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# Learning Transformation Through Digital Leadership: A Case Study of SMPN 8 Toboali, South Bangka

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**Abstract**
*This study aims to explore how the principal's digital leadership transforms learning at SMP Negeri 8 Toboali, South Bangka. Using a qualitative approach with an intrinsic case study design, the research employed in-depth interviews, participatory observations, and documentation involving the principal, two teachers, and two students. The findings reveal that the principal established a well-defined digital vision, fostered a participatory digital learning culture, and designed professional development strategies that enable teachers to adapt to emerging technologies. Digital-based managerial communication and the strategic use of social media strengthened transparent and collaborative school governance. The study also shows an increase in students' learning motivation through the integration of digital media, along with the emergence of various local solutions to address infrastructural limitations. Overall, visionary, participatory, and responsive digital leadership serves as a key catalyst in driving learning transformation within educational institutions located in non-urban areas.*



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## 1. INTRODUCTION

Learning transformation has become an urgent necessity in the context of the twenty-first century, which is characterized by rapid technological advancement and shifting educational paradigms. Schools are no longer expected to focus solely on cognitive development; they are also required to cultivate learners who are digitally literate, collaborative, critical, and adaptive. The phenomena of the Fourth Industrial Revolution, technological disruption, and the era of Society 5.0 have accelerated the need for innovation in educational management and instructional practices (Fullan, 2016; Peka et al., 2025). In such a situation, the role of school leadership becomes a highly crucial element, particularly in the context of school digitalization.

The literature highlights that digital leadership refers to the capacity of school leaders to integrate technology into learning processes and overall educational governance. Sheninger (2019) asserts that digital leadership is not merely about the use of technological devices but also requires vision, strategy, collaboration, and the courage to navigate change. This model aligns closely with transformational leadership approaches that emphasize inspiration, empowerment, and the cultivation of a culture of change (Bass & Avolio, 1994). On the other hand, various studies reveal that the implementation of digital leadership remains uneven across regions. Schools located in semi-peripheral areas often struggle with infrastructural limitations, low levels of teachers' digital literacy, and

organizational cultures that tend to resist change (Adriantoni et al., 2024; Hasan & Rahmi, 2025). Other findings also underscore the need for innovations that are not only technology-driven but also contextual and collaborative to adequately address the challenges faced by schools in peripheral settings (Farid, 2023; Judijanto, 2024).

Based on previous studies, the novelty of this article lies in its focus on examining digital leadership practices in a public school located in a semi-peripheral area, an institution that operates with limited resources yet manages to generate sustained innovations in learning transformation. Unlike previous research, which has predominantly been conducted in urban schools with well-established facilities, this study presents the unique dynamics emerging from the local context of SMP Negeri 8 Toboali. This novelty is further reflected in the analysis of the principal's role as a change agent who not only mobilizes teachers but also builds a digital ecosystem involving students, parents, and the broader school community.

The main problem addressed in this research stems from the need to understand how a principal's digital leadership can be effectively enacted within conditions of constraint. The research seeks to answer questions regarding the principal's strategies in directing digitally based learning transformation, how teachers and students respond to these changes, and the extent to which such transformation influences the quality of learning in the school.

The purpose of this study is to explore the principal's digital leadership strategies in leading learning transformation at SMPN 8 Toboali and to analyze its impact on improving learning quality. The findings are expected to contribute to the development of a context-based digital leadership model that is relevant for schools in semi-peripheral regions of Indonesia.

## 2. RESEARCH METHOD

This study employed a qualitative approach with an intrinsic case study design. This approach was selected because the research focused on gaining an in-depth understanding of the principal's digital leadership practices in directing learning transformation within a real-world context, namely SMP Negeri 8 Toboali. The intrinsic case study design enabled the researcher to explore meanings and dynamics holistically within a specific case that is considered contextually significant and compelling (Creswell & Poth, 2018; Yin, 2017). This approach has also been widely used in educational leadership research in Indonesia, such as Manalu & Kristianingsih (2024), who examined principals' strategies for improving teacher performance through a case study, and Suhendi (2023), who analyzed the digitalization of Islamic education curricula to capture the complexity of technology-based instruction.

