

Principal Managerial Strategies for Enhancing Teachers' Digital Readiness at SMP Negeri 1 Cimanggu

Ida Mahardika
 Universitas Primagraha
 Email: Idamahardika21@gmail.com

Abstract

This study aims to analyze the managerial strategies employed by the principal of SMP Negeri 1 Cimanggu to enhance teachers' digital competence and readiness for technology-based learning. A qualitative case study approach was adopted, involving six key informants selected through purposive sampling, consisting of the principal, the vice principal for curriculum, and representatives of senior and younger teachers. Data were collected through semi-structured interviews, direct observations, and document analysis and were analyzed using the interactive model of Miles, Huberman, and Saldaña, comprising data condensation, data display, and conclusion drawing. The findings indicate that the principal's managerial strategies were implemented through four main functions: planning digital infrastructure and budget allocation, organizing an information technology team and cross-generational peer coaching, conducting differentiated digital training based on teachers' competency levels, and implementing periodic technology-based supervision. These strategies helped reduce technostress among senior teachers, improve teachers' confidence and technical readiness, and encourage the use of interactive digital platforms in classroom learning. The study highlights that teachers' digital readiness is influenced not only by individual technological competence but also by adaptive, supportive, and well-structured school leadership. The findings imply that school principals should integrate infrastructure development, differentiated training, peer assistance, and continuous supervision to support sustainable digital transformation in schools.

Keywords: Digital Competence; Managerial Strategy; Principal Leadership; Teacher Readiness; Technology-Based Learning.

Introduction

The acceleration of digital transformation in education has shifted the learning paradigm from conventional approaches toward technology-based ecosystems. In the digital era, the integration of information and communication technology (ICT) is no longer merely a supplementary option but has become an essential requirement for maintaining the relevance and quality of educational outcomes (Sudarman et al., 2023). In response to this development, the Indonesian government has introduced various school digitalization initiatives, including the Merdeka Mengajar Platform, ICT device assistance, and the provision of Chromebooks. These initiatives are expected to support more interactive, efficient, and student-centered learning processes.

Nevertheless, the implementation of school digitalization policies continues to face complex challenges at the educational-unit level. Many schools tend to prioritize the procurement of physical infrastructure while paying insufficient attention to the readiness of their human resources. One of the major barriers is teachers' limited readiness to adopt and integrate new technologies into instructional practices (Pratama & Wijaya, 2024). This condition is also evident at SMP Negeri 1 Cimanggu, where a digital literacy gap exists between younger teachers who are relatively adaptive to technology and senior teachers who are approaching retirement. Such differences may generate technostress or technology-related anxiety, resulting in a situation in which the availability of digital facilities is not necessarily accompanied by their effective use in classroom learning.

Addressing these challenges requires the principal to assume a central managerial and leadership role. The principal of SMP Negeri 1 Cimanggu is expected not only to perform administrative functions but also to act as a technology leader who promotes and strengthens a digital culture within the school (Mulyadi, 2022). Improving teachers' capacity to adopt technology therefore requires systematic planning, continuous assistance, and motivational support, particularly in schools with limited digital human resources (Budiarto, 2016). Accordingly, the successful integration of technology in schools largely depends on the principal's ability to plan budgets, organize resources, motivate teachers, facilitate professional development, and conduct continuous supervision.

Previous studies have examined teacher readiness, school leadership, and technology adoption from different perspectives. Pratama and Wijaya (2024) primarily identified the factors that inhibit senior teachers' readiness to adopt digital technology, whereas Mulyadi (2022) emphasized the role of principals' technology leadership in developing a digital culture within educational institutions. Similarly, Setiawan and Lestari (2023) investigated the influence of transformational leadership on teachers' motivation and technological adaptation. However, these studies have not comprehensively explained how the principal's managerial functions are integrated into a systematic strategy involving planning, organizing, implementation, and supervision to address differences in digital competence across teacher generations.

Therefore, the novelty of this study lies in its analysis of an integrated principal managerial strategy for improving teachers' digital readiness through digital infrastructure planning, the establishment of a school IT team, cross-generational peer coaching, competency-based ICT training, and technology-based academic supervision. In addition, this study specifically highlights the use of a persuasive and collaborative approach to reduce technostress among senior teachers, an aspect that has received limited attention in previous research. By examining these strategies within the context of SMP Negeri 1 Cimanggu, this study provides a more contextual understanding of how adaptive school management can support sustainable technology integration in classroom learning.

This study aims to analyze in depth the managerial strategy of school principals in supporting teachers' readiness for technology-based learning at SMP Negeri 1 Cimanggu.

