



Analysis of the Availability of Educational Facilities and Infrastructure at SD Negeri 1 Kaloran, Temanggung

Arya Krisnawan^a, Widia Darma^b

^aSekolah Tinggi Agama Buddha Negeri Raden Wijaya Wonogiri, Indonesia

Abstract

This study aims to analyze the availability, functionality, adequacy, utilization, and management of educational facilities and infrastructure at SD Negeri 1 Kaloran, Temanggung, as well as to identify the challenges and efforts related to their development. The study employed a descriptive qualitative approach with a case study design. Data were collected through semi-structured interviews with the school principal and direct observation conducted on February 10, 2026. The data were analyzed thematically by grouping the findings into five main dimensions: availability, functionality, adequacy, utilization, and management. The results showed that basic educational facilities and infrastructure were generally available, but they were not yet fully adequate in terms of condition and utilization. Of the five LCD projectors, only two were functional, while only ten of the 15 Chromebooks could be used. Limitations were also found in classroom conditions, the school health unit (UKS), toilets, sports facilities, and library utilization. Management activities included planning, procurement, inventory, utilization, and maintenance; however, limited funding remained the main constraint. This study emphasizes that the assessment of educational facilities and infrastructure should consider their functionality, adequacy, utilization, and management rather than merely their physical availability.

Keywords: *availability; educational facilities and infrastructure; functionality; management*

INTRODUCTION

Quality education is determined not only by the curriculum and teachers' competencies, but also by the availability of a physical environment that effectively supports the learning process. Educational facilities and infrastructure constitute an essential part of the school ecosystem, as they support academic activities, skills development, health services, literacy activities, physical education, and the use of educational technology. (Andrade et al., 2024) demonstrated that several components of school infrastructure are associated with students' learning outcomes. Therefore, the quality of educational

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Corresponding author's e-mail: aryakrisnawan17@gmail.com

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facilities should be understood not merely in terms of the physical presence of buildings or equipment, but also in terms of their capacity to support safe, comfortable, and relevant learning experiences.

In the national context, the provision of educational facilities and infrastructure is supported by a regulatory framework through Regulation of the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia Number 22 of 2023 concerning Standards for Facilities and Infrastructure in Early Childhood Education, Primary Education, and Secondary Education (Kementerian Pendidikan, Kebudayaan, Riset, 2023). The regulation positions educational facilities and infrastructure as an integral part of educational standards that must be fulfilled proportionally according to the needs of each educational institution. Therefore, the assessment of school facilities should not be limited to inventory data but should also consider their condition, adequacy, functionality, and suitability for students' needs and the learning process.

The management of educational facilities is also inseparable from the processes of planning, procurement, inventory management, utilization, maintenance, and evaluation. (Adventyana et al., 2022) explained that the procurement, utilization, and maintenance of educational facilities and infrastructure are essential components in improving the effectiveness of educational provision in elementary schools. (Ayusaputri et al., 2024) also emphasized that effective management requires careful planning, regular maintenance, stakeholder involvement, and evaluation of facility conditions to ensure their effective and sustainable use. These findings indicate that facilities recorded as available do not necessarily provide educational value if they are not in proper condition or are not optimally utilized.

Previous studies on facilities and infrastructure in elementary schools have demonstrated variations in research focus. (Saputri & Pratikno, 2024) placed greater emphasis on the availability of facilities and infrastructure by examining actual school conditions, whereas (Ananda et al., 2023) focused on facility management by considering school policies, budgeting, and community involvement. These differences in focus indicate a research opportunity to integrate facility availability with functionality, adequacy, utilization, and management within a single analytical framework.

The gap is evident at SD Negeri 1 Kaloran, Temanggung. Based on the preliminary study, the school has 171 students distributed across nine study groups. The school owns five LCD projectors, but only two units are functional, while the other three are damaged. Of the 15 Chromebooks available, ten units can be used and five are damaged. In addition, several limitations were identified, including classrooms with partitions that do not adequately reduce noise, limited space for the school health unit (UKS) and toilets, insufficient sports facilities, and suboptimal use of the library. These conditions reveal a discrepancy between facilities that are recorded as available and those that are actually functional and able to meet the school's needs.

