

GUIDELINES FOR MANAGEMENT OF TEACHERS' DIGITAL COMPETENCY DEVELOPMENT AT HIGH SCHOOL AFFILIATED TO GUANGXI TALENT INTERNATIONAL SCHOOL

Lihuan LIAO¹ and Ganratchakan LERTAMORNSAK²

1 Student of Master in Educational Administration, Suan Sunandha Rajabhat University, Thailand; s67561802135@ssru.ac.th

2 Graduate School, Suan Sunandha Rajabhat University, Thailand; Ganratchakan.le@ssru.ac.th

ARTICLE HISTORY

Received: 15 June 2026

Revised: 16 June 2026

Published: 26 June 2026

ABSTRACT

This study investigates the management of teachers' digital competency development at the High School Affiliated to Guangxi Talent International School. A mixed research method was employed, combining quantitative questionnaire data collected from 80 teachers and qualitative semi-structured interviews with five key informants. The study examines four dimensions of management: Digital Competency Development Planning, Digital Resource Organization, Digital Teaching Leadership, and Digital Competency Evaluation. The findings reveal that the overall level of management of teachers' digital competency development is high ($M = 3.57$, $SD = 0.51$). Among the four dimensions, Digital Competency Evaluation achieved the highest mean score ($M = 3.60$), while Digital Competency Development Planning showed the lowest mean score ($M = 3.54$). The results indicate that the school has established a relatively supportive environment for teachers' digital competency development, particularly in evaluation and resource support. However, improvements are still needed in planning precision, leadership feedback, and the alignment of digital resources with instructional needs. The study provides practical implications for enhancing the management of teachers' digital competency development in secondary schools undergoing educational digital transformation.

Keywords: Management Guidelines, Teachers' Digital Competency Development, High School Teachers

CITATION INFORMATION: Liao, L., & Lertamornsak, G. (2026). Guidelines for Management of Teachers' Digital Competency Development at High School Affiliated to Guangxi Talent International School. *Procedia of Multidisciplinary Research*, 4(6), 28.

INTRODUCTION

Educational digitalization has become a major trend in global educational reform. Technologies such as artificial intelligence, big data, and cloud computing are transforming teaching, learning, and educational management. Following the COVID-19 pandemic, online and blended learning further accelerated the integration of digital technologies into education (Hodges et al., 2020). International organizations such as UNESCO and OECD have emphasized that educational digitalization is essential for improving educational quality and supporting future-oriented learning (UNESCO, 2021; OECD, 2023). Consequently, teachers' digital competency has become a key factor in educational development worldwide. In China, educational digital transformation has been strongly promoted through national policies encouraging the integration of technology and education. Schools have expanded digital infrastructure and technology-supported teaching practices. However, many schools still face challenges in developing teachers' digital competency effectively. Teachers are expected not only to use digital technologies but also to integrate them into teaching, learning, and assessment processes. Previous studies have shown that teachers' digital competency significantly influences instructional quality and educational innovation (Falloon, 2020; Scherer et al., 2021). Despite continuous progress in educational digitalization, schools continue to encounter management-related challenges in supporting teachers' digital competency development. Studies indicate that insufficient planning, limited resource support, inadequate leadership practices, and weak evaluation systems may hinder teachers' professional growth in digital teaching (UNESCO, 2023; Scherer et al., 2021). These issues suggest that teachers' digital competency development depends not only on individual efforts but also on effective school management and organizational support. The High School Affiliated to Guangxi Talent International School was selected as the research site for this study. As the school advances its digital transformation initiatives, teachers' digital competency development has become increasingly important for improving teaching quality and educational innovation. Therefore, this study investigates the management of teachers' digital competency development at the school and proposes practical guidelines for improvement. The findings may provide useful references for schools seeking to strengthen teachers' digital competency development in the context of educational digitalization.

Research Significance

First, this study contributes to the field of educational management by examining teachers' digital competency development from a school management perspective. By focusing on digital competency development planning, digital resource organization, digital teaching leadership, and digital competency evaluation, the study provides a comprehensive understanding of how management practices influence teachers' professional development in the context of educational digitalization.