The research was conducted from March to July 2025 at SMP Negeri 8 Toboali, South Bangka Regency, Bangka Belitung Islands Province. The school was selected purposively because it demonstrated progressive digital learning initiatives despite being located in a semi-peripheral area with limited infrastructure and human resources. The research subjects consisted of one principal as the main actor, two teachers from different subject areas, and two students from different grade levels. The subjects were determined using purposive sampling based on their direct involvement in implementing digitalization strategies at the school (Patton, 2015). For analytical and reporting purposes, the informants were coded as Informant 1 (Principal), Informant 2 (Teacher 1), Informant 3 (Teacher 2), Informant 4 (Student 1), and Informant 5 (Student 2). This variation of informants provided a representation of perspectives covering policy-making, implementation, and the reception of digital transformation within the school environment.

Data collection was conducted through semi-structured in-depth interviews, participatory observations, and document analysis. The interview guidelines were

developed based on indicators from Sheninger's (2019) digital leadership framework, which includes digital communication, school identity enhancement, teacher professional development, community engagement, digital learning, sustainable learning systems, and visionary leadership. Observations were used to examine ICT-based learning activities, teacher training sessions, and interactions among school members related to technology utilization. Document analysis reviewed school digitalization policies, digital products created by teachers and students, training reports, and evidence of collaboration with external stakeholders such as parents, alumni, and the local education office.

Data analysis was conducted using Miles et al. (2014) interactive analysis model, which includes data reduction, data display, and conclusion drawing. Data reduction was performed by selecting information relevant to the research focus and organizing it thematically. Data display was carried out through narrative descriptions illustrating patterns and relationships among the findings. The conclusion-drawing stage was conducted inductively and continuously throughout the research process. This approach was also used by Raihan (2025) in his study on primary school curriculum innovation and by Judijanto (2024) in analyzing the influence of digital literacy on learning quality.

Data validity was ensured through technique triangulation (interviews, observations, documents), source triangulation (principal, teachers, students), and member checking to confirm the alignment between the researcher's interpretations and the intended meanings of the informants (Lincoln & Guba, 1985). Ethical procedures were fulfilled by obtaining informed consent from all participants, maintaining the confidentiality of informants' identities, and ensuring the protection of sensitive information. This ethical approach is consistent with the procedures used by Candira et al. (2025) in their qualitative research on evaluating Islamic education learning.

By integrating qualitative case study methodology with the application of ethical research principles, this method is expected to produce authentic, contextual findings that contribute meaningfully to the development of digital leadership within educational institutions.

## 3. RESULTS AND DISCUSSION

This section presents the research findings collected through in-depth interviews, observations, and document analysis, which were then analyzed and discussed integratively in accordance with the theoretical framework of digital leadership, transformative leadership, and educational management. The main findings of this study illustrate how the principal of SMPN 8 Toboali leads digital-based learning transformation through a clear vision, a strong digital culture, teacher professional development, effective digital communication, the optimization of the school's social media, positive student responses, as well as the provision of facilities and solutions to digital challenges.

**Figure 1. Components of learning transformation through digital leadership**

### 3.1. The Principal's Digital Vision

The digital-based learning transformation at SMPN 8 Toboali is rooted in visionary leadership capable of translating global challenges into the school's local context. The principal plays a crucial role in formulating a digital vision that is not merely administrative, but one that reflects a direction of educational change that is contextual, progressive, and adaptive to technological developments. He stated that the school's digital vision is:

"*Becoming an Innovative, Collaborative, and Responsive Digital-Based School in the Face of Contemporary Change*." (Informant 1)

This vision was not declared symbolically; rather, it was systematically elaborated in the School Work Plan (RKS) through a mapping of needs and local potentials within the institution. In its implementation, the principal prioritizes three main pillars as the foundation of digital transformation: strengthening ICT-based learning quality, improving the efficiency of school management, and optimizing public services through digital platforms.

