

Change Management for Digital Transformation in Public Senior High Schools: A Systematic Literature Review and Contextual Analysis from Indonesia

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Abstract: This study conducts a Systematic Literature Review (SLR) and contextualizes the findings through a case study of three public senior high schools (SMAN) in Lebong Regency, Indonesia. Using a Systematic Literature Review (SLR) method adapted from the PRISMA framework, sixteen relevant studies were selected from international and national databases such as Scopus, Taylor & Francis, SpringerLink, SINTA, and Garuda. The analysis employed thematic synthesis to identify major patterns and relationships across studies. The findings reveal four dominant dimensions that influence the success of digital school transformation: leadership and organizational change, teacher competence and digital readiness, technology integration and pedagogical innovation, and sustainability supported by policy and institutional frameworks. The results indicate that effective change management serves as the foundation for achieving systemic and sustainable digital transformation in education. Strong leadership, continuous professional development, adaptive use of emerging technologies, and supportive policies are essential for improving teaching quality and institutional performance. This review concludes that digital transformation in schools is not solely a technological shift, but an organizational and cultural process that requires continuous adaptation and strategic management.

Keywords: Change Management, Digital Transformation, Education Policy, School Leadership, Teacher Competence

A. Introduction

This research specifically focuses on the implementation of change management in digital school transformation across public senior high schools (SMAN) in Lebong Regency, Bengkulu Province, Indonesia. The region represents a rural education context where readiness and digital infrastructure vary widely among schools, providing a representative model for regional education transformation. The necessity for change management in digital school transformation has markedly increased as education systems adapt to rapidly evolving technology. The COVID-19 epidemic

accelerated this trend, relevance. Many schools encounter difficulties in implementing new technology due to a lack of strategic planning and management protocols. In the absence of a strategic strategy, digital transformation initiatives may prove to be inefficient and encounter opposition from stakeholders. Educational institutions necessitate robust change management frameworks supported by effective leadership, efficient communication, and continuous training

Previous studies highlight the critical relationship between change management and digital transformation. Digital transformation requires new skill sets and sophisticated managerial techniques to address issues and competencies. A significant challenge in successful implementation is the absence of requisite skills. To overcome prevalent issues such as ineffective communication, insufficient stakeholder alignment, and inadequate collaboration, effective change management solutions are essential (Furtado, 2025). Structured and phased change management models comprising preparation, planning, execution, and consolidation are considered essential for achieving sustainability in the transformation process (Tsarkos, 2024). Effective school management is crucial; strategic vision and leadership are essential for enhancing digital education and preparing the institution for the future (Nguyet et al., 2025).

Despite the existence of these findings, empirical evidence supporting existing change management methods remains insufficient. Modern frameworks often emphasize higher education or corporate settings, leading to a dearth of research focused exclusively on schools. Furthermore, it is crucial to identify the particular abilities required for successful digital transformation in K-12 education (Mikhridinova et al., 2023). The disparity in digital preparedness between urban and rural schools underscores the necessity for identify knowledge gaps, and guide future research directions (Fundoni et al., 2023). This strategy was chosen as it allows researchers to systematically find, evaluate, and analyze relevant papers on change management in the digital transformation of educational institutions. The method emphasizes transparency, replicability, and neutrality in documenting existing evidence from 2020 to 2025. The field research was conducted from August to September 2025, combining interviews, document analysis, and field observations in SMAN 1, SMAN 2, and SMAN 3 Lebong to contextualize the systematic literature findings.

The research was conducted in three public senior high schools (SMAN 1, SMAN 2, and SMAN 3) located in Lebong Regency, Bengkulu Province, Indonesia. The region is characterized by mixed digital readiness, where schools are transitioning from conventional administrative practices toward integrated virtual learning systems.