The novelty of this study lies in the use of an integrated perspective that assesses educational facilities and infrastructure through five dimensions: availability,

functionality, adequacy, utilization, and management. This perspective enables the analysis to go beyond inventory figures by also considering whether the facilities are functional, sufficient to meet school needs, optimally utilized, properly maintained, and developed according to priority needs. This study aims to analyze the availability and management of educational facilities and infrastructure at SD Negeri 1 Kaloran, Temanggung, as well as to identify their functional condition, adequacy, utilization, constraints, and the school's efforts to optimize educational facilities in supporting the learning process.

METHOD

This study employed a descriptive qualitative approach with a case study design. The qualitative approach was selected because the study aimed to gain an in-depth understanding of the condition of school facilities and infrastructure based on actual situations encountered in the field, rather than to statistically examine relationships among variables. The case study design was used because the research focused on a single educational institution, namely SD Negeri 1 Kaloran, Temanggung Regency, allowing the characteristics, conditions, and management of educational facilities and infrastructure to be examined contextually. A case study enables researchers to focus intensively on a single case while taking into account the specific context in which the phenomenon occurs (Assyakurrohim et al., 2023). The study was conducted on February 10, 2026.

The primary research subject was a single informant, Atik Kurnia Jayanti, S.Pd., the Principal of SD Negeri 1 Kaloran. The informant was selected purposively because she had direct knowledge of and responsibility for the planning, procurement, inventory management, utilization, maintenance, and development of the school's facilities and infrastructure. Purposive selection was based on the relevance of the informant's knowledge to the focus of the study, so that the data obtained could provide a clear description of facility conditions and management processes from the school's managerial perspective (Subhaktiyasa, 2024). This study did not involve teachers, students, library staff, or school committee members as separate informants; therefore, the interview findings primarily represent the principal's perspective.

Data were collected through semi-structured interviews and direct observation. The interview was conducted with the school principal on February 10, 2026. The interview guide was developed based on the focus of the study and covered several key topics, including the availability of facilities, their condition and functionality, the adequacy of facilities and infrastructure, needs planning, procurement, inventory management, maintenance, the use of facilities in the learning process, financial constraints, and efforts to develop educational facilities and infrastructure. A semi-structured interview format was selected to provide the researcher with a clear direction for questioning while still allowing further exploration based on the informant's responses and the conditions identified during data collection (Ma' ruf et al., 2025). The

interview findings served as the primary source of information regarding management processes and the school's considerations in determining facility priorities.

Direct observation was conducted on the same day to examine the physical condition of the facilities discussed during the interview. The observation covered classrooms, educational technology devices, the library, school health facilities, toilets and sanitation facilities, sports facilities, and other observable supporting facilities. The observation focused on determining whether the facilities were actually available, usable, damaged, limited in space, or not optimally utilized. Important factual data included 171 students distributed across nine study groups, five LCD projectors of which two were functional, and 15 Chromebooks of which ten were functional. The observation was also used to verify information regarding the condition of classrooms, the school health unit (UKS), toilets, the library, and sports facilities against the actual conditions observed during the study.

The unit of analysis in this study was the condition and management of educational facilities and infrastructure at the school level. Information obtained from interviews and observations was not treated as two separate sets of data; instead, the two sources were analyzed in an integrated manner to examine the relationship between managerial explanations and actual physical conditions. For example, information provided by the informant regarding the number of projectors and Chromebooks was compared with the observable condition of the devices. This approach was used to obtain a more comprehensive understanding of the distinction between the administrative ownership of facilities and the actual capacity of those facilities to be used.

The credibility of the data was strengthened through methodological triangulation by comparing information obtained from interviews with findings from direct observation. When the informant stated that a particular facility was available, damaged, limited, or not yet optimally utilized, the information was compared with the physical conditions observed during the study. In this research, triangulation was not used to increase the number of information sources, but rather to improve consistency between the narrative data obtained from interviews and the evidence found in the field. If certain information could not be confirmed through observation, it was still treated as the informant's statement and was not developed into conclusions that exceeded the available evidence. In this way, the interpretation of the data remained limited to the information actually obtained during the study.

The data were analyzed using thematic analysis. The analytical process began by reviewing all interview and observation notes, identifying information related to the research focus, grouping information with similar meanings, comparing findings across data sources, and then developing themes that represented the main patterns. Thematic analysis was employed because it enables researchers to organize qualitative data into themes that are relevant to the research questions and to systematically explain the relationships among the findings (Nugroho & Miftahussa'adah, 2026). The data were not analyzed using statistical calculations, but rather through interpretation of patterns

related to facility conditions and management processes.

