

# UNESCO's Strategies and Practices for Advancing Teachers' Digital Competence: A Global Education Governance Perspective

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**Abstract:** *Digital technologies have emerged as a key factor in improving educational quality and advancing educational equity amid the rapidly expanding worldwide digital transformation of education. The success of integrating digital technology into teaching practices is largely determined by teachers, who are key players in bringing about educational reform. As a result, a crucial element influencing the results of educational digitalization is instructors' digital competency. The United Nations Educational, Scientific and Cultural Organization (UNESCO), a significant international organization in global education governance, has long been dedicated to improving teachers' digital competency globally through the creation of competency frameworks, policy recommendations, and the execution of useful initiatives. This study primarily contributes to SDG 4 (Quality Education) by examining how UNESCO promotes teachers' digital competency to enhance educational quality and equity in the context of global educational digitalization. This study uses textual analysis and comparative research techniques to methodically investigate the strategic frameworks, implementation pathways, and contextual background that UNESCO uses to support teachers' digital competency. It draws on theories of teacher professional development and global education governance. It identifies the main implementation problems while delving deeper into UNESCO's underlying value orientations and practical results. The study makes policy recommendations based on these findings and China's current educational digitalization needs. These recommendations include improving teacher training models, promoting equitable access to high-quality digital educational resources, and refining teacher digital competency frameworks. The study intends to further educational modernization in China by offering theoretical insights and useful references for improving teachers' digital competency.*

**Keywords:** UNESCO; Teachers' Digital Competence; Global Education Governance; Teacher Professional Development; SDG4

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## 1. Introduction

The rapid expansion of digital technologies has fundamentally reshaped contemporary education systems, redefining how knowledge is produced, disseminated, and learned. Digital transformation is no longer limited to the introduction of technological tools but increasingly entails systemic changes in curriculum design, pedagogical practices, assessment models, and educational governance (Bitegeko et al., 2024). Within this context, teachers occupy a pivotal position, as their capacity to effectively integrate digital technologies into teaching and learning processes largely determines the quality and equity of educational digitalization.

In recent years, the concept of teachers' digital competence has attracted growing scholarly and policy attention (Ahmed, 2025). Existing studies have extensively examined the definition, structure, and assessment of digital competence, as well as its relationship with instructional innovation and student learning outcomes (Gisbert Cervera & Caena, 2022). However, much of the existing literature remains focused on national or institutional contexts, with relatively limited attention paid to the role of international organizations in shaping global norms, policy frameworks, and collaborative mechanisms for teachers' digital competence development (Skantz-Åberg et al., 2022). As a result, the governance logic and strategic influence of international organizations in this field remain insufficiently explored.

Despite the growing prominence of teachers' digital competence in both educational research and policy discourse, several critical problems remain insufficiently addressed. First, existing studies tend to conceptualize teachers' digital competence primarily at the level of individual skills or institutional practices, while paying limited attention to how global education governance actors shape the normative frameworks, strategic priorities, and implementation logics that guide national and local practices. As a result, the macro-level governance mechanisms through which teachers' digital competence is promoted remain theoretically underdeveloped.

Consequently, there remains an urgent need for a systematic, theory-informed analysis of UNESCO's role in advancing teachers' digital competence from a global education governance perspective, one that not only elucidates its strategic logic and practical mechanisms but also generates context-sensitive insights to inform national policy development and implementation.

As a leading actor in global education governance, the United Nations Educational, Scientific and Cultural Organization (UNESCO) has played a distinctive role in promoting teachers' digital competence worldwide (Espejo Villar et al., 2022). Through the development of international competency frameworks, the alignment of digital education initiatives with the Sustainable Development Goals, and the implementation of cross-national capacity-building programs, UNESCO has sought to address structural inequalities in educational digitalization and support teacher professional development, particularly in developing regions. Nevertheless, existing research has tended to treat UNESCO's initiatives primarily as policy references, without offering systematic analyses of their strategic coherence, implementation pathways, and underlying value orientations (Ahmed, 2025).

This study is closely aligned with the United Nations Sustainable Development Goals (SDGs), particularly SDG 4: Quality Education, which emphasizes inclusive, equitable, and high-quality education as well as lifelong learning opportunities for all. By focusing on teachers' digital competence as a core determinant of educational quality in the digital era, this research directly contributes to SDG Target 4.c, which calls for increasing the supply of qualified teachers through enhanced training and professional development, including the effective use of digital technologies. Moreover, UNESCO's digital competency frameworks and capacity-building initiatives examined in this study reflect SDG Target 4.a, which stresses the creation of effective learning environments supported by appropriate infrastructure and technology.