The SLR methodology was modified from the PRISMA framework (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), which provides standardized recommendations to ensure clarity and comprehensiveness in review

outcomes (Mishra & Mishra, 2023). This study integrated worldwide and Indonesian research sources focused on digital transformation in educational institutions to improve contextual relevance. The review process comprised four primary steps: preparation, execution, analysis and synthesis, and reporting (García-Peñalvo, 2022).

In the planning phase, the study topic was formulated as: “How is change management employed to enable digital transformation in educational institutions?” A review methodology was established to guarantee uniformity and objectivity. The inclusion the selected papers, followed by thematic analysis centered on the primary research topic. This phase ensured that the review's results could be validated and utilized in subsequent studies on digital transformation in education. Upon the alteration of the PRISMA stages, several methodological modifications were implemented to obtain both global and local perspectives. Indonesian studies were integrated to contextualize compelling schools to adopt digital technologies and devise innovative methods for teaching and learning to provide continuity for all (Harder et al., 2025; Nurdin et al., 2023). The advent of Education 5.0 highlights the integration of digital technology within a comprehensive learning ecosystem that amalgamates human intelligence, creativity, and invention (Rauseo et al., 2023). In this setting, efficient change management is essential to address the challenges associated with digitization and ensure the success of transformation programs.

In the digital era, digital transformation in education is important for maintaining focused efforts to ensure equitable access to digital tools and educational opportunities. Prior research has identified many difficulties and strategies related to digital transformation in education, demonstrating that dynamic capacities and change management are crucial for institutional competitiveness in a rapidly changing environment. However, most modern models are mostly descriptive and lack operational rigor, highlighting the need for more context-specific and up-to-date frameworks to effectively enable digital transformation (Pulido & Taherdoost, 2024). This research offers a comprehensive understanding of change management in the context of digital school transformation. This study introduces an innovative paradigm that underscores the human dimension of transformation, emphasizing ongoing engagement, cooperation, and leadership as critical enablers of sustainable change. This study addresses the persistent digital divide by proposing targeted measures to support rural and underfunded schools (Nhung et al., 2025).

The primary objective of this study is to develop a systematic change management model to assist school leaders in effectively implementing digital transformation initiatives. The study seeks to identify critical competencies required for digital transformation, propose effective strategies to address common challenges, ensure equitable access to digital resources across diverse regions, and enhance leadership and stakeholder engagement to promote sustainable educational outcomes.

B. Methods

This study employed a Systematic Literature Review (SLR) methodology, a rigorous and structured approach for synthesizing existing research on a certain topic. The SLR technique aims to provide a comprehensive synthesis of the literature, criteria comprised works published between 2020 and 2025, focusing on digital transformation, change management, or digital culture inside educational institutions, utilizing empirical or review approaches, and written in English or Bahasa Indonesia. Studies irrelevant to education, non-peer-reviewed articles, and duplicates were excluded.

A comprehensive search was executed across many databases, including Scopus, SpringerLink, Google Scholar, and national databases such as SINTA and Garuda, during the conducting stage. The keywords employed included “change management,” “digital transformation,” “digital school,” “virtual learning environment,” and “education.” The chosen studies were assessed according to predetermined criteria, and their quality was ascertained based on research clarity, methodological rigor, and contribution to educational management (Višić, 2022).

The subsequent phase involved the analysis and synthesis stage, during which data from the selected research were extracted and organized. This encompassed details such as the title, author, research subject, methodology, principal findings, and conclusion. The data synthesis utilized a qualitative thematic methodology (Turk, 2021), in which reoccurring topics were coded and categorized into primary themes. Four major dimensions were identified: (1) leadership and organizational transformation, (2) educator proficiency and digital readiness, (3) technology integration and pedagogical innovation, and (4) sustainability and policy support.

Ultimately, at the reporting phase, the review process and findings were documented transparently to ensure replicability and comprehensibility (García-Peñalvo, 2022). A synthesis matrix was developed to consolidate global theories of change management within the frameworks of evolving educational systems. This integration ensures that the results are globally informed yet locally pertinent, demonstrating the effective use of change management concepts in the digital transformation of schools across diverse educational contexts.

