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Management of Smart Class Program (SCP): Driving Digital Learning Transformation in Middle School

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Abstract

Educational transformation in the digital era requires the integration of information and communication technology in the teaching and learning process. This study aims to analyse the management of the Smart Class Program (SCP) at SMP Muhammadiyah 8 Surakarta to support digital learning transformation, SCP implementation strategies and teacher adaptation, as well as challenges and solutions. The method employed qualitative research with a case study approach, located at SMP Muhammadiyah 8 Surakarta, and informants consisted of the Principal, SCP teachers, and students in grades 7, 8, and 9. Data collection techniques included interviews, observation, and documentation. The results of the study indicate that SCP plays an important role in encouraging digital learning transformation through systematic management, including planning, implementation, and evaluation. The strategies in SCP implementation include the provision of technological facilities, strengthening teacher capacity through training, and fostering a collaborative culture among educators. However, challenges related to human resource readiness and variations in teachers' digital competencies still exist. Special mentoring for teachers with low digital competencies is a solution implemented by the school.

Keywords: School Management, Smart Class Program, Digital Learning, Transformation

Abstrak

Transformasi pendidikan di era digital mengharuskan integrasi teknologi informasi dan komunikasi dalam proses belajar mengajar. Penelitian ini bertujuan untuk menganalisis manajemen program Smart Class Program (SCP) di SMP Muhammadiyah 8 Surakarta mendukung transformasi pembelajaran digital, strategi implemantasi SCP dan adaptasi guru serta tantangan dan solusi nya. Metode yang

digunakan adalah penelitian kualitatif dengan pendekatan studi kasus, lokasi di SMP Muhammadiyah 8 Surakarta, dan informan terdiri dari Kepala Sekolah, guru SCP, serta siswa kelas 7, 8, dan 9. Teknik pengambilan data meliputi wawancara, observasi, dan dokumentasi. Hasil penelitian menunjukkan bahwa SCP berperan penting dalam mendorong transformasi pembelajaran digital melalui manajemen yang sistematis, mencakup perencanaan, pelaksanaan, dan evaluasi. The strategies in SCP implementation include the provision of technological facilities, strengthening teacher capacity through training, and fostering a collaborative culture among educators. Namun, tantangan terkait kesiapan sumber daya manusia dan variasi kompetensi digital guru masih ada. Pendampingan khusus untuk guru yang memiliki kompetensi digital rendah merupakan solusi yang dilakukan oleh pihak sekolah.

Kata Kunci: Manajemen Sekolah, Program Kelas Pintar, Pembelajaran Digital, Transformasi

INTRODUCTION

The transformation of education in the digital era has driven fundamental changes in the learning process in schools. The integration of information and communication technology is no longer optional but rather a necessity in creating a learning environment that adapts to changing times. The development of a digital learning environment is essential for enhancing the quality of education in the 21st century, as it aligns with the demand for critical thinking, collaboration, creativity, and digital literacy.[1] In this context, developing a digital learning environment is a crucial strategy for sustainably improving the quality of learning.

Digital learning transformation is not only related to the availability of technology but is also significantly influenced by aspects of educational management. The successful implementation of technology-based innovations in schools is largely determined by managerial skills in systematically planning, organizing, implementing, and evaluating programs.[2] The role of the principal as an educational leader is crucial in guiding change, building a collaborative culture, and ensuring the readiness of human resources, particularly teachers, to adopt

[1]Mutdi Ismuni, M. Usman & Siti Choiriyah, "Digital Trends and 21st Century Competencies in Educational Transformation", *Kontigensi: Jurnal Ilmiah Manajemen*, *12*(2), (2024), 930–939. https://doi.org/10.56457/jimk.v12i2.649; Della Chrystie & Setiani Bintang Eka Saputri, "Innovation in Education: Improving the Quality of Learning in The Digital Era," *Jurnal Teknologi Pendidikan*, 2(4), 11 (2025), https://doi.org/10.47134/jtp.v2i4.1931

[2]Jarmanta Sudibya & Lantip Diat Prasojo, "Systematic Implementation of Technology-Enhanced Learning Management", *Journal of Innovation and Research in Primary Education*, *4*(4), (2025), 2559–2573. https://doi.org/10.56916/jirpe.v4i4.2366

learning technology.[3] Therefore, an appropriate management approach is key to ensuring the sustainability of educational innovation programs.