The formulation process of this vision was not carried out in a top-down manner. Instead, it involved all elements of the school through participatory forums. The principal created space for teachers to take an active role in designing digitalization strategies aligned with the specific needs of their subjects and the characteristics of their students. One teacher stated:

"*Teachers were involved in the formulation process through school work meetings, inter-teacher forums, and discussions that addressed the digital needs of each subject*." (Informant 2)

This statement illustrates that the direction of digital policy at SMPN 8 Toboali is constructed through a collaborative approach that prioritizes open communication between leadership and policy implementers. These forums function not only as platforms for expressing opinions but also as avenues for aligning policies with actual needs in the field.

Moreover, the participatory process is strengthened through structured discussions, such as Focus Group Discussions (FGDs), conducted before the planning documents are finalized. Teachers are given the freedom to propose practical, applicable solutions, including the use of simple technologies relevant to instructional needs. Another teacher remarked:

"*We were given opportunities to share ideas and suggestions, especially regarding the use of relevant technologies for learning. So the process was quite participatory and open*." (Informant 3)

This statement reinforces that teacher participation is not merely a formality but is integrated into the school's strategic decision-making processes. This egalitarian approach strengthens the sense of shared ownership of the digital vision and enhances teachers' confidence and enthusiasm in implementing digital transformation initiatives.

The principal also demonstrates consistent commitment in guiding the implementation of the vision, not only through formal documents but also through

direct motivation, intensive coaching, and facilitating creative activities for both teachers and students. He explained:

"*I encourage teachers to try producing learning videos even with limited equipment, and I provide space for students to be actively involved in digital-based activities such as creating educational content, school podcasts, or graphic design integrated into extracurricular programs*." (Informant 1)

Such leadership reflects the principal's role as an inspirer and active change agent in cultivating a culture of digital learning. The principal does not simply direct; he actively fosters initiative and creativity at all levels. Awareness of resource limitations becomes a driving force to optimize existing potentials through adaptive and solution-oriented approaches.

Overall, the digital vision formulated at SMPN 8 Toboali demonstrates characteristics of leadership that are visionary, collaborative, and transformative. The learning transformation driven through digital leadership underscores the strategic role of the principal as the guide of change, facilitator of digital culture, and collaborative agent capable of synergizing all school elements. The digital vision, formulated and disseminated through participatory processes, strongly aligns with the principles of distributed leadership, where decision-making is not centralized but shared among key factors such as teachers and students (Spillane, 2005). Through the involvement of all school members, responsiveness to local challenges, and the reinforcement of innovative values, the principal has successfully established a strong foundation for the creation of an inclusive, creative, and sustainable digital learning ecosystem, even amid infrastructural and geographical limitations.

### 3.2.Digital Learning Culture

The digital learning culture at SMPN 8 Toboali has emerged as the result of systematic efforts carried out by the principal together with all elements of the school community. This transformation did not occur instantly but developed through stages that emphasized collective awareness, active participation, and a deep understanding of the importance of adapting to educational technology. The principal positioned technology not as a replacement for teachers, but as a support system that enhances learning effectiveness and meaning. He emphasized:

"*I started by helping teachers and students understand that technology is not a substitute for teachers, but a tool that makes the learning process easier*" (Informant 1).

This statement reflects a strategic vision in building the foundations of a digital culture that is not merely technical but also philosophical. By framing technology as a pedagogical partner, the principal succeeded in minimizing resistance and fostering a constructive perception of digitalization among the school community.