C. Results and Discussion

Based on the systematic analysis of the selected studies, the main findings are presented and discussed thematically in the following section. This section presents the findings obtained from the analysis of sixteen selected studies on change management in digital school transformation. The results are organized thematically to highlight the main patterns, relationships, and implications identified through the systematic review process. The discussion aims to interpret these findings conceptually, connecting them with existing theories and previous research while emphasizing their practical significance for school management and digital education policy.

Table 1 Summary of Selected Studies on Change Management in Digital School Transformation

No	Author & Year	Context / Object	Method	Main Findings / Contribution	Related Theme
1	(Purnomo et al., 2024)	Secondary schools in Indonesia integrating VLE	Qualitative (multi-case)	Identified seven stages of change management and proposed the Digital School Culture (DSC) model.	Leadership & Organizational Change
2	(Blömer et al., 2020)	Flipped Classroom (Germany)	Literature review	Introduced new institutional roles (digital facilitators, coordinators) to sustain digital learning.	Technology & Innovation
3	(Ntsobi & Costa, 2022)	ICT in South African schools	Mixed (desktop review)	Success of ICT integration depends on teacher competence and managerial support.	Teacher Readiness & Policy
4	(Tsarkos, 2024)	Education 5.0 institutions	Conceptual model	Proposed a four-stage change management model: preparation, planning, execution, consolidation.	Leadership & Policy
5	(Álvarez-Gutiérrez et al., 2022)	University digital projects	Literature & case study	Highlighted participatory strategies combining technological, organizational, and cultural aspects.	Leadership & Organizational Change
6	(Harder et al., 2025)	Vocational schools (Germany, Switzerland)	Quantitative (survey)	Confirmed leadership and culture as key drivers of digital readiness.	Leadership & Organizational Change
7	(Azarshab et al., 2025)	School technology integration	Thematic synthesis	Identified human factors and innovative leadership as crucial for digital success.	Leadership & Teacher Competence

8	(Roa González et al., 2025)	Distance and online learning	Conceptual-longitudinal	Addressed challenges of digital divide and literacy; suggested phased adaptation.	Sustainability & Policy
9	(Holtzberg et al., 2023)	Flexible learning (Sweden)	Qualitative (interview)	LMS use depends on teacher collaboration, support, and digital training.	Teacher Competence
10	(El Hadbi et al., 2025)	AI-based tutoring systems	Conceptual-engineering	Linked AI and digital transformation; developed ITS model for adaptive learning.	Technology Integration
11	(Albarracin-Acero et al., 2024)	VR in engineering education	Mixed (action research)	VR enhances student engagement and comprehension in digital classrooms.	Technology Integration
12	(Kulikova & Yakovleva, 2022)	Teacher training (Russia)	Mixed (survey & analysis)	Defined four components of digital pedagogical management.	Teacher Competence
13	(Alali & Wardat, 2024)	Basic education (Jordan)	Quantitative (survey)	Identified barriers: lack of digital systems, training, infrastructure; proposed policy reform.	Sustainability & Policy
14	(Tran et al., 2023)	EDUZ platform (Vietnam)	Quantitative-descriptive	Demonstrated how digital platforms enhance flexibility and policy synergy.	Technology Integration
15	(Timotheou et al., 2023)	K-12 schools (global)	Literature review	Found leadership, policy, and infrastructure as interrelated success factors.	Leadership & Policy
16	(Nurdin et al., 2023)	Science learning (Indonesia)	Mixed (exploratory)	Digital transformation improved teacher management and students' science skills.	Teacher Competence & Innovation

Integrating Technology With Innovative Pedagogical Approaches

Technological advancement is a crucial catalyst for educational reform. Studies by El (El Hadbi et al., 2025) (Albarracin-Acero et al., 2024) demonstrate that the integration of artificial intelligence (AI) and virtual reality (VR) in educational environments significantly enhances student engagement, comprehension, and motivation. These technologies facilitate student engagement with complex concepts through immersive and adaptive experiences, ultimately improving conceptual understanding and recall.

