Journal of Islamic Education Management Research
P-ISSN: xxxx-xxxx | E-ISSN: xxxx-xxxx
Vol. 1, no. 1, July 2023
Doi: https://doi.org/10.14421/jiemr.2023.11-07

Adapting Educational Laboratory Management During the COVID-19 Pandemic: A Case Study at UIN Sunan Kalijaga's Faculty of Islamic Education

Lilis Candra Utami [1*], Rinduan Zain [2]
[1 2] Sunan Kalijaga State Islamic University Yogyakarta, Indonesia

Article Info

Article history:

Received: 05/27/2023
Revised: 06/07/2023
Accepted: 06/20/2023

Keywords:

COVID-19 Pandemic, Educational Laboratory Management, Infrastructure Adaptability

Abstract

Purpose – This study aims to analyze the management of educational laboratory facilities and infrastructure at the Faculty of Islamic Education, UIN Sunan Kalijaga Yogyakarta, during the COVID-19 pandemic. It focuses on understanding the adjustments and challenges in facility management under pandemic conditions, particularly exploring the role of supporting and inhibiting factors.

Design/methods/approach – Adopting a qualitative approach as defined by Bogdan and Taylor, this research involves a detailed examination through interviews, observations, and documentation. Key informants include the Head of the Laboratory and staff at the Faculty of Tarbiyah and Teacher Training. The study employs a thorough process of data analysis, involving transcript preparation, coding, grouping, and interpretation, strengthened by method and source triangulation for data validation.

Findings – The study reveals significant changes in the planning, procurement, arrangement, use, and disposal of educational infrastructure during the pandemic. It highlights the crucial role of government policies in facilitating these changes and identifies internal human resource limitations as a primary challenge. The pandemic led to shifts in planning and procurement to suit remote learning needs, emphasizing the need for adaptability in educational infrastructure management.

Research implications/limitations – The findings contribute to the academic discourse on educational facility management, particularly under crisis conditions. They provide a framework for understanding the dynamic nature of educational infrastructure management and its responsiveness to unprecedented challenges.

Practical implications – This research underscores the importance of flexible and adaptive management strategies in educational settings. It offers practical insights for educational administrators and policymakers on managing physical infrastructure effectively during crises like the COVID-19 pandemic.

Originality/value – This study uniquely focuses on the management of educational laboratory facilities during a global pandemic, offering new insights into the adaptability and resilience of educational infrastructure in the face of unforeseen challenges. It extends the discourse on facility management beyond traditional contexts, providing a model applicable in various educational settings, both during and beyond pandemic situations.

Contact: *lilischan11@gmail.com

Introduction

The COVID-19 pandemic has precipitated a global upheaval in numerous sectors, with the domain of education encountering particularly acute challenges. As educational institutions worldwide grappled with the abrupt transition from traditional classroom settings to online modalities, the Faculty of Islamic Education and Teacher Training at UIN Sunan Kalijaga Yogyakarta found itself at the forefront of navigating these unprecedented circumstances. This shift has underscored the criticality of adept management of educational facilities and infrastructure, particularly laboratory resources, during crises (Lawrent, 2020; Nagaraju, 2022; Opabola et al., 2023).

Prevailing literature underscores the integral role of infrastructure in the educational landscape. Studies have elucidated the connection between infrastructure and various educational outcomes. For instance, the evolution of educational infrastructure, as discussed by Lewis & Hartong (2022) and Swist & Gulson (2023), reflects a paradigm shift towards integrating technology and policy. Similarly, the work of Ganzar et al.(2022) and Hoelscher et al. (2022) emphasizes the significance of equitable infrastructure in supporting diverse educational needs. These insights collectively underscore the multifaceted role of infrastructure in education (Bartl, 2022; Wanke et al., 2023).

Further, the literature points to specific nuances within the domain of educational infrastructure. Studies by Prescott et al (2022) and Herath et al (2023) highlight the impact of infrastructure on school nutrition programs and the challenges in maintaining quality infrastructure, respectively. This body of work demonstrates the intricate relationship between educational facilities and various stakeholders, including students, educators, and the community at large (Ajzenman & Durante, 2023; Belmonte et al., 2020).