Method

This study employed a qualitative approach with a descriptive-analytical case study design to explore the managerial strategies implemented by the principal to improve teachers' digital readiness at SMP Negeri 1 Cimanggu. The research was conducted in the school's natural setting for three months, from April to June 2026. Six key informants were selected through purposive sampling based on their direct involvement in school management, digital learning policies, the use of technology in classroom instruction, and their ability to provide information relevant to the research objectives. The informants consisted of one principal, one vice principal for curriculum, and four teacher representatives, including two senior teachers aged over 50 years and two younger teachers aged under 30 years. This composition was intended to represent differences in age, teaching experience, and initial levels of digital competence. Primary data were collected through individual semi-structured interviews and direct observations. The interview guide covered the principal's managerial functions in digital infrastructure planning, resource organization, teacher training, peer coaching, technology-based supervision, teacher readiness, and barriers such as technostress. Each interview was conducted with the informant's permission, recorded, transcribed, and followed by additional clarification when necessary. Observations were conducted repeatedly during complete classroom learning sessions and school digital activities throughout the research period, focusing on teachers' use of digital devices and learning platforms, technical difficulties, teacher interactions, and managerial support provided by the school. Secondary data were obtained from the School Activity and Budget Plan (RKAS), the decree concerning the establishment of the school IT team, teacher training records, and data on the use of school digital platforms. Data credibility was ensured through source and method triangulation by comparing information obtained from interviews, observations, and documents, as well as through member checking with the informants (Sugiyono, 2019). Ethical principles were maintained by obtaining informed consent, explaining the objectives and procedures of the study, ensuring voluntary participation, protecting the confidentiality of informants through the use of identification codes, and allowing participants to withdraw from the study at any time. The data were analyzed interactively and continuously using the model developed by Miles et al. (2014), which comprises data condensation into categories based on managerial functions, data display in narrative matrices, and conclusion drawing and verification.

Results and Discussion

Research Results

This section presents the characteristics of the subject (informant) as well as field findings regarding the managerial strategy of the principal at SMP Negeri 1 Cimanggu which is grouped into four pillars of basic management functions.

Characteristics of Research Subjects

Table 1. Key Informants with Demographic Characteristics

Informant Code	Job Title/Role	Age Category	Initial ICT Competency Category
KS	Principal	> 50 Years	Adaptive / Accelerating
World Cup	Vice Principal for Curriculum	40 - 50 Years	Adaptive
G1	Senior Teacher	> 50 Years	Technostress
G2	Senior Teacher	> 50 Years	Technostress
G3	Young Teachers	< 30 Years	Proficient / Digital-Based
G4	Young Teachers	< 30 Years	Proficient / Digital-Based

Planning Stage

The strategy at the planning stage at SMP Negeri 1 Cimanggu focuses on aligning the school's vision towards a digital ecosystem and inclusive budget allocation. Based on the analysis of the School Activity Plan and Budget (RKAS) document, it was found that there was an increase in the allocation of BOS funds to increase the capacity of school Wi-Fi bandwidth to 150 Mbps, the procurement of portable projectors in each classroom, and the provision of supporting facilities for government-assisted Chromebook devices. The Principal of SMP Negeri 1 Cimanggu explained the step in an interview session:

"At the work meeting at the beginning of the year, I conveyed to all staff that digitalization is the price of death to maintain the quality of graduation. We don't want a Chromebook from the government to just be stored in a closet. Therefore, we directly focus on the BOS budget for the procurement of supporting infrastructure, including buying a premium account for learning platforms so that teachers are not hampered by technical problems." (Interview, June 12, 2026).

Organizing Stage

At the organizing stage, the principal formulated a supporting structure in the form of a decree on the formation of a School IT Team (ICT Task Force) filled by young adaptive teachers, and applied a peer coaching model. In its implementation, the group of young teachers (under 30 years old) showed high enthusiasm, while the group of senior teachers (over 50 years old) initially had difficulty logging in to Belajar.id accounts and operating classroom hardware. A senior teacher (52 years old) stated:

"At first, I was very afraid of touching the Chromebook and the digital projector. Worried about the wrong press and then damaged. But the principal paired me with a young honorary teacher who was smart in IT to teach me slowly in the teacher's room without a formal format. Now I can create my own material and teach with more confidence." (Interview, June 15, 2026).

Actuating Stage

Classroom observations indicated that students appeared to demonstrate greater attention and active participation when teachers used game-based interactive media, such as Quizizz, and Chromebook devices. As this study employed a qualitative approach, these findings represent observed changes in classroom engagement rather than statistically significant effects.

Supervision and Evaluation Stage (Controlling)

The supervision function is carried out consistently by the principal with the Vice Principal for Curriculum through the Technology-Based Academic Supervision (E-Supervision) mechanism, where the leader enters directly as a collaborator into Google Classroom or LMS managed by each teacher in real-time. In addition, at the end of every month, a coordination meeting for special ICT evaluation is held. If technical problems are found in the field, immediate mitigation is carried out by alerting technicians from the IT Team who are on call to solve problems while teaching hours are ongoing.