The strengthening of the digital culture began with improving teachers' capacities. Through internal training, sharing sessions, and the formation of learning communities, teachers showed strong enthusiasm in adapting to technological change. Teachers' initiatives to exchange experiences demonstrate the growth of a collaborative and autonomous learning ecosystem. One teacher stated:

"*Teachers started sharing knowledge about applications and learning platforms, such as Canva, Quizizz, and others. There is a sense of togetherness because we feel like we are learning and growing together*" (Informant 2).

This illustrates that the digital learning culture at the school has grown organically, driven by real needs and a collective spirit to move forward. The process did not involve coercion; instead, it developed through mutual support and a shared determination to adapt to change.

Student participation has also been an essential aspect of strengthening the digital culture. Changes in learning methods were directly experienced by students through more interactive and enjoyable learning activities. One student shared:

"*Now teachers often use LCD projectors, videos, and digital quizzes, so lessons feel more interesting… we also learn through PowerPoint or YouTube*" (Informant 4).

Another student added:

"*When teachers start using digital quizzes or playing videos, I get more excited. Especially when the material is designed like a game, it becomes really fun*" (Informant 5).

These statements show that digital learning approaches have successfully increased student engagement and motivation. Technology-based teaching innovations not only make it easier for students to understand the material but also create a more dynamic and participatory classroom atmosphere.

Beyond extracurricular activities, the digital culture is further strengthened through creative extracurricular programs. The school provides spaces for students to express themselves through activities such as school podcasts, the production of educational content, and graphic design competitions. These initiatives demonstrate that technology is used not only for learning consumption but also as a medium for production that builds 21st-century skills.

Among teachers, a reflective habit has developed as part of their professional culture. Teachers have formed informal groups to evaluate the effectiveness of digital media, discuss technical challenges, and design new strategies to make learning more interactive. One teacher explained:

"*There is a collaborative spirit that has formed, and gradually all teachers are becoming accustomed to using technology in their teaching process*" (Informant 3).

This reflects a cultural shift from merely receiving policy to becoming active agents of change. Teacher collaboration has become an essential foundation for sustaining the transformation, creating an innovative culture that is adaptive to the dynamics of educational technology.

The school's commitment to digital culture is also visualized through various media. Digital teaching modules, digitalization campaign banners, and regular posts on the school's social media platforms serve as forms of public communication that reinforce the school's digital identity. One student expressed:

"*This school is now becoming more widely known because it often posts activities on Instagram or the school website*" (Informant 4).

These activities not only strengthen internal culture but also build a positive public image for the school. Social media serves as a window of transparency and a tool for extending the impact of digital transformation to the broader community.


**Figure 2. Implementation of ICT in learning at SMP Negeri 8 Toboali**


**Figure 3. Website of SMP Negeri 8 Toboali**

These findings indicate that the digital learning culture has grown through a collaborative, reflective, and adaptive approach. Teachers are not merely implementers but also innovators in developing technology-based learning methods. Students respond positively to the use of digital media in the learning process, as reflected in their increased enthusiasm, interaction, and motivation. This reinforces previous findings regarding digital natives, who tend to be more responsive to visual and interactive learning approaches (Prensky, 2009). Overall, the strengthening of the digital learning culture at SMPN 8 Toboali demonstrates that the success of digital transformation is not determined solely by the availability of technological devices, but also by the establishment of values, habits, and collective mindsets that support innovation. This culture serves as a crucial pillar for sustaining change and encourages members of the school community to become active agents in creating a sustainable technology-based educational ecosystem.

### 3.3.Teacher Professional Development Strategies

Teacher professional development strategies at SMPN 8 Toboali serve as a key foundation for driving the success of digital-based learning transformation. The principal views teacher competency strengthening not merely as the technical mastery of digital tools, but also as the ability to understand pedagogy, manage digital classrooms, and cultivate the mental readiness needed to navigate dynamic changes. As an instructional leader, the principal designed teacher training programs conducted every semester and aligned with real needs in the field. He stated:

"*The development of teacher competency is the key to the success of digitalization. Every semester, we conduct training based on what teachers need, such as the use of Google Workspace for Education, Canva for Education, and LMS platforms. I also establish partnerships with the District Education Office and teacher communities to bring in training speakers. Beyond formal training, we have also created an internal*

*mentoring team consisting of teachers who are already proficient. They assist other teachers informally and flexibly*." (Informant 1)

This statement illustrates the strategic approach adopted by the school in building teacher competencies, which includes not only formal training but also peer support through internal mentoring mechanisms. This approach is holistic and sustainable because training does not stop at material delivery; it is followed by ongoing technical and emotional support that facilitates direct practice in the classroom.