To facilitate the analysis, the data were grouped into five dimensions: availability, functionality, adequacy, utilization, and management. Availability was used to determine whether the facilities required by the school were present. Functionality was used to assess whether the available facilities could be used for their intended purposes. Adequacy was used to examine the extent to which the quantity and condition of the facilities corresponded to the school's needs, without applying specific technical ratios that were not measured in this study. Utilization was used to assess the extent to which the facilities were used in learning activities and educational services. Management included planning, procurement, inventory management, utilization, maintenance, and efforts to develop the facilities. These five dimensions were employed as an analytical framework so that the study would not merely describe the number of facilities, but also explain their capacity to support educational needs.

The analytical criteria used in this study were qualitative and based on the correspondence between field conditions, facility functionality, and the school's needs as described by the informant. Facilities were categorized as available when they physically existed at the school; as functional when they could be used at the time of the study or when their usability was confirmed through observation; and as limited when their quantity, condition, space, or level of utilization did not fully support the school's needs. This study did not conduct technical building audits, measurements of sanitation standards, or calculations of facility ratios per student or per study group. Therefore, the findings are intended to provide a qualitative description of the condition and management of educational facilities and infrastructure based on interview and observation data collected during the study, rather than to serve as a technical assessment of compliance with all physical standards for educational facilities.

RESULTS AND DISCUSSION

Research Findings

The results indicate that SD Negeri 1 Kaloran has basic educational facilities and infrastructure to support the provision of education; however, their levels of functionality and adequacy are not yet evenly distributed. The school has classrooms, desks and chairs, whiteboards, a library, toilets, a school field, health facilities, and educational technology devices. However, some facilities are damaged, limited in number, or have not yet been optimally utilized. These conditions indicate that the administrative availability of facilities does not always correspond to their actual capacity to effectively support the learning process.

Tabel 1. Condition and Functionality of Educational Facilities and Infrastructure at SD Negeri 1 Kaloran

Facility/Key Aspect	Condition	Issues Identified	Analytical Significance
LCD Projectors	5 unit; 2 functional	3 units damaged	Nominal availability is higher than functional availability
Chromebook	15 unit; 10 functional	5 units damaged	The devices are available, but their usable capacity is reduced
Classrooms	Available for 9 study groups	Some partitions provide insufficient sound insulation	Classroom adequacy is also determined by comfort and functionality
Library	Relatively complete collection	Utilization is not yet optimal; limited library staff	The availability of collections does not automatically result in optimal literacy services
School Health Unit (UKS)	Basic equipment is available	Not yet supported by an adequate dedicated room	Limited space affects the functioning of other facilities
Sports Facilities	Some equipment is available	Limited in quantity and some items are damaged	Limits the variety of physical education activities

Source: Interview and observation findings, February 10, 2026

AVAILABILITY, FUNCTIONALITY, AND ADEQUACY OF EDUCATIONAL FACILITIES AND INFRASTRUCTURE

The main findings of this study indicate that the assessment of educational facilities and infrastructure should distinguish between nominal availability and functional availability. Five LCD projectors were recorded as school assets, but only two units were functional. A similar situation was found with the Chromebooks, of which only ten out of 15 units could be used. If the analysis were based solely on inventory figures, the school would appear to have relatively adequate technological devices. However, when functional conditions are taken into account, the actual capacity of these facilities to support learning becomes more limited. This finding is consistent with (Susanti et al., 2024) who showed that the availability of facilities such as textbooks, LCDs, Chromebooks, and projectors can support the learning environment and students' motivation. In the context of SD Negeri 1 Kaloran, the relevance lies in the need to ensure that these devices are not only available, but also functional and accessible for use by both teachers and students.

When compared with the total of 171 students across nine study groups, the availability of only two functional projectors indicates that access to digital presentation media must be shared among classes. This study did not calculate a standard ratio of devices per student or per study group; therefore, it does not quantitatively conclude that the number of devices falls below a specific threshold. However, from a qualitative perspective, the difference between the number of devices owned by the school and the number that can actually be used indicates a limitation in usage capacity.