One form of innovation developing in the field of education is IT-based classes. IT-based classes enable the integration of various digital learning resources, the use of interactive media, and broader, real-time access to information. This provides opportunities for students to learn independently, exploratively, and contextually, thus making the learning process more meaningful. Furthermore, according to Kamilovich et al, IT-based classes also play a crucial role in improving the quality of teacher pedagogy. The use of technology encourages teachers to be more innovative in designing learning strategies, such as the use of multimedia, online learning platforms, and supporting applications that can enrich students' learning experiences.[4] IT-based classes not only impact students but also improve teachers' professionalism and digital literacy.

One of the junior high school-level educational institutions that has implemented IT-based classes is Muhammadiyah 8 Middle School of Surakarta, where its IT-based class is called the Smart Class Program (SCP) class. This school was the first school in Surakarta to open an IT-based class since 2017 until now. The SCP class is a superior information technology-based class designed to support digital learning.[5] Based on the results of interviews with the vice principal[6] and new student admission documents, among various other class programs, this class is the most popular class among new students because it is digital-based, integrating various digital devices and platforms, such as internet access, interactive learning media, and the use of learning support applications. Through this program, the learning process is expected to be more interesting, flexible, and student-cantered. In addition, SCP also has the potential to encourage increased teacher creativity and

[3]Ulfah, YF. "*Produktivitas Kerja Guru Madrasah: Kepemimpinan Transformasional, Efikasi Diri dan Perilaku Kewargaan Organisasi*", Klaten: Lakeisha, (2023); Wahib Chasbullah & Ida Rindaningsih, "The role of the principal as a role model in developing educator and educational staff human resources", *Academic Journal Research*, *3*(1), (2025), 19–29, https://doi.org/10.61796/acjoure.v3i1.259.

[4] Elov Olimdjon Komilovich et al, "Information Technologies in Improving the Quality of Education", *Academic Research in Modern Science*, Vol. 3, Number 51, (2024), 62–66, Zenodo, https://doi.org/10.5281/zenodo.14550831.

[5] SMP Muhammadiyah 8 Surakarta, https://smpm8ska.sch.id/, accessed in December 2025.

[6] Purmoko, Vice Principal for Curriculum, Interview, January 10th 2026.

innovation in designing learning media that are appropriate to the characteristics of the digital generation.

Several previous studies have discussed the integration of technology into teaching and the development of digital learning. Reshma's study reveals that technology integrated pedagogy transforms teaching by utilizing digital tools and multimedia resources to enhance learner engagement, critical thinking, and personalized learning. It requires equitable access, learner readiness, and teachers' competencies to effectively implement and maximize its benefits in education.[7] Meanwhile, Akram et al's study find the barriers in the integration of technology in learning encompassing inadequate infrastructure and lack of training hinder effective implementation, necessitating policies that support teachers' technological competencies and resources for successful digital learning.[8] However, most of those studies focus primarily on technology use or learning outcomes, with limited comprehensive studies examining the management aspects of implementing digital-based classroom programs at the school level. Furthermore, studies integrating managerial strategies, teacher adaptation, and collaboration dynamics within innovative programs like SCP are still relatively limited, particularly in the context of Middle education in Indonesia.

Based on this, this study offers a novel approach by examining the Smart Class Program (SCP) from a more comprehensive educational management perspective. This research focuses not only on program implementation but also examines the managerial strategies employed, teachers' adaptation to technology, and the challenges and efforts made by schools in optimizing program implementation. Using a case study approach, this research is expected to provide a more in-depth empirical picture of digital classroom management practices in schools.

This study aims to analyse how the Smart Class Program (SCP) management promotes digital learning transformation in Middle schools. Furthermore, it examines the implementation strategies employed by schools, teachers' adaptation

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[7] Reshma KR, "The Power of Technology Integrated Pedagogy", *Stallion Journal for Multidisciplinary Associated Research Studies*, 4(3), (2025), 161–164. https://doi.org/10.55544/sjmars.4.3.15.

[8] Huma Akram et al, "Teachers' Perceptions of Technology Integration in Teaching-Learning Practices: A Systematic Review", *Frontiers in Psychology*, 13 (2022), https://doi.org/10.3389/fpsyg.2022.920317

processes to the use of learning technology, and the challenges faced in implementing the program.