One of the teachers described her experience participating in various training programs, both internal and external. She emphasized how these trainings supported the design of more engaging and interactive technology-based instructional materials. She stated:

"*Most recently, I attended training on Coding and Artificial Intelligence learning, as well as several previous trainings, such as creating teaching materials using Canva and others. These trainings greatly helped me in designing interactive materials, creating online assessments, and managing digital classrooms more effectively*." (Informant 2)

This explanation highlights the importance of strengthening teacher capacity not only in mastering digital tools but also in building pedagogical creativity aligned with the needs of today's learners. It demonstrates that the training provided has indeed influenced daily teaching practices.

Furthermore, teacher professional development at SMPN 8 Toboali does not rely solely on structural policies but also grows from the collaborative culture among teachers themselves. Teachers are given space to share experiences, exchange knowledge, and discuss implementation challenges in informal forums. One teacher explained:

"*The learning culture in this school has developed positively. We feel encouraged to learn from one another and to share experiences in using educational technology. For example, teachers who are more skilled in certain applications often share tips through WhatsApp groups or internal training sessions*." (Informant 3)

This collaborative professional culture becomes a social mechanism that accelerates the spread of innovation and strengthens the sense of togetherness in facing digital transformation. Beyond serving as a platform for exchanging ideas, such collaborative practices foster a collective awareness to continuously adapt and innovate in developing meaningful learning.

The teacher development model at SMPN 8 Toboali combines structured formal training, flexible peer mentoring, and a supportive learning culture. From an educational management perspective, the teacher development strategies implemented by the principal reflect the principles of transformational leadership, in which leaders guide, motivate, and develop teacher potential through formal training and peer mentoring (Leithwood et al., 2008). These efforts strengthen not only technical competence but also cultivate a reflective and supportive professional culture. This model enhances teachers' technological proficiency while nurturing reflective and

adaptive dispositions that are essential for creating high-quality and contextually relevant digital learning. The digital transformation at this school demonstrates that change does not begin merely with devices or policies but with the readiness and empowerment of educational actors as the primary agents of transformation.

### 3.4. Digital Communication in School Management

The use of digital media in school communication management at SMPN 8 Toboali has become an integral part of efforts to create governance that is efficient, transparent, and responsive to the needs of all stakeholders. The principal views digital communication not merely as a tool for delivering information, but also as a bridge for collaboration between school leaders, teachers, students, and parents. He explained:

"*We use various digital media that are easily accessible to everyone. For internal communication among teachers, we use WhatsApp groups as reminders for activities. For parents, we regularly deliver information through WhatsApp Broadcast and Google Forms for surveys or feedback*." (Informant 1)

This communication strategy demonstrates how the school's management has adapted to contemporary needs, where information must move quickly, accurately, and be accessible to all parties without geographical or time constraints. The WhatsApp Group has become the main platform for conveying agendas, policy information, and daily technical coordination. Its effectiveness is also directly experienced by teachers. One teacher explained:

"*If there is anything important, it must be delivered through the WhatsApp group*." (Informant 2)

This statement shows that digital platforms have become embedded in the school's daily operations. Teachers no longer rely solely on face-to-face meetings to obtain important information. The digital communication space is used not only for coordination, but also for informal discussions among teachers or between teachers and the principal. Another teacher added:

"*The principal is also open to input from teachers, and we are given space to ask questions if something is unclear*." (Informant 3)

This highlights the existence of a complementary two-way communication pattern: on one hand, as a tool for technical coordination, and on the other as a space for open, inclusive, and constructive dialogue.