The condition of the Chromebooks shows a similar pattern. Of the 15 units owned by the school, five were damaged, reducing the number of usable devices to ten. This finding indicates that the procurement of technological devices should be accompanied by proper maintenance and repair to preserve their functionality and usefulness. Purchasing additional new devices is not always the only option when some of the existing devices can still be repaired. In the context of limited resource management, restoring the functionality of damaged facilities can be an important strategy for improving facility adequacy without relying solely on new procurement.

These conditions indicate that the adequacy of learning facilities cannot be determined solely by the number of items owned by the school. Administratively, the presence of five projectors suggests that the school has devices to support digital learning; however, when only two units are functional, the actual usable capacity becomes considerably more limited. In relation to the nine study groups, the use of these devices requires scheduling and sharing among classes. This study did not measure the frequency of device borrowing or the detailed usage schedule for each device; therefore, it cannot quantitatively determine the degree of equitable access. Nevertheless, these conditions highlight the importance of distinguishing between the number of assets recorded in the inventory and the number of assets that are actually ready for use in learning activities.

The condition of the classrooms reflects a different dimension of quality. The school has adequate learning spaces; however, some room partitions are insufficient to reduce noise, allowing activities from adjacent classrooms to be heard. The principal also reported differences in comfort between the upper and lower classrooms. These findings indicate that the adequacy of classroom infrastructure is determined not only by the availability of rooms but also by their ability to provide a conducive learning environment. (Febrianti et al., 2024) showed that noise in the school environment can negatively affect the quality of the educational setting, suggesting that acoustic aspects should be considered in the development of learning spaces. (Kharisma et al., 2026) reported that adequate physical school facilities are not necessarily utilized optimally for learning activities and student development. These findings reinforce the argument that the quality of the school environment should be assessed by considering the relationship between physical conditions and the utilization of facilities in educational activities.

The classroom findings also indicate that the adequacy of school infrastructure should be understood in terms of both quantity and quality. The availability of classrooms

for nine study groups suggests that the basic spatial needs have been accommodated; however, the quality of the learning environment still faces challenges, particularly in relation to room partitions that are insufficient to reduce noise. Noise generated by activities in adjacent classrooms may reduce comfort during the learning process. Therefore, the physical availability of classrooms alone does not fully reflect their suitability as learning spaces. Acoustic conditions, comfort, and the ability of the classrooms to support students' concentration should also be considered in the assessment of school infrastructure.

Overall, the findings related to the projectors, Chromebooks, and classrooms indicate a distinction between nominal availability, functional availability, and actual adequacy. Nominal availability refers to the number of facilities administratively owned by the school, whereas functional availability refers to the facilities that can actually be used. Actual adequacy, meanwhile, concerns the extent to which the functioning facilities are able to meet the needs of educational activities. This distinction is important because a school may appear to have sufficient facilities based on inventory records, while the actual condition may differ when damage, limited access, and the quality of learning spaces are taken into account. These findings also reinforce the use of the five analytical dimensions in this study, particularly the relationship among availability, functionality, and adequacy.

Management and Maintenance of Educational Facilities and Infrastructure

From a managerial perspective, the management of educational facilities and infrastructure at SD Negeri 1 Kaloran has followed a structured process. Planning begins with the identification of needs, which are then adjusted to the school's budgetary capacity. Acquired items are recorded by the inventory officer before being put into use. The school maintains inventory records that include item numbering, asset values, and consumable goods. These findings indicate that the limitations in facilities are not caused by the absence of a management system, but are more closely related to the school's capacity to allocate resources to meet needs and maintain the functionality of existing facilities.

(Damayanti et al., 2026) showed that the development of facilities and infrastructure in elementary schools requires needs-based planning, organization, procurement, maintenance, supervision, and evaluation. The school principal plays an important role in linking learning needs with procurement decisions and budget allocation. At SD Negeri 1 Kaloran, this role is reflected in the processes of identifying needs, setting priorities, proposing building rehabilitation, and planning facility development.

Maintenance is carried out through several practices, including storing laptops in dry areas, recording the borrowing of laptops, LCD projectors, and Chromebooks, covering printers after use, and repainting school buildings periodically. Nevertheless, the presence of devices that remain damaged indicates that preventive maintenance has not yet fully addressed the need for repairs. (Anugrahwati et al., 2022) emphasized that

maintenance is an important component of facilities and infrastructure management and requires the involvement of the school community to ensure that facilities remain usable.

