



## Book Review

*AI Competency Framework for Teachers*, **Fengchun Miao and Mutlu Cukurova**, 2024, Paris: UNESCO. <https://doi.org/10.54675/ZJTE2084>.

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## 1 Introduction

The rapid advancement of artificial intelligence (AI) is fundamentally transforming educational practices, reshaping the traditional pedagogical dynamics into a teacher-student-AI triangular relationship. Unlike previous digital technologies, the ability of AI to emulate human behavior raises concerns about its potential to undermine the teachers' roles and their connections with learners. As a result, there is a higher demand for teachers' competencies, requiring them to thoroughly understand both the benefits and limitations of AI, while effectively integrating AI tools into their pedagogy and leveraging them for their professional development. However, it remains unclear how teachers can effectively utilize AI technologies, what specific competencies they need to develop, and to what extent they should master them. To address this gap, the *AI Competency Framework for Teachers* (hereinafter referred to as "the AI CFT") was released by UNESCO in 2024. This framework, developed by Fengchun Miao (Chief of Unit for Technology and AI in Education at UNESCO) and Mutlu Cukurova (Professor of Learning and Artificial Intelligence at University College London), is designed to guide teachers in acquiring the competencies required in the age of AI and to support their adaptive professional development.

While AI-driven educational shifts challenge teachers across all subjects, language teachers face the most profound impacts due to the interactive nature of language teaching. The integration of AI has altered both communication modes and the core elements of language instruction. Given the transformative impact of AI on language education, the AI CFT could also serve as a critical framework to guide language teachers in adapting to these changes.

Therefore, this review introduces the AI CFT, examines its implications for language teacher education, and explores solutions to enhance language teachers' competencies in the context of digital transformation in education.

## 2 Overview of the AI CFT

### 2.1 Goals and structure

Based on a human-centred approach, the AI CFT aims to support teachers in their ongoing professional development. Its primary goal is to equip teachers with the essential knowledge, skills, values, and attitudes needed to effectively and responsibly incorporate AI tools into their teaching practices, thereby enhancing students' learning outcomes. It emphasizes not only foundational AI literacy but also ethical principles, human agency, and social responsibility, ensuring that teachers maintain professional autonomy and promote educational innovation in the rapidly evolving AI landscape. Importantly, it targets teachers who use AI to improve teaching and learning, rather than those specializing in advanced AI technical instruction.

Consisting of five chapters, the AI CFT presents a comprehensive guide for integrating AI into education, serves as a global reference for developing national and regional AI competency standards, guides teacher training programs, and offers practical frameworks for curriculum design and competency assessment.

Chapter 1 begins with introducing the background and rationale of the AI CFT, describing the rapid evolution of AI and its implications for education, while highlighting the importance of developing AI competencies among teachers. This chapter also outlines the target audience for the AI CFT and discusses its alignment with previous UNESCO's ICT CFT, ensuring a comprehensive approach to technology in education.

Chapter 2 proposes the six key principles of the framework, including ensuring inclusive digital futures, adopting a human-centred approach to AI, protecting teachers' rights and iteratively (re)defining teachers' roles, ensuring applicability for all teachers and reflecting digital evolution, and promoting lifelong professional learning for teachers. These principles imply that the integration of AI should be inclusive, supportive, ethical, and safe.

In Chapter 3, the structure of the AI CFT is presented in a two-dimensional matrix, which combines five key competency aspects: human-centred mindset, ethics of AI, AI foundations and applications, AI pedagogy, and AI for professional development, and evolves across three progression levels: acquire, deepen, and create (see Table 1). By presenting the fifteen competencies in this matrix, Chapter 3 clearly depicts how teachers can progressively develop their AI competencies and integrate AI effectively into their teaching.

Following the introduction of the competency structure, Chapter 4 delves into the detailed competencies for five aspects, breaking them down by progression levels. It

**Table 1:** AI competency framework structure and progression levels (Miao and Cukurova 2024, p. 22).

Aspects	Progression		
	Acquire	Deepen	Create
1) Human-centred mindset	Human agency	Human accountability	Social responsibility
2) Ethics of AI	Ethical principles	Safe and responsible use	Co-creating ethical rules
3) AI foundations and applications	Basic AI techniques and applications	Application skills	Creating with AI
4) AI pedagogy	AI-assisted teaching	AI-pedagogy integration	AI-enhanced pedagogical transformation
5) AI for professional development	AI enabling lifelong professional learning	AI to enhance organizational learning	AI to support professional transformation

outlines example training activities, and teaching-learning objectives of each competency to develop at each stage, from “acquire” to “create”. Through these example training programs, this chapter offers clear guidance for teachers at different levels.

After explaining the structure and content of AI CFT, Chapter 5 further provides strategies for its implementation. It first stresses the importance of regulation to ensure the trustworthy and reliable introduction of AI. Next, it emphasizes the need for supportive policies to promote teachers’ lifelong learning and the effective AI integration into education. Additionally, this chapter highlights the localization of AI CFT to adapt to different local contexts, and calls for the development of targeted training programs and performance-based assessment tools aligned with the teaching-learning goals proposed in the AI CFT.