Students also experience the direct benefits of the school's digital communication system. In their daily learning activities, students receive information, assignments, and learning links through digital media such as WhatsApp, Google Drive, and the school's LMS. One student shared:

"*It is usually through WhatsApp when there are assignments or important information. We were also given Google Classroom and Google Drive links to submit our work."* (Informant 4)

The involvement of students within this digital communication ecosystem extends the function of digital media beyond administrative purposes, positioning it as part of a contextual and real-time learning practice. This creates an integrated communication system across educational actors.

The digital communication approach at SMPN 8 Toboali reflects a progressive and adaptive management pattern. The use of platforms such as WhatsApp, Google Forms, and the LMS demonstrates that the school leader can align communication policies with local conditions while upholding principles of information transparency and accountability (Gunawan et al., 2020; Sa'diyah & Noorjanah, 2022). The integration of digital media has successfully created a communication system that is fast, flexible, and participatory. This success is supported by the principal's openness to innovation and the ability to build a dialogic and collaborative communication culture. Thus, digital communication is not merely a technical instrument but a crucial foundation that supports learning transformation and strengthens school governance that is inclusive and future-oriented.

### 3.5. Optimization of Social Media for School Branding

The optimization of social media at SMPN 8 Toboali has become one of the main strategies for strengthening external communication and building a positive public image of the school. The use of various digital platforms is not only focused on disseminating administrative information, but also directed toward media publication, documentation, and a strategic tool for establishing the school's branding as a modern, participatory, and adaptive educational institution.

The principal stated that the school consistently maintains a digital presence through several official channels, including the school website, Instagram and Facebook accounts, as well as a YouTube channel. All these media platforms are professionally managed by the school's public relations team and function to strengthen information transparency and expand the school's communication reach to the wider community. He explained:

"*We have an official school website and social media accounts on Facebook and Instagram to reach the wider community. In addition, for reporting student progress, we use digital platforms such as e-Rapor. We also created a school YouTube channel as a medium for publishing students' work and documenting school activities*." (Informant 1)

The optimization of these digital media is not carried out in a one-way manner. The principal fosters synergy between school leadership, teachers, and students in the process of producing and managing the school's digital content. One of the teachers who serves as the head of the school's media team stated that this activity is not only intended as an institutional promotion tool, but also as a space for expression and creativity for members of the school community. He said:

"*Together with the student media team we formed, we are responsible for creating flyers for school events, documentation, writing news for the school website, certain videos, podcasts, and several other social media content*." (Informant 2)

This statement indicates a collective effort to integrate students' roles in building the image of a school that is active, creative, and closely connected to today's digital ecosystem. The active involvement of students in the digital publication process also provides a positive psychological impact by strengthening their sense of pride and engagement within the school environment.

One student mentioned that the school's active presence on social media has improved its public image, attracting attention from parents, alumni, and students from other schools. He stated:

"*The school is now becoming more well-known because it often posts activities on Instagram or the school website. Many parents and alumni see and comment as well*." (Informant 4)

This statement is reinforced by another student who confirmed that the school's social media content serves as a window for outsiders to understand the school's dynamics and activities. He said:

"*Our school is now very active on Instagram. My friends from other schools can also see and know that our school has many activities*." (Informant 5)

These findings show that the digital branding strategy implemented by SMPN 8 Toboali is built strategically, not merely through routine postings but through an approach that involves all components of the school. This strategy aligns with the concepts of strategic school communication and school branding, in which educational institutions use social media as a tool to build a positive narrative consistently and systematically (Anggraini et al., 2025; Susanti et al., 2024). With visionary leadership, professional media management, and enthusiastic student participation, social media becomes not just a communication tool but a representation of the school's identity within the digital public space. SMPN 8 Toboali not only disseminates information but also "tells a story" About its values, spirit, and strengths through authentic and engaging visual content. This approach simultaneously expands the school's social reach, strengthens public trust, and enhances the institution's attractiveness within a digital-based educational ecosystem.