Table 2. Managerial Strategy

Management Functions	Principal Strategic Actions	Specific Applications & Platforms	Impact on Readiness
Planning	Preparation of the school's digital vision and increase of ICT infrastructure budget in RKAS.	BOS funding allocation for 150 Mbps Wi-Fi bandwidth upgrades & projector classes.	Teachers' mental readiness increases; the loss of obstacles to the limitations of physical facilities.
Organizing	Establishment of ICT Task Force (IT Team) & implementation of inter-generational Peer Coaching system.	Intensive collaboration between young teachers and senior teachers (>50 years old).	Successfully eliminating technostress in senior teachers persuasively.
Implementation	Implementation of ICT training based on leveling and monthly rewards .	Optimize Google Classroom, Canva, Quizizz, Chromebook, and PMM platforms.	Skilled teachers create interactive media; Students' attention and learning participation increased.
Supervision	Implementation of scheduled E-Supervision & provision of on-call technician services.	Real-time monitoring of teachers' teaching activities via	Consistency of teacher teaching is maintained; Technical obstacles

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LMS/Google Classroom accounts.	in the field are mitigated instantly.
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Discussion

The findings indicate that the integration of technology at SMP Negeri 1 Cimanggu was supported by the principal's ability to combine digital vision, infrastructure planning, teacher development, and continuous supervision. The allocation of the School Activity and Budget Plan (RKAS) for internet connectivity, projectors, digital platforms, and Chromebook-supporting facilities helped reduce practical barriers encountered by teachers. This finding is consistent with Mulyadi (2022), who emphasizes that principals must act as technology leaders in developing a digital culture within educational institutions. It also supports the digital literacy framework proposed by UNESCO (2024), which highlights the importance of institutional support, infrastructure, and leadership in strengthening educators' digital competence. However, the present study extends these perspectives by showing that the availability of digital infrastructure alone is insufficient unless it is integrated with teacher assistance, differentiated training, and continuous managerial supervision.

The findings also reveal differences in digital readiness between younger and senior teachers. Senior teachers initially experienced anxiety, fear of making technical errors, and limited confidence when operating digital devices. This condition is consistent with Pratama and Wijaya (2024), who identified teacher readiness and technology-related barriers as important challenges in the adoption of digital learning. In the present study, these challenges were addressed through cross-generational peer coaching, in which younger teachers assisted senior teachers informally and gradually. This result also corresponds with Setiawan and Lestari (2023), who underline the importance of principal leadership in strengthening teachers' motivation and technological adaptation. Nevertheless, this study provides an additional contribution by demonstrating that cross-generational peer coaching can serve as a persuasive managerial strategy for reducing technostress while maintaining positive professional relationships among teachers.

The implementation of competency-based training further demonstrates that teachers require different forms of assistance according to their initial levels of digital competence. Senior teachers were provided with introductory training in Google Classroom, the Merdeka Mengajar Platform, and basic digital administration, whereas digitally proficient teachers received more advanced training in Canva for Education, Quizizz, and artificial intelligence-based teaching materials. This finding supports Khalif et al. (2024), who showed that the introduction of interactive digital applications can support more engaging learning activities. It is also in line with Rahmawati (2021), who discussed the importance of evaluating the effectiveness of digital platform use in learning. Classroom observations in the present study indicated that students appeared more attentive and actively involved when teachers used interactive digital media. However, because this study used a qualitative design, these findings should be interpreted as observed tendencies rather than statistically significant improvements or causal effects.

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Technology-based academic supervision was also found to play an important role in maintaining teachers' consistency in using digital platforms. Through e-supervision, monthly evaluation meetings, and the availability of on-call IT support, supervision was perceived not merely as an administrative control mechanism but as a form of professional assistance. This finding is consistent with Mulyasa (2022), who emphasizes that managerial supervision and continuous teacher development are integral components of principal leadership in the digital era. The availability of technical assistance also appeared to provide teachers with greater confidence when integrating technology into classroom instruction.

Overall, the findings suggest that teachers' digital readiness is shaped not only by individual digital competence but also by an integrated and supportive school management system. The combination of infrastructure planning, cross-generational peer coaching, competency-based training, recognition, e-supervision, and technical assistance created a more supportive environment for technology adoption. Therefore, the contribution of this study lies in demonstrating how the principal's managerial functions can be implemented as an interconnected strategy to address differences in teachers' age, digital competence, and levels of technology-related anxiety.

Conclusion

This study concludes that the principal's managerial strategies at SMP Negeri 1 Cimanggu were implemented systematically through digital infrastructure and budget planning, the establishment of a school IT team, cross-generational peer coaching, competency-based ICT training, and technology-based academic supervision. These integrated strategies contributed to improving teachers' confidence and digital readiness while reducing technostress among senior teachers. The use of digital platforms, including Google Classroom, Canva, Quizizz, the Merdeka Mengajar Platform, and Chromebooks, was also accompanied by observable improvements in students' attention and participation during classroom learning. Practically, schools should allocate adequate budgets for digital infrastructure, provide continuous and differentiated training according to teachers' competence levels, establish peer-support mechanisms, and ensure the availability of technical assistance. School principals are also encouraged to adopt supportive and collaborative supervision rather than relying solely on administrative control. However, this study was limited to a single school, involved only six key informants, and was conducted over a three-month period; therefore, the findings cannot be broadly generalized to other educational contexts. Future studies should involve multiple schools and more diverse participants and employ longitudinal or mixed-method designs to examine changes in teachers' digital competence and the effects of managerial strategies on measurable learning outcomes.

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