RESEARCH METHODS

This research employed a qualitative approach with a case study design to gain an in-depth understanding of the implementation of the Smart Class Program (SCP) in encouraging digital learning transformation. Miksza et al argue that a qualitative approach with a case study design is a research method that focuses on exploring complex phenomena within their real-life contexts. The qualitative case study does not aim for statistical generalization but rather seeks to provide rich, detailed insights and promote a deeper understanding of the subject matter.[9] The research was conducted at Middle School (SMP) of Muhammadiyah 8 Surakarta, Central Java, with a focus on SCP classes at all levels; grades of 7th, 8th, and 9th, in the 2025/2026 academic year, specifically November 2025 – February 2026.

The subjects in this study were the parties directly involved in the implementation of the Smart Class Program (SCP). The research informants were determined purposively, including the principal, five SCP class teachers, 7th, 8th, and 9th grade students with two students from each class, and the technical support team, who were deemed to have direct involvement in the program's implementation. Data was collected through in-depth interviews, observation, and documentation to gather information related to program planning, implementation, and evaluation. Data validity was maintained through triangulation of sources, techniques, and time, as well as member checking to ensure data conformity with field conditions. Data analysis was conducted using an interactive model that encompassed data reduction, data presentation, and ongoing conclusion drawing and verification, resulting in comprehensive findings regarding SCP management in the context of digital-based learning.

RESULT AND DISCUSSION

The purpose of this study is to analyse the management of the Smart Class Program (SCP) in driving digital learning transformation at Middle School of

[9] Peter Miksza at al, "*Qualitative Case Study Research"* (pp. 157–182), (2023), Oxford University Press eBooks. https://doi.org/10.1093/oso/9780197639757.003.0009

Muhammadiyah 8 Surakarta. Furthermore, this study examines the school's implementation strategies, teachers' adaptation processes in using learning technology, and the challenges faced in implementing the program.

Smart Class Program (SCP) Management in Driving Digital Learning Transformation

Based on interviews with the Principal, SCP class teachers, and students, as well as field observations, the following table summarizes the interview results regarding SCP class management at SMP Muhammadiyah 8 Surakarta:

Table 1. Synthesis of Interview Results on SCP Management

Topic	Data Source	Findings	Interpretation
Analysis of SCP management in driving digital learning transformation	Principal	SCP is an IT-based flagship class, supported by classroom Wi-Fi, learning accounts, and school policies.	Demonstrating the existence of digital-based strategic planning.
	Teachers	Learning using digital media (videos, applications, online platforms).	Program implementation is already underway in learning practices.
	Students	More engaging learning (video, Kahoot, Canva, etc.)	Digital transformation impacts students' learning experience
Synthesis		Technology integration in planning, implementation, and evaluation	SCP effectively drives digital learning transformation, although it is not yet optimal.

The table above shows that the Smart Class Program (SCP) management at SMP Muhammadiyah 8 Surakarta has been systematically implemented through planning, implementation, and evaluation stages. This finding aligns with the concept of classical management functions proposed by George R. Terry[10], which emphasizes that organizational success is determined by the effectiveness of the planning, organizing, implementing, and controlling processes.

[10] George Terry, R, *Dasar-Dasar Manajemen, Edisi revisi*, (2019), Jakarta: Bumi Aksara

During the planning stage, the school's policy of designating SCP as an IT-based flagship class demonstrated a strategic orientation toward digital transformation. This aligns with Basri et al's[11] view that modern educational management must indeed be adaptive to environmental changes, particularly technological advancements. The integration of technology into educational practices is essential for fostering innovative and effective learning environments. This adaptability is crucial for addressing the challenges posed by rapid technological evolution and societal shifts.

During the implementation phase, the integration of technology into learning through the use of digital media, learning applications, and interactive platforms demonstrated that SCP is moving toward 21st-century learning. Previous studies reveal that the integration of technology in education is crucial for enhancing students' creativity, collaboration, communication, and critical thinking. It fosters an engaging learning environment, promotes innovative problem-solving, and encourages interactive learning experiences, ultimately preparing students to become creative specialists in a rapidly evolving world.[12] Research indicates that technology not only facilitates these skills but also prepares students for the demands of the 21st century.