However, existing research exhibits gaps, particularly in the context of laboratory infrastructure management during pandemics. Despite a rich repository of knowledge on infrastructure standards, there is a dearth of empirical data addressing the practical challenges and adaptations necessitated by crises such as COVID-19. These limitations underscore the need for in-depth exploration into the pragmatic aspects of infrastructure management during unforeseen challenges.

This study aims to bridge these gaps by scrutinizing the management of educational laboratory facilities at the Faculty of Islamic Education and Teacher Training, UIN Sunan Kalijaga, amidst the COVID-19 pandemic. It seeks to dissect the supporting and inhibiting factors in facility management during this crisis, thereby contributing novel insights into optimizing infrastructure management in tumultuous times. This research endeavors to enrich the discourse on educational infrastructure management, focusing on resilience and adaptability in the face of sudden, sweeping disruptions such as a global health crisis.

Methods

This study is a qualitative research, as defined by Bogdan and Taylor, which produces descriptive data in the form of written or spoken words from people and observed behaviors (Moleong, 2001). The informants in this study were the Head of the Laboratory at the Faculty of Tarbiyah and Teacher Training, UIN Sunan Kalijaga Yogyakarta, and staff who experienced, knew, and understood the research object. Data collection techniques included interviews, observations, and documentation. The data analysis process involved transcript preparation, coding, grouping, comparing and contrasting, and interpretation. To ensure the validity of the data, two triangulation techniques were employed: Method Triangulation and Source Triangulation. Method Triangulation involved comparing interview results with documentation and observation findings. In contrast, Source Triangulation compared the interview outcomes of one informant with another.

The study's procedures began with selecting informants who were deeply involved in the management of educational laboratory facilities during the COVID-19 pandemic. Interviews were conducted to gather in-depth information, complemented by observations of the laboratory environment and an examination of relevant documents. The analysis of this

qualitative data entailed a meticulous process of transcribing the interviews, followed by coding to identify key themes and patterns. These themes were then grouped and compared, leading to a contrasting and interpretative analysis. The study's reliability and validity were bolstered through the use of triangulation methods, ensuring a comprehensive understanding of the laboratory management practices at the Faculty of Tarbiyah and Teacher Training, UIN Sunan Kalijaga Yogyakarta, during the pandemic.

Results

1. Management of Educational Laboratory Facilities and Infrastructure at the Faculty of Islamic Education during the COVID-19 Pandemic

Facilities include all movable and immovable assets that directly support the achievement of educational goals. According to Bancin et al (2019), infrastructure refers to equipment that indirectly supports the attainment of educational objectives or the learning process. The utilization and management of educational facilities and infrastructure involve a comprehensive process linked with procurement, aimed at achieving pre-set goals effectively and efficiently (Bancin et al., 2019). Facility management, often referred to as material management, encompasses a series of organizational processes related to acquisition. The management and utilization of educational facilities are conducted to achieve predetermined effective and efficient objectives.

The components of facility and infrastructure management include planning, procurement, arrangement and usage, and elimination. Subsequent interviews and observations of the management of educational laboratory facilities and infrastructure at the Faculty of Islamic Education at UIN Sunan Kalijaga revealed the following key aspects.

Firstly, Planning. The initial process in facility and infrastructure management is planning, as it is the fundamental step in making future estimates and assumptions for predetermined objectives. Prof. Dr. Suharsimi Arikunto emphasized that planning should not be done close to the time of equipment or item usage (Bancin et al., 2019). The first step in planning facilities and infrastructure at the educational laboratory was to identify and analyze future needs by considering the field conditions, involving laboratory managers, program leaders, and faculty members. This step was followed by prioritizing essential equipment and materials to prevent financial wastage.