Tran et al. (2023) demonstrate that the EDUZ platform fosters collaboration between teachers and parents, enhancing the flexibility and efficiency of digital classrooms. This platform facilitates multidirectional communication and encourages individualized learning. Timotheou et al. (2023) emphasized that digital transformation in education must extend beyond the mere utilization of new ethical implementation of AI and other emerging technologies in educational institutions to ensure equitable treatment and accountability for all.

In Indonesia, these findings underscore the necessity for national digital education policies and school-level initiatives to collaborate effectively. To attain sustainability, continuous evaluation and cooperative planning are crucial to guarantee that transformation programs progress beyond pilot projects, evolving into a durable, flexible digital environment that promotes both innovation and inclusivity in education.

Comprehensive Discourse

The analysis indicates that change management is the fundamental component of digital school transformation, as it integrates leadership, human competence, technological infrastructure, and policy support into a cohesive system. Unlike earlier research focused on technology adoption, the current literature emphasizes the interconnectedness of human preparation, corporate culture, and sustainable innovation.

This study rectifies a significant research gap by synthesizing diverse information from multiple educational contexts into a unified conceptual framework. The findings indicate technologies and applications. To facilitate pedagogical innovation, a comprehensive curriculum reform, infrastructural enhancements, and an elevation of digital literacy are essential. The results indicate that effective change management in schools must include both technological scalability and the dynamics of teacher-student interaction and curricular redesign, ensuring that innovation substantially improves learning outcomes and promotes sustainable educational practices.

Endorsement of Policies and Sustainability

Successful long-term digital transformation necessitates enabling institutional and policy frameworks. Research by Ntsobi and Costa (2022) and Alali and Wardat (2024) underscores that ongoing governmental support, adequate funding, and systematic monitoring frameworks are essential for the sustainability of digital innovation in educational institutions. These elements ensure that school practices align with broader transformations in education. Tsarkos (2024) asserts that the transition to Education 5.0 necessitates adaptable governance and the that successful digital transformation requires:

1. Robust and visionary leadership to guide strategic direction;
2. Continuous professional development to enhance educators' competencies;
3. Employing digital tools in a flexible and cohesive manner to enhance instruction;
4. Policies that are beneficial and coherent to ensure long-term sustainability

Educational institutions and policymakers are urged to adopt a systematic change management framework that promotes collaboration, continuous assessment, and capacity building. This strategy ensures that initiatives aimed at digitally transforming education result in tangible enhancements in teaching quality, student engagement, and institutional innovation, while also aligning with the broader objectives of national education reform. The findings provide valuable insight for school leaders and policymakers in Bengkulu Province. The proposed framework can serve as a reference for regional education offices to formulate systematic digital transformation programs that align with Indonesia's Education 5.0 vision.

D. Conclusions

This study concludes that effective change management is the essential component of successful digital school transformation. The integration of sixteen studies reveals that leadership, human competence, technology innovation, and governmental support are the four interrelated factors driving this process. School leaders serve as change agents who influence the vision, preparedness, and collaborative culture. The digital competencies of educators influence the extent of pedagogical innovation within the classroom. systems that align national plans with school-level actions. The findings indicate that the cornerstone of effective digital transformation is the establishment of a collaborative learning ecosystem that is inclusive and centered on innovation. This review significantly improves the understanding of applying change management frameworks to educational reform in the digital era. Schools should implement organized, participatory, and context-sensitive strategies to guarantee that digital transformation modernizes teaching practices while enhancing the quality and equity of education. Digital transformation in education include not just technology but also the alteration of organizational structures and cultural practices. This necessitates

continuous professional development, adaptable leadership, and comprehensive support from the entire system. The integration of technology such as AI, VR, and learning management systems can enhance educational outcomes and engagement, provided that educators and institutions are adequately prepared. Sustainability in policy hinges on effective governance, consistent funding, and comprehensive evaluation.