Second, this study provides practical guidance for improving the management of teachers' digital competency development. The findings may assist school administrators in strengthening planning systems, optimizing resource management, enhancing leadership support, and establishing effective evaluation mechanisms. The proposed guidelines may also serve as a useful reference for other high schools seeking to promote sustainable teacher development during educational digital transformation.

Research Objectives

- (1) To study the level of Management of Teachers' Digital Competency Development at High School Affiliated to Guangxi Talent International School.
- (2) To propose the Guidelines for Management of Teachers' Digital Competency Development at High School Affiliated to Guangxi Talent International School.

LITERATURE REVIEW

Concepts and Theories of Educational Management

Educational management refers to the process of planning, organizing, leading, and evaluating educational activities to achieve institutional goals effectively (Bush, 2020). Effective educational management supports resource coordination, teacher development, and educational quality improvement. Hallinger (2020) emphasized the importance of instructional leadership in promoting teacher growth and school effectiveness, while Fullan (2020) and Harris (2021) highlighted the roles of collaborative leadership and organizational learning in educational improvement. In the context of educational digitalization, educational management increasingly focuses on supporting technology integration, professional learning, and school digital transformation.

Concepts and Theories of Teachers' Digital Competency Development

Teachers' digital competency refers to the knowledge, skills, and professional capabilities required to effectively integrate digital technologies into teaching and learning (UNESCO, 2018). The DigCompEdu framework identifies key dimensions of teachers' digital competency, including digital resources, teaching, assessment, and professional engagement (Redecker, 2017). The TPACK framework further explains that effective technology integration requires the combination of technological, pedagogical, and content knowledge (Mishra & Koehler, 2006). Recent studies indicate that teachers' digital competency development is influenced by professional learning opportunities, organizational support, leadership practices, and evaluation systems (Falloon, 2020; Caena & Redecker, 2019).

Previous Studies

Many previous studies have examined teachers' digital competency development and educational digital transformation in schools. UNESCO (2023) and OECD (2023) emphasized that teachers' digital competency has become a key factor influencing educational quality and school development. Researchers found that effective digital competency development promotes teaching innovation, student engagement, and learning effectiveness (Falloon, 2020; Tondeur et al., 2021). Previous studies also highlighted the importance of school-level management in supporting teachers' digital competency development. Professional development planning, resource allocation, leadership support, and competency evaluation have been identified as important factors influencing teachers' digital growth (Philipsen et al., 2019; Pettersson, 2021). In addition, leadership support, collaborative learning environments, and evaluation systems contribute significantly to teachers' continuous professional improvement (Dexter & Richardson, 2020; Tang et al., 2022). However, many schools still face challenges related to insufficient planning, limited digital resources, inadequate leadership support, and weak evaluation mechanisms (Nguyen & Habók, 2022; UNESCO, 2023). Existing studies have provided valuable insights, but management-related challenges remain a major issue in educational digital transformation.

2.4 Research Gap

Although many studies have explored teachers' digital competency development, most focus on individual competencies and technology integration practices rather than school-level management mechanisms. In addition, planning, resource organization, leadership, and evaluation are often examined separately rather than as an integrated management framework. Furthermore, empirical studies focusing on high school contexts remain limited, particularly in Guangxi Province. Therefore, this study investigates teachers' digital competency development management at High School Affiliated to Guangxi Talent International School and proposes practical guidelines based on planning, resource organization, leadership, and evaluation dimensions.

METHODOLOGY

Research Design

This study used a mixed-methods research design to investigate the guidelines for management of teachers' digital competency development at the High School Affiliated to Guangxi Talent International School. Quantitative data were collected through questionnaires to examine the current level of management of teachers' digital competency, while qualitative data were obtained through semi-structured interviews to gain deeper insights into management challenges and improvement strategies. The mixed-methods approach enabled a comprehensive understanding of both the current situation and practical needs related to teachers' digital competency development.

Population and Sample

The population consisted of 100 teachers at the High School Affiliated to Guangxi Talent International School. Based on Krejcie and Morgan's (1970) sample size table, 80 teachers were selected as the sample for the questionnaire survey.

In addition, five key informants were selected through purposive sampling for semi-structured interviews. The participants who were involved in academic affairs, educational management and digital education.

Research Instruments

Two research instruments were used in this study.