During the COVID-19 pandemic, there were changes related to planning. Due to the sudden onset of the pandemic, a total overhaul in funding was carried out unplanned. Nevertheless, the laboratory management proposed to the faculty to continue budgeting for supporting facilities for laboratory activities, such as the Field Education Practice - Community Service Program (PLP-KKN). Despite conducting PLP-KKN remotely, students were proposed to receive facilities like face shields, masks, hand sanitizers, and gloves. Additionally, in 2021, students were budgeted to receive transportation funds. All these facilities were budgeted because they were deemed essential to support the activities managed by the Faculty of Islamic Education's Educational Laboratory.

Secondly, Procurement. The procurement of facilities and infrastructure represents the realization of previous planning. The procurement activities in the Educational Laboratory of the Faculty of Islamic Education implemented a pre-established plan based on needs, which were then forwarded to the Head of the Facility and Infrastructure Sub-Department. The initial procurement process involved creating a Term of References (TOR) during planning, which was then submitted to the faculty and included in the RKA-KL (Work Plan and Budget of the Ministry/Agency). During the pandemic, the Educational Laboratory only acquired a computer unit with its accessories, a computer table, a printer, and a dispenser.

Thirdly, Arrangement and Usage. There were changes in the arrangement and usage of facilities and infrastructure at the Educational Laboratory during the pandemic compared to previous years. Equipment typically used to support student and lecturer activities, like microteaching laboratories, was not utilized, as teaching and learning shifted to remote methods. Consequently, rooms for microteaching were no longer used during the pandemic, as lecturers employed remote teaching tools like Zoom Meeting and Google Meet.

The initial step in arranging facilities and infrastructure in the laboratory was to assign inventory codes to the facilities, in line with Prof. Dr. Suharsimi Arikunto's theory that initial arrangement involves assigning specific inventory codes based on type (Bancin et al., 2019). As stated by Mr. Feri Irianto, facilities in the Educational Laboratory were coded according to the year of acquisition. Subsequently, facilities with assigned codes were recorded in an inventory book, which is held by the Facility and Infrastructure Sub-Department of the Faculty of Islamic Education. The Educational Laboratory itself only maintains a checklist and availability table. After assigning codes to each educational laboratory tool or item, they were placed in specific rooms or cabinets according to the type of item, to facilitate control and inspection.

Fourthly, Elimination. Educational facilities and infrastructure are state-owned and must be maintained and cared for to prevent rapid deterioration. Over time, the usefulness of various items may fade. Some items, when damaged, may not be repairable or reusable. However, some items can still be repaired when they become obsolete. The elimination of facilities and infrastructure in the Educational Laboratory of the Faculty of Islamic Education was coordinated with the university and faculty. This coordination concerned whether there was a budget for procurement and whether the items to be eliminated still had any utility. Elimination of facilities in the laboratory was conducted when items were no longer needed, not budgeted for, lacked benefit, and were not proposed.

Items marked for elimination were rechecked to see if they could be repaired. If repairable, the cost of repair was considered. If the repair cost exceeded the purchase price, the item could be eliminated, provided that a replacement was already available. The planning for the elimination of facilities and infrastructure originated from the central administration and trickled down to the faculty level.

2. *Supporting and Inhibiting Factors in the Management of Educational Laboratory Facilities and Infrastructure during the COVID-19 Pandemic*

Firstly, Supporting Factors. Supporting factors play a pivotal role in ensuring the effective management of facilities and infrastructure in educational laboratories during the COVID-19 pandemic. One crucial supporting factor is the government's flexibility in allocating educational budgets. With the realization of the severe challenges posed by the pandemic, many governments recognized the importance of adequately funding educational institutions to ensure the safety and continuity of learning. This financial support allowed educational institutions to initiate procurement programs aimed at acquiring essential facilities and infrastructure, with a particular focus on COVID-19 protective equipment. These resources were instrumental in safeguarding the health and well-being of students and staff, facilitating a safer and more conducive learning environment.

Another noteworthy supporting factor is the dependency of laboratory infrastructure on government policies. Educational facilities often rely on government regulations and policies for funding, maintenance, and upgrades. During the pandemic, governments recognized the urgency of maintaining high-quality educational infrastructure to support remote learning and adapt to new safety requirements. As a result, continuous and phased policies were implemented to enhance the quality of educational facilities and infrastructure. These policies aimed to ensure that educational institutions had the necessary resources, technological support, and safety measures in place to continue providing a high standard of education despite the challenges posed by the pandemic.

