

## **Collaboration between Teachers and Principals in Vocational Planning Towards Digital Transformation: A Systematic Literature Review**

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**Abstract:** The digital transformation in education requires schools to adapt rapidly to changes in technology, learning methods, and the needs of 21st-century students. In vocational schools, the role of principals and teachers is crucial in planning the direction of technology-based school development. However, many vocational schools still lack optimal collaboration between school leaders and teachers in the planning process – thus, digitization often proceeds without direction. The purpose of this study is to investigate how collaboration between teachers and principals contributes to effective educational planning in vocational schools and how this collaboration supports digital transformation initiatives. This study uses the Systematic Literature Review (SLR) method. This writing's references come from journals, papers, and articles published between 2021 and 2025. Fifteen journals, papers, and articles were reviewed, all sourced from Google Scholar. The results of this study examine key factors such as shared vision, leadership practices, teacher professional development, infrastructure readiness, and collaborative planning processes. Findings indicate that strong leadership led by the principal who encourages formal and informal teacher collaboration significantly improves the school's ability to implement digital transformation strategies. The study concludes with implications for policy, professional development, and school leadership practice, offering a collaborative planning model for vocational education contexts.

**Keywords:** Collaboration in Vocational Planning, Digital Transformation in Education, Principal Digital Leadership, Teacher Professional Development, Vocational School Management

### **A. Introduction**

The rapid advancement of digital technologies and the emergence of Industry 4.0 have transformed the landscape of vocational education worldwide. Vocational schools are expected not only to prepare students with technical and employability skills but also to integrate digital competencies, innovation, and adaptive learning systems that are aligned with the needs of modern industry. As a result, educational planning in

vocational schools must undergo a strategic shift toward digital transformation, requiring leadership, collaboration, and systematic organizational change (Benešová & Tupa, 2020).

In this context, the role of the principal and teachers becomes central to shaping the school's readiness and capability for transformation. Research over the past five years has consistently emphasized that digital transformation in education is not merely a technological process but a human and organizational one, dependent on shared vision, collective decision-making, and distributed leadership (Ifenthaler & Egloffstein, 2021; Arntzen et al., 2022). Principals are responsible for strategic direction, resource allocation, and policy alignment, while teachers serve as curriculum implementers, classroom innovators, and key actors in pedagogical change. Therefore, collaboration between principals and teachers is crucial for effective education planning, especially in vocational schools where curriculum and industry alignment are constantly evolving.

Previous studies have examined leadership effect on school digitalization, teacher readiness for technology integration, and strategic planning in vocational institutions. However, there remains a research gap regarding how collaborative planning specifically between teachers and principals' shapes digital transformation outcomes, particularly in the context of vocational schools in developing countries (Yigit et al., 2023). This gap highlights the need for deeper theoretical and practical exploration of collaborative models in educational planning.

This paper aims to analyze the collaborative role of teachers and school principals in designing and implementing education planning strategies that support digital transformation in vocational schools. The study focuses on the following research questions:

1. How do principals and teachers collaborate in planning for digital transformation in vocational schools?
2. What enabling factors and challenges influence this collaboration?
3. What collaborative planning model can be proposed to strengthen digital transformation in vocational education?

The findings of this study are expected to contribute to the fields of educational leadership, vocational pedagogy, and school digital transformation by offering a structured framework for collaborative planning among school stakeholders.

## **B. Methods**

This study adopted a Systematic Literature Review (SLR) approach to synthesize empirical evidence on teacher-principal collaboration in educational planning for digital transformation in vocational schools. The review process followed a

transparent, systematic, and replicable procedure, guided by the PRISMA 2020 framework, encompassing the stages of identification, screening, eligibility assessment, and inclusion.

**Literature Search Strategy:** The literature search was conducted using Google Scholar, in accordance with the sources specified in the research protocol. To ensure contemporary relevance, the search was restricted to studies published between 2021 and 2025. The following keyword combinations were applied using Boolean operators: “vocational school” AND “digital transformation” “principal leadership” AND “teacher collaboration” “education planning” AND “digital leadership” “TVET” AND “digital competencies”.

These search strings were designed to capture studies addressing school leadership, collaborative practices, educational planning, and digital transformation within the vocational education context.

#### *Inclusion and Exclusion Criteria*

**Inclusion Criteria:** Studies were included if they 1) Were published between 2021 and 2025; 2) Appeared in peer-reviewed journals, academic proceedings, or verifiable scholarly publications; 3) Examined at least one of the following themes: digital leadership, teacher collaboration, educational planning, digital transformation, or digital and AI-related competencies in education; 4) Focused on secondary education, particularly vocational or TVET institutions. Were available in full-text format.