From the student perspective, the more engaging and interactive learning experience in digital classrooms shows an increase in student engagement. Student engagement across cognitive, emotional, and behavioural dimensions is indeed a crucial indicator of learning success. Cognitive engagement involves students' investment in their learning processes, such as critical thinking and problem-solving.[13] Emotional engagement refers to students' feelings towards their learning

[11] Hasan Basri et al, "Modern Education Management: Challenges, Strategies Towards a Future of Continuing Education", Munaddhomah: Jurnal Manajemen Pendidikan Islam, 5(3), (2024), 260–269. https://doi.org/10.31538/munaddhomah.v5i3.875

[12] Salman JK et al, "Quantitative Analysis of ICT's Role in Communication, Collaboration, Creativity, and Critical Thinking: Perspectives of Students and Teachers", *The Knowledge*, *4*(1), (2025), 26–36. https://doi.org/10.63062/tk/2k25a.41027 ; Kumari NS, "*Promoting Creativity and Collaboration: Innovative Interdisciplinary Approaches to Enhance STEM Education and Critical Thinking in Students*. *03*(09), (2024), 546–551. https://doi.org/10.70333/ijeks-03-09-004; Ahmad Tohir et al, "Integration of Technology in Learning: Enhancing Higher Order Thinking Skills (HOTS) in Middle School Students", *International Journal of Computational and Experimental Science and Engineering*, *11*(3) (2025), https://doi.org/10.22399/ijcesen.3474

[13] Haider Wali Khan et al, "The Effect of Students' Cognitive and Emotional Engagement on Students' Academic Success and Academic Productivity", *Journal of Social Sciences Review*, *3*(1), 322–334 (2023), https://doi.org/10.54183/jssr.v3i1.141

environment. Positive emotional engagement has been linked to improved academic performance, as students who feel connected and motivated are more likely to participate actively in their education.[14] Behavioural engagement encompasses students' participation in academic activities. The higher levels of behavioural engagement correlate with better academic results, as students who are actively involved in learning tend to perform better.[15]

Strategy of Smart Class Program (SCP) Implementation in Schools

The SCP implementation strategy is implemented through an approach that integrates infrastructure, human resource development, and organizational culture. The following table illustrates the interview results related to this discussion.

Table 2. Synthesis of Interview Results on SCP Implementation Strategy

Topic	Data Source	Findings	Interpretation
Strategy of SCP Implementation	Principal	Provision of infrastructure, teacher training, parental involvement	System-based strategy (top-down management)
	Teachers	IT training (Canva, etc.), self-study, sharing between teachers.	Human resource development strategies are not yet evenly distributed
	Students	Method variations: discussion, digital quizzes, application projects	Strategies impact learning innovation
Synthesis		Combination of infrastructure, training, and collaboration	The strategy is quite comprehensive, but requires ongoing strengthening

Table 2 above shows that the SCP implementation strategy in schools reflects an approach that integrates infrastructure, human resource development, and organizational culture. In other words, successful educational change necessitates a

[14] Rupashree Goswami, "*Towards an Effective Education System: Harnessing Factors to Enhance Students' Performance"*, (2025), https://doi.org/10.5281/zenodo.15300684

[15] Marry Bessel, *Analysis of student cyclic responses and tri-engagement levels in a global learning environment*, (2022), https://doi.org/10.25549/usctheses-c89-273303.

comprehensive approach that integrates policy, resources, and leadership. According to McLure & Aldridge, effective educational change requires policies that are coherent and aligned with the goals of the reform. This includes ensuring that policies are flexible enough to adapt to the unique needs of different schools.[16] Furthermore, adequate resources, including funding and infrastructure, are essential. For instance, the development of a digital-based educational ecosystem emphasizes the importance of resource readiness and strategic planning.[17] In addition, strong leadership is pivotal in driving change. Leaders must cultivate a reform-ready climate and support professional development to enhance teacher competencies, which is critical for successful implementation.[18]

From the perspective of teacher competency development, the training provided and independent learning initiatives demonstrate a process of professional adaptation. However, the uneven distribution of teachers' digital competencies indicates the need for a more systematic approach. Thus, the gradual adoption of technology in education highlights the need for a systematic approach to enhance teachers' digital competence. Jajang et al's study reveals that teachers' digital competence varies significantly, influenced by access to technology and institutional support. A systematic approach, including tailored training and emotional support, is essential to address these disparities and enhance teachers' adaptation to digitalization in education.[19]