In summary, supporting factors such as government leniency in educational budgets and the dependency of laboratory infrastructure on government policies have played a pivotal role in successfully managing educational facilities and infrastructure during the COVID-19 pandemic. These factors have enabled educational institutions to procure essential resources, including COVID-19 protective equipment, and implement policies that have contributed to an exclusive level of educational facilities and infrastructure, ensuring the continuity of learning and the well-being of students and staff.

Secondly, Inhibiting Factors. Inhibiting factors in the management of facilities and infrastructure at the Educational Laboratory of the Faculty of Islamic Education during the

COVID-19 pandemic were found within the internal human resources (HR). As expressed by Mrs. Umi, inhibiting factors included the HR's slow response in adapting to the evolving needs according to the situation and conditions, as well as a lack of sensitivity to the required insights during the pandemic. Besides HR, damages to non-functional systems also impeded optimal work performance. Additionally, during the pandemic, government regulations encouraging all work to be done from home led to less optimal management of facilities and infrastructure in the educational laboratory.

Discussion

The research undertaken at UIN Sunan Kalijaga Yogyakarta during the COVID-19 pandemic delved into the management of educational laboratory facilities and infrastructure within the Faculty of Islamic Education. This area of study is crucial as it intersects with broader themes in educational infrastructure management, which have been significantly impacted by the pandemic (Bowers & Choi, 2023; Kitzmiller & Drake Rodriguez, 2022). The focus on the management of facilities and infrastructure during a crisis period adds a unique dimension to existing literature, expanding upon insights from studies such as those by Lewis & Hartong (2022) & Swist & Gulson (2023), who emphasized the evolving role of data and decision-making systems in educational settings.

The study identified critical stages in the management of educational laboratory facilities, including planning, procurement, arrangement and use, and disposal. These stages were significantly altered by the COVID-19 pandemic, necessitating rapid adaptation and re-evaluation of priorities, similar to observations made in other educational contexts (Ingaramo & Pascale, 2020; Machusky & Herbert-Berger, 2022). Notably, the study revealed a shift towards prioritizing health and safety equipment, like face shields and hand sanitizers, even for remote learning scenarios, underscoring the pandemic's profound impact on educational infrastructure management.

The findings from UIN Sunan Kalijaga Yogyakarta align with the broader trends observed in other studies, highlighting the challenges and adaptations in educational infrastructure management during the pandemic. The emphasis on rapid adaptation and prioritization of health and safety resources mirrors the experiences of schools globally, as noted in studies like those conducted by Belmonte et al. (2020) & Fukushima et al. (2022). However, this study also presents a unique case where remote learning did not diminish the importance of physical infrastructure management, contrasting with the general trend of focusing more on digital infrastructure during the pandemic (Owolabi, 2020).

The study's findings underscore the dynamic nature of educational infrastructure management, especially under crisis conditions. The emphasis on health and safety, even in remote learning contexts, reflects a broader understanding of the role of physical infrastructure in supporting educational goals (Hiwi, 2021; Kitzmiller & Drake Rodriguez, 2022). The rapid adaptation and re-prioritization observed at UIN Sunan Kalijaga Yogyakarta offer valuable insights into the resilience and flexibility required in educational infrastructure management. These findings hold significance not only for pandemic response but also for future crises and shifts in educational paradigms.

The implications of this research are manifold. Firstly, it highlights the need for educational institutions to maintain flexibility and adaptability in infrastructure management, especially during crises (Fernandes & Köptcke, 2021; Hoelscher et al., 2022). Secondly, the study underscores the continuing importance of physical infrastructure in supporting educational objectives, even in an increasingly digital world (Belmonte et al., 2020; McFadden, 2023). Finally, this research contributes to the broader discourse on effective management practices in educational settings, offering a model that can be adapted and applied in various contexts, both during and beyond the pandemic era.