**Exclusion Criteria:** Studies were excluded if they 1) Lacked a clear connection to teacher–principal collaboration or digital transformation in education; 2) Were primarily opinion-based without empirical or methodological support; 3) Were not accessible in full text; 4) Originated from non-scholarly sources, such as blogs, news articles, or informal report.

## **C. Results and Discussion**

### **Results**

The results of the study on Collaboration between Teachers and Principals in Vocational Planning Towards Digital Transformation from 15 selected journals can be seen in the following table.

**Table 1. Selected Journal Articles**

No	Journal Title and Author	Research Object	Research Method	Results	Conclusion
1	Examining Teachers' Perspectives on School Principals' Digital Leadership Roles and Technology Capabilities during the COVID-19 Pandemic and (Karakose et al., 2021)	Teachers and principals at secondary level (SMA) in the context of digital leadership	A quantitative study based on a survey of teacher perceptions	Digital leadership increases teachers' motivation and readiness to use technology.	Digital literacy effectively strengthens teachers' capacity in the digital era.
2	Examining the Role of School Leadership in the Digital Advancement of Educational Organizations and (Raptis et al., 2024)	School leaders and teachers in digital education organizations	Qualitative and conceptual analysis	School leadership plays a vital role in the digital advancement of educational organizations	Digital education planning requires an active role from school leaders.
3	Relationship between digital preparedness and digital integration: mediation evidence on the role of school climate and (Liu et al., 2025)	Secondary schools with a focus on digital readiness and school climate	Quantitative study with mediation analysis	School climate mediates the relationship between teachers' digital readiness and technology integration.	A conducive school climate supports the success of school digitalization.
4	Principals' digital transformational leadership, teachers' commitment, and school effectiveness and (Berkovich & Hassan, 2025)	Principals and teachers in the context of digital transformational leadership	Correlational studies using structural models	Digital transformational leadership influences teacher commitment and effectiveness.	Digital transformational leadership contributes to educational effectiveness.
5	The influence of school principals' digital leadership on teachers' competency in	Teachers and principals regarding AI	Thematic systematic review	Digital leadership enhances teachers'	Teacher collaboration and digital leadership

	integrating artificial intelligence: a systematic thematic review and (Zeng et al., 2025)	competencies in education.		competency in integrating AI.	are key to AI integration in schools.
6	Principals' Digital Leadership Competencies in the Fourth Industrial Revolution: Teachers' Perspectives and (Okunlola & Naicker, 2025)	High school teachers and principals in digital leadership competency assessment.	Descriptive survey based on teacher perception	Teachers assess the principal's digital leadership as an important factor in school transformation.	Digital leadership shapes the direction of digital transformation in high schools.
7	Leading digital innovation in schools: the role of the open innovation mindset and (Witthöft et al., 2024)	Schools and leaders implementing digital innovation	Qualitative analysis and case study of school innovation	School leaders' open innovation mindset strengthens the culture of digital innovation.	School digital innovation requires open and collaborative leadership.
8	Research trends on digital school leadership over time: Science mapping and content analysis and (Wollscheid et al., 2025)	Digital school leadership studies in various countries	Bibliometric and content analysis (meta-analysis)	Research trends show an increasing focus on collaboration and digital leadership.	The global research focus is shifting to digital leadership and collaboration.
9	Teacher collaboration and students' digital competence and (Castaño Muñoz et al., 2023)	Teachers and students in the context of digital collaboration	Correlational study between collaboration variables and student competence	Teacher collaboration improves students' digital competence	Teacher collaboration is the foundation for developing students' digital competencies.
10	Teachers Making Sense of Principals' Leadership in the Context of Collaboration within and across Schools and (Sahlin, 2023)	Teachers and principals in collaborative leadership	Descriptive qualitative approach	Teachers understand collaborative leadership as the key to cross-school collaboration.	Cross-school collaboration strengthens participatory leadership.

11	The urgency of anti-bullying digital literacy in habituating the character of junior high school students in Yogyakarta city and (Efianingrum et al., 2025)	Junior high school students regarding digital literacy and character	Descriptive quantitative approach	Digital literacy effectively shapes character and prevents bullying.	Digital literacy plays an important role in strengthening students' character.
12	Digital Literacy Education and Cyberbullying Combat: Scope and Perspectives and (Shahzad et al., 2024)	Teachers and students in digital literacy learning	Literature and conceptual studies	Digital literacy programs increase awareness of digital ethics.	Digital literacy planning strengthens digital ethics in schools.
13	The impact of digital leadership on teachers' technology integration during the COVID-19 pandemic in Kuwait and (AlAjmi, 2022)	Teachers and principals in Kuwait in implementing digital leadership.	Quantitative survey	Digital leadership has a significant impact on teachers' technology integration.	Digital leadership improves teacher competency in secondary schools.
14	How can principal leadership practices promote teacher collaboration to improve teaching and learning? And Meyer et al., 2023)	Teachers in collaboration promoted by the school principal	Qualitative analysis	School leadership encourages teacher collaboration in lesson planning	Collaboration between teachers and principals increases the effectiveness of planning.
15	Validity of Integrated Inquiry-Based E-book Character Education and (Ramdani et al., 2023)	Teachers and students regarding inquiry-based digital media for character education	Research and Development (R&D) model Borg & Gall	IE-book inquiry-based improves students' character values.	Digital media can be an effective means of character education