Against this backdrop, this study examines UNESCO's strategies and practices for advancing teachers' digital competence from the perspective of global education governance. By integrating theories of teacher professional development and global education governance, the study analyzes the contextual foundations, strategic frameworks, and practical mechanisms

through which UNESCO promotes teachers' digital competence, while also identifying key challenges and limitations. Furthermore, by situating this analysis within the context of China's ongoing educational digitalization, the study seeks to extract policy-relevant insights that may inform the development of teachers' digital competence and contribute to the sustainable modernization of education systems.

## 2. Research Objectives

RO1: To systematically analyze UNESCO's strategies and practices for promoting teachers' digital competence from the perspective of global education governance, with particular attention to their policy logic, strategic frameworks, and implementation mechanisms.

RO2: To derive policy-relevant insights from UNESCO's experiences to inform the development of teachers' digital competence and support high-quality educational digitalization in China.

Global education systems are undergoing a significant digital transition due to the quick development of big data, artificial intelligence, and information technology. In this situation, instructors are increasingly acting as designers, facilitators, and mediators of digital learning environments rather than just being knowledge transmitters. As a result, teachers' proficiency with technology has emerged as a crucial measure of educational equity and quality.

UNESCO's global strategies and practices in promoting teachers' digital competence provide important reference models for countries—particularly developing nations—seeking to address the challenges of educational digitalization (Ahmed, 2025). Taking UNESCO's initiatives as the object of analysis, this study aims to systematically examine their policy logic, implementation pathways, and value orientations from the perspective of global education governance. By clarifying the mechanisms through which UNESCO contributes to teacher professional development and educational equity, the study seeks to distill experiences and strategies that offer meaningful implications for the development of teachers' digital competence in China. This research not only contributes to the theoretical literature on teachers' digital competence and global education governance but also offers practical guidance for advancing educational digitalization and the high-quality development of the teaching workforce in China.

## 3. Theoretical Foundations

### 3.1 Teacher Professional Development Theory

According to teacher professional development theory, improving teachers' competences is a long-term, dynamic process that is influenced by social support networks, institutional settings, and individual introspection and learning (Chiu et al., 2024). With digital competence becoming an essential part of teachers' professional capacity, the scope of teacher professional development has greatly grown in the digital age (El Islami et al., 2022).

The ability to effectively integrate digital technology with curriculum objectives, pedagogical tactics, and assessment processes is part of teachers' digital competency, which goes beyond simple technical proficiency. Through competency frameworks and focused training programs, UNESCO continuously positions educators as active agents of educational reform in its attempts to enhance their digital competency. This strategy is in line with the fundamental ideas

of teacher professional development theory, especially the focus on lifelong learning and teacher empowerment.

### 3.2 Global Education Governance Theory

Global education governance theory(Altbach & Cantwell, n.d.) emphasizes the importance of international organizations in norm-setting, coordination, and resource mobilization while concentrating on cooperative arrangements among various participants in transnational educational affairs. The expanding transnational nature of educational concerns like the digital divide and educational inequality makes it difficult for individual nations to address these problems on their own, highlighting the growing need of international cooperation(Robertson, 2022).

UNESCO plays a key coordinating and directing role within the global education governance framework through the creation of standards pertaining to teachers' digital competency, the release of Global Education Monitoring Reports, and the encouragement of cross-national cooperation projects. These programs demonstrate a strong normative commitment to justice and sustainable development in addition to the logic of international governance.

## 4. UNESCO’s Strategies and Practices for Advancing Teachers’ Digital Competence

### 4.1 Strategic Framework: From the Sustainable Development Goals to Competency Standards

UNESCO emphasizes the significance of digital technology in guaranteeing equitable access to high-quality education and possibilities for lifelong learning by integrating the development of teachers' digital competence within the larger framework of the Sustainable Development Goals (SDGs) of the United Nations. UNESCO has created and updated the ICT Competency Framework for Teachers under this framework(Table 1), which offers methodical direction for national initiatives to improve teachers' digital competency(Althubyani, 2024).

The framework articulates core competencies across three progressive levels—technology literacy, knowledge deepening, and knowledge creation—and addresses key domains such as curriculum and assessment, pedagogy, educational management, and teachers’ professional learning (Table 2). By offering a structured yet adaptable reference, the framework enables countries to advance teachers’ digital competence in ways that are responsive to their specific educational contexts.