Conclusion

The study conducted at the Faculty of Islamic Education at UIN Sunan Kalijaga Yogyakarta offers pivotal insights into the management of educational laboratory facilities and

infrastructure during the COVID-19 pandemic. Aimed at analyzing the management of these facilities, particularly under the constraints imposed by the pandemic, the research identified crucial changes in planning, procurement, arrangement, usage, and removal of educational infrastructure. It highlighted the significant role of government policies in facilitating this management and pointed out internal human resource limitations as a key challenge. The findings emphasize the importance of adaptability and flexibility in infrastructure management during crises, reinforcing the continued relevance of physical infrastructure in an increasingly digital educational landscape. However, the study's focus on a single institution limits its generalizability, suggesting the need for further research across diverse educational settings to understand the long-term impacts of the pandemic on educational infrastructure. Future studies should also explore the integration of technology in enhancing physical infrastructure, thereby contributing to the evolving discourse on effective management practices in educational settings.

References

Ajzenman, N., & Durante, R. (2023). Salience and Accountability: School Infrastructure and Last-Minute Electoral Punishment∗. *Economic Journal*, *133*(649), 460–476. Scopus. https://doi.org/10.1093/ej/ueac044

Bancin, A., Lubis, W., Daryanto, Khikmah, N., Moleong, L. J., Mulida, Murniati, Niswanto, Suharsimi Arikunto, Prof. Dr., Lia Yuliana, M. Pd., Wardani, S. D. K., & Trihantoyo, S. (2019). Manajemen Sarana Dan Prasarana Pendidikan Studi Kasus SMA Negeri 2 Lupuk Pakam. *EducanduM*, *10*(1), 62–69.

Bartl, W. (2022). Governing Spatial Disparities in School Infrastructure by Numbers: Investments in Form, Tensions, New Compromises? *Education Sciences*, *12*(3). Scopus. https://doi.org/10.3390/educsci12030167

Belmonte, A., Bove, V., D'Inverno, G., & Modica, M. (2020). School infrastructure spending and educational outcomes: Evidence from the 2012 earthquake in Northern Italy. *Economics of Education Review*, *75*. Scopus. https://doi.org/10.1016/j.econedurev.2019.101951

Bowers, A. J., & Choi, Y. (2023). Building School Data Equity, Infrastructure, and Capacity Through FAIR Data Standards: Findable, Accessible, Interoperable, and Reusable. *Educational Researcher*, *52*(7), 450–458. Scopus. https://doi.org/10.3102/0013189X231181103

Fernandes, L. A., & Köptcke, L. S. (2021). Analysis of the School Health Program eye health action in Brazil from 2014 to 2019: A cross-sectional study. *Epidemiologia e Servicos de Saude*, *30*(2). Scopus. https://doi.org/10.1590/S1679-49742021000200008

Fukushima, I. S. F., Quintão, G. P., & Pazello, E. T. (2022). Impacts of a full-time school program on learning, school's composition and infrastructure: The case of public schools in the state of São Paulo-Brazil. *Estudos Economicos*, *52*(4), 809–850. Scopus. https://doi.org/10.1590/1980-53575244ige

Ganzar, L. A., Bentley, S. S., Salvo, D., Durand, C. P., Anderson, A., Emamian, A., & Hoelscher, D. M. (2022). Incorporating equity into active commuting to school infrastructure projects: A case study. *Transportation Research Part D: Transport and Environment*, *112*. Scopus. https://doi.org/10.1016/j.trd.2022.103493

Herath, N., Duffield, C., & Zhang, L. (2023). Public-school infrastructure ageing and current challenges in maintenance. *Journal of Quality in Maintenance Engineering*, *29*(2), 401–419. Scopus. https://doi.org/10.1108/JQME-06-2021-0043

Hiwi, B. T. (2021). A "lack of homelike surroundings": Resident health, home, and recreational infrastructure at pelican lake indian residential school, 1952–1962. *Histoire Sociale*, *54*(110), 99–125. Scopus. https://doi.org/10.1353/HIS.2021.0002