Questionnaire: A five-point Likert scale questionnaire was developed to assess four aspects of teachers' digital competency development management, including Planning, Digital Resource Organization, Digital Teaching Leadership, and Evaluation. The questionnaire was designed based on relevant theories and previous studies concerning teachers' digital competency development.

Semi-structured Interview: Interview questions focused on management practices, existing challenges, and suggestions related to the four aspects of teachers' digital competency development management.

Validity and Reliability

The questionnaire was examined by three experts using the Item Objective Congruence (IOC) technique. The IOC values ranged from 0.67 to 1.00, indicating acceptable content validity. A pilot study involving 30 teachers was conducted to assess reliability. The overall Cronbach's Alpha coefficient was 0.973, indicating good reliability.

The interview questions were reviewed and revised based on expert and supervisor recommendations to ensure consistency with the research objectives and conceptual framework.

Data Analysis

Quantitative data were analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation. Qualitative interview data were analyzed using content analysis to identify key themes related to the management of teachers' digital competency development and to formulate practical improvement guidelines.

RESULTS

Descriptive Statistical Results

Table 1

Results analysis of mean and standard deviation results analysis

Management of Teachers' Digital Competency Development at High School Affiliated to Guangxi Talent International School.	n = 80		Interpretation
	M	S.D.	
1.Digital Competency Development Planning	3.54	0.55	high level

2.Digital Resource Organization	3.57	0.54	high level
3.Digital Teaching Leadership	3.56	0.57	high level
4.Digital Competency Evaluation	3.60	0.57	high level
Total	3.57	0.51	high level

Table 1 shows that the overall management of teachers' digital competency development at the High School Affiliated to Guangxi Talent International School was at a high level ($M = 3.57$, $S.D. = 0.51$). Among the four dimensions, Digital Competency Evaluation obtained the highest mean score ($M = 3.60$, $S.D. = 0.57$), followed by Digital Resource Organization ($M = 3.57$, $S.D. = 0.54$), Digital Teaching Leadership ($M = 3.56$, $S.D. = 0.57$), and Digital Competency Development Planning ($M = 3.54$, $S.D. = 0.55$). The findings suggest that the school has established relatively effective management mechanisms for supporting teachers' digital competency development. However, opportunities remain for improving planning precision, resource alignment, leadership support, and evaluation effectiveness.

Interview Results

Digital Competency Development Planning

Interview participants emphasized the importance of establishing long-term and systematic planning mechanisms for teachers' digital competency development. They suggested conducting regular needs assessments, setting differentiated development goals, utilizing data-informed planning approaches, and strengthening the connection between training programs and classroom teaching practices.

Digital Resource Organization

Participants highlighted the importance of strengthening digital infrastructure, establishing centralized resource management systems, promoting resource sharing, and providing continuous technical support. They also emphasized that digital resources should be closely aligned with curriculum requirements and instructional needs.

Digital Teaching Leadership

Interview participants indicated that school leaders should establish a clear digital transformation vision, provide continuous professional support, promote professional learning communities, and develop digital mentoring systems to strengthen collaboration and innovation among teachers.

Digital Competency Evaluation

Participants suggested that evaluation systems should include clear standards, multiple assessment methods, and continuous feedback mechanisms. Evaluation results should be linked to professional development planning to support teachers' continuous improvement and professional growth.

DISCUSSION

The findings indicate that the overall management of teachers' digital competency development at High School Affiliated to Guangxi Talent International School is at a high level ($M = 3.57$). Among the four dimensions, Digital Competency Evaluation achieved the highest score (3.60), while Digital Competency Development Planning showed the lowest score (3.54). The results suggest that the school has established relatively effective management mechanisms for supporting teachers' digital competency development through planning, resource organization, leadership support, and evaluation practices.

Although all dimensions were rated at a high level, the interview findings revealed several areas for improvement. Participants emphasized the need for more systematic planning, stronger

resource integration, enhanced leadership support, and more comprehensive evaluation mechanisms. These findings indicate that teachers' digital competency development depends not only on individual efforts but also on coordinated management systems that support continuous professional growth. This finding is consistent with previous studies emphasizing the importance of organizational support and leadership in educational digital transformation (UNESCO, 2023; OECD, 2023).