## **Discussion**

Based on the 15 readings above and a review, the author then connects them with the research title, namely Collaboration between Teachers and Principals in Vocational Planning Towards Digital Transformation, where from the journal review that has been carried out. From the 15 articles and journals that are the literature in this research, it can be seen that collaboration between teachers and principals is an important pillar in the success of educational transformation, especially in the vocational high school (SMK) environment. In the digital era, collaboration extends beyond administrative coordination to strategic planning that integrates technology into the curriculum, learning, and school management. This collaboration is crucial because vocational education focuses on practical skills that require technology to adapt to industry needs. Therefore, a productive collaborative relationship between teachers and principals is fundamental to creating innovative educational plans that are relevant to the demands of the digital workplace. Teachers' digital readiness is not only related to their ability to use digital devices, but also their ability to adapt teaching methods to the needs of technology-based industries. Collaboration with school principals allows for the creation of ongoing training and professional development strategies for teachers relevant to the era of digital transformation. Based on findings and theoretical analysis, it can be concluded that effective collaboration between teachers and principals creates synergy in decision-making, learning innovation, and the development of schools' digital capacity. The principal's digital leadership drives the direction of transformation, while teacher readiness drives implementation in the field. This collaboration also creates a learning organization, where every element of the school is actively involved in the change process. In the context of vocational education, this synergy strengthens the school's competitiveness in producing graduates with digital competencies that meet the demands of the industrial.

## **D. Conclusions**

This systematic review confirms that collaboration between teachers and principals is a critical component in fostering effective educational planning for digital transformation in Vocational High Schools (VHS). Overall, the findings indicate that successful digital transformation is not determined solely by technological readiness, but is strongly influenced by collaborative practices, digital leadership, and the organizational capacity of schools to manage change strategically. This review contributes a synthetic model of collaborative planning for digital transformation in vocational education, highlighting the symbiotic relationship between principals' digital leadership and teacher agency. Within this model, principals are positioned as transformational leaders who articulate a clear digital vision, provide policy and structural support, and cultivate a culture of innovation. Teachers, in turn, act as key

agents of implementation by driving pedagogical innovation and integrating digital technologies into teaching and learning processes.

More specifically, several key conclusions can be drawn. First, teacher–principal collaboration serves as a strategic foundation for digital transformation planning, as it enables the development of adaptive programs that are responsive to industry needs and technological advancements. Second, principals’ digital leadership plays a central role in establishing an innovation-oriented school culture by providing strategic direction, motivation, and internal policy support. Third, teachers’ digital readiness and agency significantly contribute to the successful implementation of digital initiatives, particularly through their digital competence and pedagogical preparedness. Fourth, a collaborative school climate functions as an important mediator that strengthens the relationship between digital leadership and the quality of teacher collaboration. Finally, future directions of digital transformation increasingly involve the integration of intelligent technologies such as Artificial Intelligence (AI), which requires more intensive collaboration in policy formulation, professional development, and the creation of adaptive learning ecosystems. Overall, these findings underscore that digital transformation in vocational schools is a systemic process that extends beyond technology adoption to include pedagogical, organizational, and cultural dimensions.

School principals are encouraged to establish digital innovation committees that involve teachers from diverse vocational fields to support continuous planning, monitoring, and evaluation of digital transformation initiatives. Teachers should be positioned as *co-designers* in the development of digital curricula to ensure that technology integration aligns with the specific needs of vocational learning. In addition, schools should provide collaborative spaces such as reflective practice forums, digital lesson study groups, or innovation working groups to strengthen a culture of knowledge sharing and ongoing professional development.

Educational policies should allocate resources not only for technological infrastructure, but also for structured time and opportunities for collaborative planning between principals and teachers, including digital training and strategic planning workshops. Governments are also encouraged to develop a national digital leadership framework that can serve as a reference for principals’ professional development. Furthermore, policies related to vocational school digitalization should emphasize meaningful teacher involvement in strategic decision-making processes, rather than limiting their role to implementation alone.

Future studies should validate the proposed collaborative planning model through in-depth case studies across vocational schools with varying levels of digital readiness. Longitudinal empirical research is also needed to examine the long-term dynamics of digital leadership, organizational culture, and teacher agency.

Additionally, the development of context-specific instruments to measure teacher-principal collaboration in digital transformation settings represents an important direction for further research.

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