Hoelscher, D. M., Ganzar, L. A., Salvo, D., Kohl, H. W., Pérez, A., Brown, H. S., Bentley, S. S., Dooley, E. E., Emamian, A., & Durand, C. P. (2022). Effects of Large-Scale Municipal Safe Routes to School Infrastructure on Student Active Travel and Physical Activity: Design, Methods, and Baseline Data of the Safe Travel Environment Evaluation in Texas Schools (STREETS) Natural Experiment. *International Journal of Environmental Research and Public Health*, *19*(3). Scopus. https://doi.org/10.3390/ijerph19031810

Ingaramo, R., & Pascale, L. (2020). An interpretative matrix for an adaptive design approach. Italian school infrastructure: Safety and social restoration. *Sustainability (Switzerland)*, *12*(20), 1–22. Scopus. https://doi.org/10.3390/su12208354

Kitzmiller, E. M., & Drake Rodriguez, A. (2022). Addressing Our Nation's Toxic School Infrastructure in the Wake of COVID-19. *Educational Researcher*, *51*(1), 88–92. Scopus. https://doi.org/10.3102/0013189X211062846

Lawrent, G. (2020). School infrastructure as a predictor of teacher identity construction in Tanzania: The lesson from secondary education enactment policy. *African Studies*, *79*(4), 409–427. Scopus. https://doi.org/10.1080/00020184.2020.1859356

Lewis, S., & Hartong, S. (2022). New shadow professionals and infrastructures around the datafied school: Topological thinking as an analytical device. *European Educational Research Journal*, *21*(6), 946–960. Scopus. https://doi.org/10.1177/14749041211007496

Machusky, J. A., & Herbert-Berger, K. G. (2022). Understanding online learning infrastructure in U.S. K-12 schools: A review of challenges and emerging trends. *International Journal of Educational Research*, *114*. Scopus. https://doi.org/10.1016/j.ijer.2022.101993

McFadden, K. (2023). Infrastructures of social reproduction: Schools, everyday urban life, and the built environment of education. *Dialogues in Human Geography*. Scopus. https://doi.org/10.1177/20438206231178827

Moleong, L. J. (2001). *Metodologi Penelitian Kualitatif*. PT Remaja Rosdakarya.

Nagaraju, M. T. V. (2022). Analysis of Infrastructure Facilities, Academic Facilities, Community Participation, and Co-Curricular Activities in Primary Schools in Three Districts of Telangana State. *Journal of Education*. Scopus. https://doi.org/10.1177/00220574221130957

Opabola, E. A., Galasso, C., Rossetto, T., Meilianda, E., Idris, Y., & Nurdin, S. (2023). Investing in disaster preparedness and effective recovery of school physical infrastructure. *International Journal of Disaster Risk Reduction*, *90*. Scopus. https://doi.org/10.1016/j.ijdrr.2023.103623

Owolabi, J. O. (2020). Virtualising the school during covid-19 and beyond in africa: Infrastructure, pedagogy, resources, assessment, quality assurance, student support system, technology, culture and best practices. *Advances in Medical Education and Practice*, *11*, 755–759. Scopus. https://doi.org/10.2147/AMEP.S272205

Prescott, M. P., Gilbride, J. A., Corcoran, S. P., Elbel, B., Woolf, K., Ofori, R. O., & Schwartz, A. E. (2022). The Relationship between School Infrastructure and School Nutrition Program Participation and Policies in New York City. *International Journal of Environmental Research and Public Health*, *19*(15). Scopus. https://doi.org/10.3390/ijerph19159649

Swist, T., & Gulson, K. N. (2023). School Choice Algorithms: Data Infrastructures, Automation, and Inequality. *Postdigital Science and Education*, *5*(1), 152–170. Scopus. https://doi.org/10.1007/s42438-022-00334-z

Wanke, P., Lauro, A., dos Santos Figueiredo, O. H., Faria, J. R., & Mixon, F. G. (2023). The Impact of School Infrastructure and Teachers' Human Capital on Academic

Performance in Brazil. *Evaluation Review*. Scopus. https://doi.org/10.1177/0193841X231197741