committee members; observations of physical conditions; questionnaires distributed to 40 staff members; and documentation reviews. Methodological triangulation (interviews, observations, questionnaires, and documentation) and source triangulation ensured the validity of the data. The questionnaire used dichotomous items ('yes/no') to assess facility feasibility based on (Teasdale et al., 2025) criteria. Data analysis followed three stages: preparation, analysis, and interpretation.

RESULTS AND DISCUSSION

Effective management of facilities and infrastructure is essential for sustaining a conducive learning environment, as confirmed by both interview and documentation findings. All school staff must actively manage existing facilities and infrastructure. Interview data revealed ongoing improvements in infrastructure procurement, particularly in learning media and computer laboratories: 'The school is still in the process of upgrading…' (Teacher, P5) at Candingasinan State Elementary School.

> *"This school is still in the process of procuring and upgrading infrastructure, including learning facilities, sports facilities, and computer labs. Infrastructure procurement is intensively managed by the school administration, which records needs related to procurement, utilization, maintenance, and supporting and inhibiting factors." (Tarwiyati, 22-10-2025)*

.According to (Hassanain et al., 2022), equipment in the form of buildings, libraries, and tools used during classroom learning are closely related to school quality. Teaching aids include learning media for mathematics, science, sports, languages (Indonesian, English, and Javanese), and other subjects. Infrastructure is an indirect tool that functions to achieve educational goals, including the location, place, and school buildings. While facilities are tools used to facilitate educational goals, such as rooms, books, libraries, and laboratories (Enes et al., 2024).

The procurement process for facilities and infrastructure at Candingasinan State Elementary School is carried out through an analysis of the school's needs, conducted through direct inspections by the responsible parties and through requests from the school community. Next, the school administration categorizes the items according to needs, aligning with the school's available funds. The principal and school committee are authorized to approve purchases. School infrastructure is managed by the principal and all *school* members, including teachers and staff. The school committee plays an active role in managing school infrastructure (Fazriyati, 2025). According to the principal, this is explained below.

> *"Management of infrastructure requires support and participation from the community and school committee, so that it can provide adequate infrastructure for the implementation of the teaching and learning process."*

Meanwhile, according to the school committee, factors supporting the management of school facility and infrastructure standards include government involvement through Special Allocation Funds, School Operational Assitance (BOS). Funds, and assistance from various parties through the education office. Obstacles to managing facility and infrastructure standards, according to the principal, are as follows.

> *"There is limited space or shelving for some facilities, particularly learning facilities in the form of media and teaching aids, such as computers and laboratories, and reading, writing, and arithmetic aids, which are essential for children to participate in learning. Furthermore, there is a shortage of personnel specifically responsible for maintaining school facilities and infrastructure, as well as a limited government budget."*

Observational evidence corroborates the interview findings, showing adequate availability of instructional rooms and worship facilities, although shortages persist in desks, chairs, and sports media conducted at Candingasinan State Elementary School, it is equipped with adequate infrastructure, although there are still shortcomings in other

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facilities that support other learning activities. The results of the observation of the infrastructure are complete with learning activities that already use laptops, OHP, LCD, and currently the school has planned technology-based learning activities. In addition, the facilities of the prayer room, library, bathrooms, classrooms, health unit room, warehouse, and ablution area are very good and meet standards and are in a ready-to-use condition. However, some facilities such as the number of tables and chairs are insufficient for student needs and are still limited. The condition of facilities for sports learning is also still limited, because it is not supported by a closed outdoor space that covers the learning process outside the room other than the field.

Interview data was supported by school documentation. School documentation activities indicate that management implementation has been running quite well. The following are the results of the infrastructure data documentation study at Candingasinan State Elementary School.