E. Acknowledgement

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References

- Alali,R.,&Wardat,Y.(2024).Empowering education through digital transformation: Confronting educational wastage in basic education schools in Jordan.*International Journal of Innovative Research and Scientific Studies*, 7 (3, 1148-1162). <https://doi.org/10.53894/ijirss.v7i3.3144>
- Albarracin-Acero, D. A., Romero-Toledo, F. A., Saavedra-Bautista, C. E., & Ariza-Echeverri, E. A. (2024). Virtual Reality in the Classroom: Transforming the

- Teaching of Electrical Circuits in the Digital Age. *Future Internet*, 16(8).
<https://doi.org/10.3390/fi16080279>
- Azarshab, E., Ghahramani, M., Abolghasemi, M., & Azimi, E. (2025). Change Management in School Technology Integration: Synthesis of Thematic Summaries. *Computers in the Schools*.
<https://doi.org/10.1080/07380569.2025.2467626>
- Blömer, L., Droit, A., & Vogelsang, K. (2020). May the Change Be with You: The Need for New Roles to Support Flipped Classroom Development. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 12066 LNCS, 532–544.
https://doi.org/10.1007/978-3-030-44999-5_44
- El Hadbi, A., Rziki, M. H., Jamil, Y., Ammari, Z., Bourray, H., & El Ouadghiri, M. D. (2025). Leveraging Artificial Intelligence and Digital Transformation in Intelligent Tutoring Systems to Drive Sustainability. *Lecture Notes in Networks and Systems*, 1402 LNNS, 203–213. https://doi.org/10.1007/978-3-031-91334-1_17
- Fundoni, M., Porcu, L., & Melis, G. (2023). Systematic literature review: Main procedures and guidelines for interpreting the results. In *Researching and Analysing Business: Research Methods in Practice* (pp. 55–74). Taylor and Francis.
<https://doi.org/10.4324/9781003107774-5>
- Furtado, A. R. (2025). Change Management in Digital Transformation: Key Strategies for Successful Implementation. *TAPPICON2025*. <https://www.scopus.com/pages/publications/105012355674?origin=scopusAI>
- García-Peñalvo, F. J. (2022). Developing robust state-of-the-art reports: Systematic Literature Reviews [Desarrollo de estados de la cuestión robustos: Revisiones Sistemáticas de Literatura]. *Education in the Knowledge Society*, 23, E28600.
<https://doi.org/10.14201/eks.28600>
- Harder, A., Schumann, S., & Imboden, S. (2025). The driving force behind change? Digital transformation at vocational schools from the perspective of school management in Switzerland and Germany. *Zeitschrift Fur Erziehungswissenschaft*. Digital Readiness. *Educational Process: International Journal*, 16.
<https://doi.org/10.22521/edupij.2025.16.291>
- Holtzberg, J., Thomsen, M., & Åkesson, M. (2023). Learning Management Systems in Flexible Learning Environments - A Study of Teachers' Experiences. *Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering*, LNICST, 493 LNICST, 3–21.
https://doi.org/10.1007/978-3-031-31392-9_1
- Kulikova, S. S., & Yakovleva, O. V. (2022). Pedagogical Management In The Digital Educational Environment: Issues Of Professional Training For Future Teachers.