### 3.6.Students' Responses to Digital Transformation

The digital transformation in education has not only influenced managerial and pedagogical aspects but also brought significant changes to students' behavior, perceptions, and learning motivation. At SMPN 8 Toboali, the integration of technology into the learning process has created more interactive, enjoyable, and meaningful learning experiences for students. Findings from the in-depth interviews show that digital transformation has become a positive catalyst in increasing student engagement, improving material comprehension, and shaping new patterns of interaction in the classroom.

One student from Grade VIII B stated that since the school began implementing digital-based learning, the classroom atmosphere has become more engaging and far less monotonous. She expressed:

"*Since the school started implementing digital learning, I feel that our learning has become more modern and not as monotonous as before. Now teachers often use LCDs, videos, and digital quizzes, so lessons feel more interesting*." (Informant 4)

She further explained that learning through digital media generates a more active and conducive classroom environment. Visual activities such as instructional videos help increase students' focus and minimize distractions during lessons:

"*The atmosphere is more enjoyable and livelier, but still focused. For example, when the teacher shows a learning video, my classmates become more enthusiastic and don't talk by themselves*." (Informant 4)

A similar statement was conveyed by a student from Grade VIII A. He emphasized that the presence of technology makes learning feel fresher and more varied. Teachers no longer rely solely on lectures and textbooks, but now utilize projectors, laptops, and visual media such as animations or historical videos when delivering lessons:

"*In the past, we only learned using the whiteboard and textbooks. But now teachers often use laptops or projectors. So in my opinion, the learning process feels more modern and not the same as before*." (Informant 5)

Positive student responses are also reflected in their use of various applications and digital platforms that facilitate communication and learning tasks. Media such as WhatsApp, Google Forms, and the school's LMS have become part of their daily routines for receiving information and submitting assignments:

"*Yes, several times. When the teacher has an important announcement, it's usually sent to the class WhatsApp group. Some teachers also collect assignments through Google Forms and the LMS*." (Informant 5)

Nevertheless, students acknowledge that they sometimes face technical challenges, such as unstable internet connections or limited access to devices. However, overall, they still perceive digital learning as more enjoyable and motivating. This is reinforced by a student who stated:

"*I prefer learning when technology is used. Because if it's only writing notes and reading textbooks, sometimes I get sleepy. But when the teacher uses digital quizzes or plays videos, I feel more excited*." (Informant 5)

Another student highlighted that they have become more accustomed to using smartphones or laptops productively for academic purposes, although still under the supervision of teachers:

"*We now use our phones or laptops more often for assignments, even though it is still supervised*." (Informant 4)

These statements indicate that digital transformation has reshaped students' perspectives and learning habits. Digital media have not only become instructional tools but also platforms that enhance participation, creativity, and student autonomy.

Within the framework of the principal's digital leadership, students' responses serve as an important indicator that the shift in learning culture is functioning effectively and contextually. These findings align with Prensky's (2006) argument that digital-native learners tend to prefer visual, interactive, and technology-mediated learning approaches. They learn not only from text but also through exploring multimedia content that makes the learning process more dynamic and relevant to their everyday experiences.

Thus, students' responses at SMPN 8 Toboali illustrate that digital transformation is not merely about replacing learning tools or media, but rather represents a paradigm shift that shapes a more adaptive, participatory, and future-oriented learning environment.

### 3.7. Infrastructure Support and Solutions to Digital Barriers

Transforming education through digital innovation requires adequate facilities and infrastructure, as well as readiness to address various technical and operational challenges that may arise. At SMPN 8 Toboali, attention to facilities and infrastructure forms an integral part of the school leadership's strategy in building a sustainable and adaptive digital learning system.