Table 1. Data on Educational Facilities and Infrastructure in the Public Sector of Candingasinan State Elementary School

Facilities and Infrastructure	Maximum Score	Score Obtained	Percentage	Type Information
Tables	40	28	70%	Quite Decent
Chairs	40	28	70%	Quite Decent
Whiteboards	40	27	68%	Quite Decent
Projectors	40	22	55%	Less Worthy
OHP	40	22	55%	Less Worthy
Computer/laptops	40	36	90%	Very Worthy
Principal's Office	40	34	85%	Decent
Teacher' Room	40	36	90%	Very Worthy
Classroom	40	34	85%	Decent
Library	40	36	90%	Very Worthy
Worship Area	40	36	90%	Very Worthy
Teachers' Restrooms	40	34	85%	Decent
Student Restrooms	40	22	55%	Less Worthy
Health and Safety Room	40	34	85%	Decent
Warehouse	40	22	55%	Less Worthy

The description of the level of adequacy of facilities and infrastructure at Candingasinan State Elementary School is divided into four categories. The first category, with the criteria of less adequate, includes projectors, OHP, student toilets, and storage. The second category with a fairly adequate level includes tables, chairs, and whiteboards. The third category with a decent level includes the principal's office, classrooms, teacher toilets and the UKS room. The fourth category is very adequate includes the availability of computers/laptops, a teacher's room, a library, and a place of worship. According to (Menteri Pendidikan Nasional Republik Indonesia, 2007) ideally the availability of school infrastructure that supports the learning process includes classrooms, libraries, laboratories, the principal's office, the teacher's room, and other supporting facilities with a high level of adequacy, so that they effectively support learning.

Procurement of goods at Candingasinan State Elementary School is carried out routinely every month to meet the school's infrastructure needs. Facilities and infrastructure are provided to support the learning process. According to (Rizky et al., 2022), procurement of school facilities and infrastructure is carried out in various ways, depending on the type of infrastructure needed. Each school must have a dedicated officer who carries out equipment-related tasks. These activities include receiving, storing, and removing goods from the warehouse/storage

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area.

Maintenance of infrastructure at Candingasinan State Elementary School is carried out daily, including checking and cleaning to ensure they are always ready for use when needed. Physical assets and infrastructure are integral to an educational institution and learning environment (Ebekozien et al., 2025). However, the implementation of infrastructure management at Candingasinan State Elementary School does not always run smoothly. Obstacles in infrastructure management include storage space and dedicated personnel managing the budget. This is due to the lack of a budget for maintaining school infrastructure. This is in line with the opinion of (Kokkaew et al., 2022) that infrastructure management is influenced by technical, financial, environmental, and human resource implementation.

Funds for construction and renovation are still being spent periodically, particularly in building outdoor sports spaces, repairing damaged classrooms, and providing adequate computer labs, requiring regular planning. Furthermore, the limited availability of desks and chairs to support learning needs to be addressed and budgeted immediately, as it is related to student comfort during learning. Another need is the availability of laptops, as student Computer-Based National Assessment (ANBK) activities require computers with adequate internet connections. The government's budget, from special allocation funds and operational assistance funds, is still limited, so to meet the needs of school facilities and infrastructure, schools request assistance from outside the school, for example from parent contributions, the community, and donations from the education office.

The biggest challenges in managing educational facilities and infrastructure are budget constraints and the lack of training for facility managers. Limited budgets often hinder the procurement of new facilities and the maintenance of existing ones. According to (Hou et al., 2016) revealed that budget constraints hamper the

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procurement of new facilities and the maintenance of existing ones. A similar finding was expressed by (Abugre, 2018), who emphasized that poor facility management, caused by a lack of skills in planning and maintaining facilities, results in a mismatch between facilities and evolving educational needs. The study stated that good educational facility management requires careful planning and technical skills in facility maintenance. Furthermore, (Olaifa et al., 2025) highlighted that in many regions, educational facility managers do not receive adequate training to manage and maintain facilities and infrastructure, which leads to a decline in the function and quality of these facilities. Therefore, it is important to improve training for facility managers so that facilities can be managed optimally.

CONCLUSION

The feasibility assessment shows that although Candingasinan State Elementary School possesses several adequate infrastructures, key learning facilities such as student restrooms, storage units, projectors, OHP devices, and whiteboards remain insufficient. These inadequacies hinder optimal learning conditions, particularly in technology-supported instruction. Strengthening budget allocation, improving facility maintenance systems, and providing training for facility managers are urgently needed to ensure equitable educational quality. Future research should include comparative studies across rural schools and incorporate longitudinal monitoring to better understand infrastructure improvement trajectories

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