Furthermore, the practice of sharing among teachers is pivotal in fostering a collaborative culture, which is essential for accelerating digital transformation within schools. This collaborative environment not only enhances educators' professional development but also significantly impacts student engagement and learning outcomes. Vanessa & Elisa claim that learning organization practices, including collaboration among teachers, significantly enhance work productivity. A

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[16]Felicity l McLure & Jill M. Aldridge, "A systematic literature review of barriers and supports: initiating educational change at the system level", *School Leadership & Management,* 42(4), (2022), 402–431. https://doi.org/10.1080/13632434.2022.2113050.

[17]Undang Wahyudin et al, "The Development of a Digital-Based Educational Quality Ecosystem at SMK Bhineka Karawang", *Sinergi International Journal,* 3(3), (2025), https://doi.org/10.61194/education.v3i3.837.

[18] Le Cong Duc & Pham Le, "Factors Influencing the Management of Teaching Activity Change in High Schools According to Fullan's Model", *Contemporary Research Analysis Journal.*, *02*(09), (2025), https://doi.org/10.55677/craj/10-2025-vol02i09

[19] Jajang Rustandi et al, "Teacher competence in the digital era a phenomenological study". *Jurnal Konseling Pendidikan Islam*, *5*(2), (2024), 527–534. https://doi.org/10.32806/jkpi.v5i2.212

supportive work culture fosters positive relationships, which are essential for adapting to changes and promoting effective teaching, thereby facilitating digital transformation in schools.[20]

From a student perspective, the variety of teaching methods used by teachers demonstrates a shift from conventional learning to more interactive and participatory learning. This aligns with the student-centered learning approach that is a key characteristic of modern education. According to Kalbaeva, student-centered learning approach is a transformative educational paradigm that emphasizes active student engagement and ownership of the learning process. This approach is rooted in constructivist theory and is characterized by various methodologies such as project-based learning, collaborative methods, and the integration of digital technologies.[21] SCL not only enhances academic performance but also fosters critical skills necessary for success in the 21st century

Teacher Adaptation, Challenges, and Solutions in SCP Implementation

The final objective of this study is to analyse teacher adaptation in SCP implementation, the challenges, and the solutions. The following table summarizes the interviews and synthesizes the topics discussed.

Table 3. Synthesis of Interview Results on Teacher Adaptation, Challenges, and Solutions in SCP Implementation

Topic	Data Source	Findings	Interpretation
Teacher Adaptation, Challenges, and Solutions in SCP Implementation	Principal	Program of monitoring and evaluation and facility support	Managerial control is in place for implementation
	Teachers	Obstacles: devices, student skills, digital competencies	Adaptation is still in progress

[20] Vanessa Marie Aliazas & Elisa N. Chua, "*Work Culture and Learning Organization Practices in Promoting Work Productivity among Public Elementary School Teachers"*, (2024), https://doi.org/10.60692/9eckn-p9h50

[21] Kalbaeva Tumaris Daryabaevna, "Modern approaches to student-centered learning in the 21st century", *Central Asian Journal of Multidisciplinary Research and Management Studies*, 2(9), (2025). 26–28). https://doi.org/10.5281/zenodo.17149416.

Topic	Data Source	Findings	Interpretation
	Students	Obstacles: electricity, teacher understanding, variations in teaching quality	Teachers are a key factor in the success of SCP
Synthesis		Technical, pedagogical, and human resource challenges	The success of SCP depends on teacher competence and system support

The results of table 3 above reveal that teacher adaptation in implementing SCP indicates a shift in role from 'teacher-centered' to 'facilitator of learning'. Teachers are required not only to master the material but also to be able to integrate technology into learning. This is in line with the TPACK (Technological Pedagogical Content Knowledge) framework[22] emphasizing the integration of technological knowledge, pedagogy, and content knowledge as essential for effective teaching, particularly in the context of modern education. This framework is increasingly relevant in the digital age, where educators must adeptly blend these domains to enhance learning outcomes.