**Table 1: UNESCO's Core Framework for Promoting Teachers' Digital Competencies**

Strategic objectives	Core Tools	Implementation path
Educational Equity and Sustainable Development	ICT Competency Framework, GEM Report	Teacher training, resource sharing, international cooperation

**Table 2: Three-Level Structure of Teachers' Digital Competence (Based on the UNESCO Framework)**

Level	Connotation of ability
Technical literacy	Basic ICT Tools and Resource Applications
Knowledge Deepening	Teaching Improvement Supported by Technology
Knowledge Creation	Innovative Teaching and Educational Reform

### 4.2 Practical Pathways: A Multi-Level and Multi-Modal Approach

At the implementation level, UNESCO adopts a range of systematic strategies to enhance teachers’ digital competence (Skantz-Åberg et al., 2022). To begin with, UNESCO actively fosters international teacher learning networks by leveraging open educational resource

platforms and digital repositories, thereby facilitating the efficient sharing and dissemination of high-quality educational resources. In addition, UNESCO provides targeted support for teacher digital competence development in developing countries through regionally and nationally tailored assistance programs, which contributes to strengthening the foundational conditions necessary for educational digital transformation. Moreover, considerable emphasis is placed on the establishment of robust monitoring and evaluation mechanisms. Through instruments such as the Global Education Monitoring Reports, UNESCO systematically tracks progress and outcomes, offering evidence-based guidance for the continuous refinement of policy implementation.

## 5. Findings

Value Orientations and Practical Outcomes. An integrated analysis of UNESCO's strategies and practices further reveals several core value orientations underpinning its efforts to advance teachers' digital competence (Gisbert Cervera & Caena, 2022). First, an empowerment-oriented perspective is evident, focusing on enhancing teachers' professional growth, career development opportunities, and instructional innovation capabilities. Second, equity constitutes a central principle, as priority is given to low-income countries and disadvantaged regions, with digital technologies employed as key tools to reduce educational inequalities and promote inclusive education. Third, UNESCO emphasizes collaborative governance by encouraging multilateral cooperation, global knowledge exchange, and coordinated action, thereby constructing an international network for the advancement of teachers' digital competence. Finally, a future-oriented vision aligns these initiatives with the broader goals of sustainable development, underscoring the importance of cultivating a teaching workforce equipped to address the evolving demands of a digitally driven society.

In terms of outcomes, UNESCO has made significant progress in raising global awareness of teachers' digital competence, promoting international consensus on competency standards, and facilitating cross-national educational cooperation (Tondeur et al., 2023). Nevertheless, challenges remain in translating strategic principles into localized practice, sustaining teacher engagement, and strengthening evaluation and feedback mechanisms.

## 6. Limitations

UNESCO's initiatives to improve teachers' digital competency nevertheless confront a number of obstacles, despite noteworthy successes (Vrabec & Furtáková, 2024). First, the localization and successful implementation of competency frameworks are complicated by significant differences in digital infrastructure and educational resources between nations. Second, there are still gaps between training material and classroom realities, and some teachers have limited access to professional development opportunities. Third, the thorough assessment of the long-term effects of advances in teachers' digital competency is limited by the inadequacy of the current evaluation and feedback procedures.

## 7. Implications and Recommendations

UNESCO's experience has various lessons that might be applied to China's ongoing digitization of education. In order to provide uniform standards for training and assessment, a national framework for teachers' digital competency should first be created. From Table 3, this would explain competency criteria for teachers at various career phases and across many categories. Second, in order to improve teachers' ability to use digital technologies in real-world learning

environments, teacher training models should be strengthened in terms of their contextual applicability and practical relevance. Third, in order to reduce regional and urban-rural inequities, the open educational resource system should be further enhanced to encourage the co-construction and sharing of high-quality digital materials. Finally, a data-informed evaluation and support mechanism should be established to facilitate the continuous improvement of teachers’ digital competence and ensure the sustainable advancement of educational digitalization (Table 3).

**Table 3: Lessons from UNESCO's Experience for Developing Chinese Teachers' Digital Competence**

<b>Dimension</b>	<b>UNESCO Experience</b>	<b>Insights from China's Practice</b>
Institutional Design	Unified Competency Framework and Global Standards	Developing National Standards for the Digital Competence Levels of Teachers
Implementation method	Multilateral Cooperation and Open Resources	Strengthen school-local collaboration and platform support
Development Goals	Educational Equity and Sustainable Development	Modernization and High-Quality Development of Service Education

## 8. Conclusion

In the context of global educational digital transformation, teachers’ digital competence has become a critical determinant of educational quality and equity. Through strategic leadership and sustained practical engagement, UNESCO has developed influential models for advancing teachers’ digital competence worldwide. A systematic examination of its strategic logic and implementation pathways, combined with an adaptation to China’s educational realities, offers valuable insights for promoting teacher professional development and advancing educational modernization.