- Obrazovanie i Nauka*, 24(2), 48–83. <https://doi.org/10.17853/1994-5639-2022-2-48-83>
- M., & García-Izquierdo, A. L. (2022). Human Resources Analytics: A systematic Review from a Sustainable Management Approach. *Revista de Psicología Del Trabajo y de Las Organizaciones*, 38(3), 129–147. <https://doi.org/10.5093/JWOP2022A18>
- Mikhridinova, N., Ngereja, B. J., Pinilla, L. S., Neumann, D., Wolff, C., & Van Petegem, W. (2023). Competences and the Digital Transformation: Case Study of a German Management Consultancy. 2023 IEEE European Technology and Engineering Management Summit, E-TEMS 2023 - Conference Proceedings, 168–171. <https://doi.org/10.1109/E-TEMS57541.2023.10424045>
- Mishra, V., & Mishra, M. P. (2023). Prisma For Review Of Management Literature – Method, Merits, And Limitations – An Academic Review. *Review of Management Literature*, 2, 125–136. <https://doi.org/10.1108/S2754-586520230000002007>
- Nguyet, N. T. M., Huong, V. T. M., Vinh, B. Q., & Long, P. N. (2025). Cluster-Informed Policy Design for School Administrators in Vietnam: A Data-Driven Perspective on <https://doi.org/10.1007/s10758-022-09631-9>
- Nhung, N. T. H., Kien, P. T., Khanh, M. Q., Tinh, T. T., & Phong, T. D. (2025). Digital transformation in Vietnam's education: Opportunities, challenges, and development strategies. *Multidisciplinary Reviews*, 8(9). <https://doi.org/10.31893/multirev.2025282>
- Ntsobi, M. P., & Costa, K. (2022). Change Management as a requirement for introducing ICT in curriculum delivery – the Gauteng Experience. *New Trends in Qualitative Research*, 11. <https://doi.org/10.36367/ntqr.11.2022.e559>
- Nurdin, D., Marnita, M., & Ghani, M. F. B. A. (2023). Digital Transformation To Improve Teachers' Learning Management And Students' Science Life Skills. *Jurnal Pendidikan IPA Indonesia*, 12(3), 329–342. <https://doi.org/10.15294/jpii.v12i3.44253>
- Pulido, F. L. P., & Taherdoost, H. (2024). Employment of Change Management Models in the Digital Transformation Process. *Lecture Notes in Networks and Systems*, 928 LNNS, 392–405. https://doi.org/10.1007/978-3-031-54671-6_29
- Purnomo, E. N., Imron, A., Wiyono, B. B., Sobri, A. Y., & Dami, Z. A. (2024). Transformation of Digital-Based School Culture: implications of change management on Virtual Learning Environment integration. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186X.2024.2303562>
- Rauseo, M., Harder, A., Glassey-Previdoli, D., Cattaneo, A., Schumann, S., & Imboden, S. (2023). Same, but Different? Digital Transformation in Swiss Vocational Schools from the Perspectives of School Management and Teachers. *Technology*,

- Knowledge and Learning*, 28(1), 407–427. <https://doi.org/10.1007/s10758-022-09631-9>
- Roa González, J., Sánchez Sánchez, N., Seoane Pujol, I., & Díaz Palencia, J. L. (2025). Challenges and perspectives in the evolution of distance and online education towards higher technological environments. *Cogent Education*, 12(1). <https://doi.org/10.1080/2331186X.2024.2447168>
- Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., Monés, A. M., & Ioannou, A. (2023). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. *Education and Information Technologies*, 28(6), 6695–6726. <https://doi.org/10.1007/s10639-022-11431-8>
- Tran, T., Xuan, T. P., & Le, L. T.-H. (2023). EDUZ Solution for Digital Transformation in School. *Proceedings ICSIT, International Conference on Society and Information Technologies*. <https://www.scopus.com/pages/publications/85173659425?origin=scopusAI>
- Tsarkos, A. (2024). Navigating change in education 5.0: A model for successful digital transformation. In *Teaching and Assessment in the Era of Education 5.0* (pp. 256–280). IGI Global. <https://doi.org/10.4018/979-8-3693-3045-6.ch015>
- Turk, N. (2021). Methodology of systematic reviews. *Zdravniski Vestnik*, 90(7–8), 432–442. <https://doi.org/10.6016/ZdravVestn.3138>
- Višić, M. (2022). Connecting Puzzle Pieces: Systematic Literature Review Method In The Social Sciences. *Sociologija*, 64(4), 543. <https://doi.org/10.2298/SOC2204543V>