However, the research findings indicate that teachers face various challenges, such as limited equipment, differences in student abilities, and limited digital competency. Schools have addressed these challenges through training, mentoring, and strengthening collaboration. This demonstrates the existence of adaptive strategies in addressing challenges. Nisa et al argue that adaptive strategies are essential for educational institutions to address challenges in the digital learning era, including integrating technology-based curricula, enhancing digital literacy among educators, improving infrastructure, and fostering collaboration with stakeholders to create an inclusive educational ecosystem.[23] Furthermore, these findings also

[22]Pratima Pradhan, "*Technological Pedagogical Content Knowledge (TPACK): A Model for 21st Century prospective teachers for upgrading their teaching-learning Scenario"*, (2023), https://doi.org/10.5281/zenodo.8350855; Rahmat Solihin, "Analysis of TPACK Content in the Curriculum of Educational Study Programs in Higher Education", Scaffolding: Jurnal Pendidikan Islam Dan Multikulturalisme, 7(3), (2025), 1–18. https://doi.org/10.37680/scaffolding.v7i3.7936

[23]Nisa Ainur et al, "Strategi Adaptasi Lembaga Pendidikan terhadap Dinamika Perubahan Lingkungan Eksternal di Era Digital", *Jurnal Nakula*, 3(6), (2025), 115–124. https://doi.org/10.61132/nakula.v3i6.2317

align with the concept of continuous improvement in educational management[24], which emphasizes the importance of ongoing evaluation and development. This approach fosters a culture of perpetual learning and adaptability, ensuring that educational institutions can meet the evolving needs of learners and society. Key aspects of this concept include the integration of systematic evaluation, accountability, and the application of quality management principles

From a student perspective, teacher factors are a key element in the success of digital learning. Communicative and creative teachers can increase student motivation and understanding, while less adaptable teachers tend to hinder effective learning. These findings align with the Wardani et al's research[25], which states that the integration of technology in education has transformed pedagogical practices, yet the quality of pedagogical interaction remains a critical factor in achieving effective learning outcomes. While digital tools enhance accessibility and interactivity, their success largely depends on how well they are integrated with pedagogical methods.

CONCLUSION

Based on the findings, it can be concluded that Smart Class Program at Middle School of Muhammadiyah 8 Surakarta is a potential educational innovation to support digital learning transformation. However, its success depends heavily on the synergy between school management, teacher readiness, and ongoing system support. In detail, this study shows that the implementation of the Smart Class Program (SCP) at SMP Muhammadiyah 8 Surakarta has played a role in encouraging digital learning transformation through management that encompasses planning, implementation, and evaluation. This program is designed as a technology-based flagship class, supported by school policies, infrastructure provision, and the involvement of various parties, thus creating a learning environment that is more adaptive to digital developments. In terms of implementation, the school's strategy demonstrates a fairly comprehensive

[24]Yetty et al, "*Landasan Manajemen Pendidikan*", Jambi: PT. Sonpedia Publishing Indonesia, (2025); Hariyono et al, "*Manajemen Pendidikan Bermutu"*, (2025), PT. Sonpedia Publishing Indonesia.
[25]Wardani P Sari et al, "Blending Pendagogy and Technology: How Digital Tools Enhance Teaching and Learning Outcomes", *Journal of Educational Teaching and Trends*, *1*(1), (2025), 14–27. https://doi.org/10.64840/jett.v1i1.22

approach, encompassing the provision of technological facilities, strengthening teacher capacity through training, and fostering a collaborative culture among educators. This strategy has resulted in a variety of more interactive and participatory learning methods, ultimately enhancing student engagement and learning experiences. However, in practice, several challenges remain, particularly related to human resource readiness, limited facilities, and variations in teachers' digital competencies. Research also confirms that teachers are a key factor in the successful implementation of SCP, with pedagogical skills and adaptation to technology crucial for learning effectiveness. This research implies that the successful implementation of the Smart Class Program (SCP) at SMP Muhammadiyah 8 Surakarta depends not only on the availability of technology, but also on effective management, teacher digital readiness and competence, and ongoing system support. Therefore, schools need to systematically strengthen teacher training, ensure equitable distribution of facilities, and build a collaborative culture as a space for sharing best practices. Furthermore, consistent policy support is needed in the development of digital-based learning so that program implementation can run optimally and sustainably, while also serving as a reference for the development of similar innovations in the broader educational context.

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