## 9. Future research directions

Future research could further extend this study in several directions. First, empirical investigations are needed to assess the actual effectiveness and contextual adaptability of UNESCO’s teacher digital competency frameworks across different national and institutional settings, particularly through large-scale surveys, longitudinal studies, or mixed-method approaches. Second, comparative studies involving multiple international organizations or regional frameworks (such as the European Union or OECD) would help clarify similarities and differences in global governance strategies for teachers’ digital competence development. Third, future research could explore the micro-level mechanisms linking teachers’ digital competence to instructional practices, student learning outcomes, and educational equity in digitally diverse contexts. Finally, in the context of rapid technological change, further studies should examine how emerging technologies—such as artificial intelligence and data-driven educational tools—reshape the conceptual boundaries, assessment models, and professional development pathways of teachers’ digital competence.

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## Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this study.

## References

- Ahmed, R. (2025). Teachers' Competency in Technology, Digital Innovation, and Creativity and Its Role in Supporting Curriculum Reform in Light of UNESCO's Education 2030 Strategy. *Journal of Research, Innovation, and Strategies for Education (RISE)*, 2(1). <https://doi.org/10.70148/rise.19>
- Altbach, P. G., & Cantwell, B. (n.d.). *PRAISE FOR THE PREVIOUS EDITION*:
- Althubayani, A. R. (2024). Digital Competence of Teachers and the Factors Affecting Their Competence Level: A Nationwide Mixed-Methods Study. *Sustainability*, 16(7), 2796. <https://doi.org/10.3390/su16072796>
- Bitegeko, R. M., Lawrent, G., & Cosmas, J. (2024). Applying the UNESCO ICT competency framework to evaluate digital competencies among undergraduate students in teacher education in Tanzania. *Educational Technology Quarterly*, 2024(3), 298–318. <https://doi.org/10.55056/etq.769>
- Chiu, T. K. F., Falloon, G., Song, Y., Wong, V. W. L., Zhao, L., & Ismailov, M. (2024). A self-determination theory approach to teacher digital competence development. *Computers & Education*, 214, 105017. <https://doi.org/10.1016/j.compedu.2024.105017>
- El Islami, R. A. Z., Anantanukulwong, R., & Faikhamta, C. (2022). Trends of Teacher Professional Development Strategies: A Systematic Review. *Shanlax International Journal of Education*, 10(2), 1–8. <https://doi.org/10.34293/education.v10i2.4628>
- Espejo Villar, L. B., Lázaro Herrero, L., & Álvarez-López, G. (2022). UNESCO Strategy and Digital Policies for Teacher Training: The Deconstruction of Innovation in Spain. *Journal of New Approaches in Educational Research*, 11(1), 15–30. <https://doi.org/10.7821/naer.2022.1.812>
- Gisbert Cervera, M., & Caena, F. (2022). Teachers' digital competence for global teacher education. *European Journal of Teacher Education*, 45(4), 451–455. <https://doi.org/10.1080/02619768.2022.2135855>
- Robertson, S. L. (2022). Guardians of the Future: International Organisations, Anticipatory Governance and Education. *Global Society*, 36(2), 188–205. <https://doi.org/10.1080/13600826.2021.2021151>
- Skantz-Åberg, E., Lantz-Andersson, A., Lundin, M., & Williams, P. (2022). Teachers' professional digital competence: An overview of conceptualisations in the literature. *Cogent Education*, 9(1), 2063224. <https://doi.org/10.1080/2331186X.2022.2063224>
- Tondeur, J., Howard, S., Van Zanten, M., Gorissen, P., Van Der Neut, I., Uerz, D., & Kral, M. (2023). The HeDiCom framework: Higher Education teachers' digital competencies for the future. *Educational Technology Research and Development*, 71(1), 33–53. <https://doi.org/10.1007/s11423-023-10193-5>
- Vrabec, N., & Furtáková, L. (2024). Ways of defining digital competences and their components in the EU, EC and UNESCO recommendations. *Annales Universitatis Paedagogicae Cracoviensis | Studia de Cultura*, 16(2), 5–17. <https://doi.org/10.24917/20837275.16.2.1>