The lack of dedicated storage space for sports equipment is also a concern. Without adequate storage, there is a risk that equipment may not be returned to its proper place or may become damaged more quickly. This condition indicates that facility management needs to consider the entire cycle of equipment use, from procurement to storage and maintenance.

Utilization of Educational Facilities and Infrastructure in Learning and Literacy

The availability of facilities has not yet been accompanied by equally consistent utilization across learning activities. The principal explained that the facilities have been used by teachers, although the intensity of use varies among classes. Grade VI is one of the classes that uses LCD projectors relatively frequently for learning activities and practice exercises, while some instructional activities still rely on conventional methods. Therefore, the provision of additional technological facilities should be accompanied by efforts to strengthen their utilization so that investment in such devices can have a meaningful impact on students' learning experiences. The findings of (Parwati et al., 2024) are relevant in this context, as their study also showed that the use of educational technology may remain limited even when the facilities are available. This reinforces the importance of treating utilization as a distinct dimension in the evaluation of educational facilities and infrastructure, rather than equating it with mere ownership of equipment.

The issue of utilization is also evident in the library. The book collection is considered relatively comprehensive; however, the library has not yet been utilized to its full potential due to limited staffing and the relatively unattractive condition of the reading area. Programs such as compulsory reading, mandatory library visits, storytelling competitions, and synopsis-writing competitions had previously been implemented, but they are no longer carried out optimally. These findings indicate that the effectiveness of a school library is determined not only by the size of its collection, but also by service management, literacy programs, and the quality of the reading environment. (Febriyanti et al., 2025) identified the library as an important facility in school literacy initiatives because of its role in fostering reading habits and a culture of literacy. (Sari et al., 2023) showed that the physical school environment can support the educational process; however, the presence of facilities still requires appropriate guidance and management in order to produce the expected outcomes. These findings support the view that school facilities need to be integrated with the actions of educators and school management so that they can effectively contribute to students' learning experiences.

Limitations of Supporting Learning Facilities

Limitations were also identified in physical education facilities. The availability of sports equipment remains limited, and some items are damaged, including nets and balls used for various activities. These conditions restrict the range of physical education activities

that can be conducted. (Siregar et al., 2024) emphasized that the availability and quality of sports facilities play an important role in supporting the effectiveness of physical education in elementary schools.

For the school health facilities, basic equipment for the school health unit (UKS), such as beds and medicines, is available; however, it is not yet supported by an adequate dedicated UKS room. Some UKS functions must share space with other facilities, including the library. This condition indicates interdependence among school facilities, whereby limitations in one space may reduce the effectiveness of another. Therefore, infrastructure development planning should consider the functional relationships among spaces rather than addressing each facility separately.

The condition of the toilet facilities is also a concern. This study did not conduct technical measurements against sanitation standards; therefore, the findings are not intended to serve as an audit of sanitation compliance. However, the interview and observation findings indicate that limitations in toilet facilities should be included among the priorities for future development, as sanitation facilities are an important part of the school environment that supports the comfort and health of the school community.

Financing Constraints and Priority Setting

The primary constraint in the development of educational facilities and infrastructure is limited funding. The school must establish priorities because the needs for procurement, repair, and maintenance cannot all be fulfilled within a single budget period. Funding is primarily optimized through BOS funds, while support from the school committee is directed toward specific supporting needs. As a result, the fulfillment of facility and infrastructure needs must be carried out gradually.

(Nurharirah & Effane, 2022) explained that each stage of facilities and infrastructure management may encounter various obstacles, including limited resources. (Suharyadi et al., 2024) also found that limited funding and human resources can become constraints in the management of elementary school facilities. At SD Negeri 1 Kaloran, budget limitations require the school to align its planning with the urgency of its needs. Damaged facilities that can still be repaired need to be considered alongside the need for facilities that are not yet available.

Based on the research findings, development priorities can be grouped into three categories. First, restoring the functionality of assets that are already owned by the school but are damaged, such as projectors and Chromebooks. Second, providing facilities that remain limited in terms of quantity or space, such as the school health unit (UKS), toilets, and sports equipment. Third, optimizing facilities that are already available but have not yet been fully utilized, such as the library and educational technology devices. This classification indicates that facility development does not always have to involve the purchase of new equipment.