In the school's planning process, budget management is directed strategically to meet the essential needs of digitalization, including the procurement of devices such as laptops, projectors, internet networks, and computer laboratories. The principal emphasized:

"*We maximize BOS funding, support from the school committee, and assistance from the local government to procure devices such as laptops, projectors, and Wi-Fi networks. Beyond procurement, we also ensure sustainability through routine maintenance and regular inventory checks*." (Informant 1)

This procurement policy not only focuses on providing devices but also considers sustainability and efficient use. The school formed an internal technical team to handle minor device issues and established the one teacher one laptop program as a long-term solution to support consistent integration of technology into the learning process.

However, conditions in the field show that the distribution of devices is not yet fully even. One teacher explained that the limited number of projectors requires teachers to move equipment from one room to another, which takes up preparation time before teaching:

"*The ICT facilities are fairly good; we have six projectors, twenty laptops, and other equipment to support learning. However, for projectors and speakers, it would be better if each classroom had its own unit, so teachers can focus on teaching without having to prepare and carry projectors, cables, and speakers from one class to another*." (Informant 2)

Another teacher added that although devices are becoming more available, they still need to be used alternately, especially when class schedules overlap:

"*We have several projectors, laptops, and internet access, but the number is not yet proportional to the needs of teachers and students. Sometimes we have to take turns when we want to use the equipment*." (Informant 3)

Similar challenges are also experienced by students. The main obstacles stem from unstable internet access and an insufficient number of computers. One student explained:

"*There is Wi-Fi, but sometimes the network is weak. For computers, we use them during ICT classes in the lab, but the number is limited. I hope that in the future every classroom can have an LCD projector and a faster internet connection*." (Informant 4)

Another student stated that although digitalization helps them understand lessons and communicate with teachers, technical problems still frequently occur:

"*It feels easier because if something is unclear, we can ask right away. But sometimes it gets confusing when the link errors or the internet is slow*." (Informant 5)

In response to these challenges, the school has developed adaptive solutions based on collaboration and capacity building. Digital literacy improvement is carried out through training for teachers and students, as well as the establishment of internal learning groups that support each other in using devices and learning platforms. Senior teachers who are more proficient are encouraged to mentor other teachers in resolving technical issues independently.

Furthermore, students are also actively involved in creative digital programs such as video production, social media content creation, and school podcasts. These strategies not only optimize the use of available devices but also cultivate a participatory and solution-oriented digital culture.

From the perspective of educational economics, digital transformation at SMPN 8 Toboali demonstrates a realistic approach to budget limitations. The principal effectively optimizes available resources, such as BOS funds and collaboration with the school committee, to provide ICT tools that support learning. This resource management strategy reflects a strong understanding of efficiency and effectiveness in educational budget management within a peripheral school context (Makatara, 2025). The gradual steps taken by SMPN 8 Toboali show strong commitment and responsive leadership in addressing the challenges of digital transformation. Although the situation is not yet ideal, the participatory approach in developing solutions has enabled the school to build a solid foundation for technology-based learning. The transformation that occurs is supported not only by devices but also by systems, habits, and collaboration that continue to grow within the school's dynamic ecosystem.

## 4. CONCLUSION

Based on the research conducted at SMPN 8 Toboali, the principal's digital leadership has proven to play a strategic role in promoting innovative, collaborative, and technology-adaptive learning. The principal not only formulated a digital vision but also implemented it through teacher professional development, the strengthening of digital culture, the optimization of technology-based communication, and the use of social media to enhance the school's identity. The impact is evident in the increased engagement of teachers and

students, the formation of a participatory digital ecosystem, and more efficient school management. These findings indicate that visionary and responsive digital leadership can catalyze learning transformation, even within limited infrastructural conditions. The implications of this study include the need to strengthen principal capacity through training, government policy support, and interschool partnerships. The practices implemented at SMPN 8 Toboali may also serve as a model for other schools, with adjustments based on local characteristics, thus opening opportunities for the future development of digital leadership.

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