GUIDELINES FOR IMPROVEMENT

Strengthening Planning and Professional Development Mechanisms

The school should strengthen systematic planning for teachers' digital competency development through regular needs assessments, differentiated training programs, and measurable development indicators to support continuous professional growth.

Enhancing Digital Resource Organization and Technical Support

The school should improve the accessibility and utilization of digital resources by establishing centralized resource-sharing platforms, strengthening technical support services, and regularly updating digital teaching resources.

Strengthening Digital Teaching Leadership and Professional Collaboration

School leaders should promote digital teaching development through mentoring programs, professional learning communities, and collaborative activities that encourage experience sharing and instructional innovation.

Improving Digital Competency Evaluation and Feedback Mechanisms

The school should establish a comprehensive evaluation system incorporating self-assessment, peer review, and administrative evaluation to provide constructive feedback and support continuous improvement in teachers' digital competency development.

CONCLUSION

This study examined the management of teachers' digital competency development at the High School Affiliated to Guangxi Talent International School. The findings indicate that the overall level of management is high across the four dimensions of Digital Competency Development Planning, Digital Resource Organization, Digital Teaching Leadership, and Digital Competency Evaluation. Among these dimensions, Digital Competency Evaluation achieved the highest level, while Digital Competency Development Planning showed relatively lower performance. The results suggest that effective planning, resource support, leadership practices, and evaluation mechanisms collectively contribute to teachers' digital competency development. The study also highlights the need to strengthen planning precision, improve resource alignment with teaching needs, enhance leadership support, and refine evaluation standards. These findings provide practical implications for improving the management of teachers' digital competency development and supporting educational digital transformation in high school contexts.

REFERENCES

- Bush, T. (2020). *Theories of educational leadership and management* (5th ed.). Sage.
- Caena, F., & Redecker, C. (2019). Aligning teacher competence frameworks to 21st-century challenges. *Educational Research Review*, 27, 1–14.
- Dexter, S., & Richardson, J. W. (2020). What does technology integration research tell us about the leadership of technology? *Journal of Research on Technology in Education*, 52(1), 17–36.
- Falloon, G. (2020). From digital literacy to digital competence: The teacher digital competency continuum. *Educational Technology Research and Development*, 68(5), 2449–2472.
- Fullan, M. (2020). *Leading in a culture of change*. Jossey-Bass.

- Hallinger, P. (2020). Instructional leadership and school improvement. *Educational Management Administration & Leadership*, 48(4), 595–616.
- Harris, A. (2021). Distributed leadership and school development. *School Leadership & Management*, 41(2), 1–15.
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *EDUCAUSE Review*.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054.
- Nguyen, T. T., & Habók, A. (2022). Digital competence development among teachers: A systematic review. *Education and Information Technologies*, 27, 8405–8443.
- OECD. (2023). *Digital education outlook 2023*. OECD Publishing.
- Pettersson, F. (2021). Understanding digitalization in school organizations. *Education and Information Technologies*, 26(5), 5321–5344.
- Philipsen, B., Tondeur, J., Pareja Roblin, N., Vanslambrouck, S., & Zhu, C. (2019). Teacher professional development for online and blended learning: A systematic meta-aggregative review. *Educational Technology Research and Development*, 67, 1145–1174.
- Redecker, C. (2017). *European framework for the digital competence of educators (DigCompEdu)*. European Commission.
- Scherer, R., Siddiq, F., & Tondeur, J. (2021). Teachers' technology acceptance: A review of the literature. *Computers & Education*, 163, 104099.
- Tang, L., Gu, J., & Xu, J. (2022). Digital competence evaluation framework. *Sustainability*, 14(9), 5268.
- Tondeur, J., Howard, S. K., & Yang, J. (2021). Towards an adaptive model of digital competencies. *Computers in Human Behavior*, 116, 106659.
- UNESCO. (2018). *UNESCO ICT competency framework for teachers (Version 3)*. UNESCO.
- UNESCO. (2021). *Reimagining our futures together: A new social contract for education*. UNESCO.
- UNESCO. (2023). *Global education monitoring report 2023: Technology in education*. UNESCO.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.



Copyright: © 2026 by the authors. This is a fully open-access article distributed under the terms of the Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0).