The school has undertaken several development efforts, including maximizing the use of existing facilities, submitting proposals for building rehabilitation to the local

education office, obtaining support from the school committee, reorganizing the library, and planning the procurement of facilities in accordance with the available budget. These efforts indicate that the development of educational facilities and infrastructure is an ongoing process that requires a combination of procurement, repair, maintenance, and optimization of facility utilization.

Integrated Interpretation and Research Implications

Overall, the findings indicate that the condition of educational facilities and infrastructure at SD Negeri 1 Kaloran is more appropriately understood through five interrelated dimensions. Facilities may be available but non-functional due to damage; they may be functional but insufficient in quantity; they may be available and functional but not yet optimally utilized; or they may be utilized but not adequately supported by proper maintenance and development systems. This framework explains why inventory data alone are insufficient as the sole indicator of the actual condition of school facilities.

The practical implication of this study is the need for the school to set priorities based on functionality and urgency. Repairing existing devices that are currently non-functional can be a strategic option because it restores the capacity of assets already owned by the school. At the same time, the provision of adequate space for the school health unit (UKS), sanitation facilities, and sports facilities should continue to be considered according to the level of need. Optimizing the library and educational technology also requires attention to human resources, utilization programs, and maintenance systems.

This study has limitations. The primary informant was only one person, namely the school principal; therefore, the interview data mainly represent a managerial perspective. Direct observation was used to confirm some of the information; however, the study did not separately collect the perspectives of teachers, students, library staff, or school committee members. The observation was also conducted at a single point in time and therefore did not capture changes in facility conditions over the long term. Future research may involve a broader range of informants, use more detailed inventory documentation, and conduct observations across multiple periods.

CONCLUSION

This study concludes that the condition of educational facilities and infrastructure at SD Negeri 1 Kaloran, Temanggung, has generally supported the provision of education; however, not all facilities have reached an optimal level in terms of availability, functionality, adequacy, utilization, and management. The physical presence of facilities does not always indicate that they can be used effectively in learning activities. This is evident in the technological equipment, as the school owns five LCD projectors but only two are functional, while only ten of the 15 Chromebooks remain usable. In addition, limitations are still found in the quality of learning spaces, the school health unit (UKS), toilets, sports equipment, and library utilization. These findings indicate that the

evaluation of educational facilities and infrastructure should consider the actual condition and functionality of the facilities, rather than relying solely on the number of items recorded in the school inventory.

From a management perspective, the school has implemented needs planning, procurement, inventory management, utilization, and maintenance of educational facilities and infrastructure. The identification of needs is carried out by considering both the level of urgency and the school's budgetary capacity. Maintenance efforts have also been undertaken through borrowing records, proper storage of equipment, building maintenance, and supervision of facility use. Nevertheless, financial constraints require repairs and the fulfillment of facility needs to be carried out gradually. This condition emphasizes that the effectiveness of facilities and infrastructure management depends not only on administrative systems, but also on the school's ability to maintain the functionality of existing facilities and to determine development priorities appropriately.

Based on the five analytical dimensions employed, this study demonstrates a close relationship between the availability and functionality of facilities. Facilities that are available but damaged reduce the school's actual capacity to support learning, whereas facilities that are functional but limited in number require careful scheduling and management to ensure more equitable use. Facility utilization is also an important element, as the availability of technology, libraries, and other supporting facilities does not provide maximum benefits when their use remains limited. Therefore, the development of educational facilities and infrastructure should be directed not only toward new procurement, but also toward repairing damaged assets, improving the utilization of existing facilities, strengthening maintenance, and fulfilling facility needs based on priority levels.

In practical terms, the school needs to prioritize restoring the functionality of devices that can still be repaired, improving the adequacy of learning spaces and supporting facilities, optimizing the use of the library and educational technology, and strengthening storage and maintenance systems. This study also provides an analytical framework for examining facility conditions more comprehensively through the interrelationship among availability, functionality, adequacy, utilization, and management. However, the findings remain limited to the principal's perspective and observations conducted at a single point in time. Future research may involve teachers, students, library staff, and school committee members, as well as conduct observations across multiple periods, so that changes in the condition of educational facilities and infrastructure can be understood more comprehensively.

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