## 2.2 Key AI competencies

Section 2.1 introduces the overall structure of the AI CFT, with its key elements being the fifteen competency blocks (as shown in Table 1), which combine the three levels with the five aspects of competency. These blocks are designed to provide guidelines that support teachers at all stages, helping them to integrate AI into their teaching practices properly. Therefore, the following section will explore these fifteen competencies in greater detail and provide a thorough explanation of each aspect of the three progression levels.

In the AI CFT, five intertwined AI competency aspects are illustrated, focusing on the knowledge, skills, values, and attitudes required for the effective and ethical use of AI in education. The three progression levels are demonstrated in the second

dimension for teachers to assess their existing AI competencies and set expected learning objectives. The “acquire” level aims at equipping teachers who have limited or no prior AI knowledge with basic AI literacy. The “deepen” level focuses on enabling teachers with some AI knowledge to engage more deeply with AI tools to enhance their teaching practices. At the “create” level, teachers are expected to exhibit strong AI competencies and apply AI in a both transformative and ethically sound way in education. The five aspects intertwine with three levels, providing a “to-be-scaffolded” roadmap for teachers’ professional development and continuous learning.

In the human-centred mindset aspect, teachers are encouraged to prioritize human agency when adopting AI tools and develop a critical understanding of both benefits and risks of AI. This competency grows progressively from the “acquire” level, where teachers gain basic awareness that AI is human-led and may pose potential impacts on human autonomy, to the “deepen” level, where teachers deepen their understanding of human accountability and critically assess AI tools in the teaching decision loop, and to ultimately the “create” level, where teachers are expected to hold the social responsibility for building inclusive AI societies and ensure the employment of AI aligns with human welfare, inclusion, and social justice.

In addition to human agency, the ethical implications of AI are stressed. In the ethics of AI aspect, teachers are expected to understand the fundamental ethical principles of AI and ensure its responsible and safe use, while safeguarding human rights and privacy. This includes acquiring ethical principles related to AI, including protecting human rights and agency, linguistic and cultural diversity, and ensuring inclusiveness. At the “deepen” and “create” levels, teachers can internalize those principles to ensure a responsible and safe application of AI and actively contribute to the co-creation of ethical standards in educational contexts.

Regarding the AI foundations and applications aspect, teachers are guided to gain basic technical knowledge about AI models and algorithms and practical skills to select and apply AI tools effectively. At the “acquire” level, basic understandings of AI concepts are developed. At the “deepen” level, teachers employ and select AI tools proficiently and skillfully according to various educational settings, visualize the training steps and working process of AI tools, and facilitate students’ understanding of AI technology. At the “create” level, teachers can customize and finetune AI tools proficiently, and create inclusive AI-assisted teaching and learning environments.

The AI pedagogy aspect helps teachers be equipped with abilities to critically select appropriate AI tools and effectively integrate them into teaching practices. In terms of acquiring, teachers are able to select and leverage AI tools in assisting their teaching ranging from planning to assessment. At the “deepen” level, teachers can integrate those tools into their whole teaching process, support personalized

learning and promote interactions between teachers and students. The “create” stage involves facilitating AI-immersed learning scenarios and exploring innovative approaches to student-centred pedagogical transformations. Under this context, teachers can exhibit abilities such as utilizing AI to open new learning horizons.

The final aspect guides teachers in using AI for their professional development, encouraging continuous learning in the evolving educational landscape. At the “acquire” level, teachers explore AI tools to assess their learning needs and personalize learning pathways. This includes conducting self-assessment instruments to identify competency gaps first and then selecting trustable AI resources for learning. At the “deepen” level, teachers engage more actively in collaborative professional communities, using data analytics and peer coaching to track progress and optimize their learning trajectories. At the “create” level, teachers can customize AI tools to enhance their professional learning and test the effectiveness of their learning strategies. They are expected to co-create ethically sound AI pedagogical tools that align with teaching practices.

### 3 Evaluating the AI CFT

As the education landscape evolves in the digital age, the AI CFT serves as a comprehensive and practical roadmap for teachers, guiding them through various stages of AI competency development. It is particularly relevant to language teacher education, where AI technology is gradually being integrated. This review critically examines the AI CFT, highlighting its strengths and addressing the challenges of implementing the framework in language education.

#### 3.1 Strengths of the AI CFT in pedagogy and teacher education

Firstly, one notable feature of this framework is its emphasis on digital humanities, which aligns with the human-centered mindset in AI competency. By prioritizing human agency in teaching practices, it ensures that AI integration remains focused on human needs and values. As Gu (2021) mentioned, “with the advancement of digital technologies as no one had ever dreamed of, a machine that can replace a human instructor still does not exist! (p. 23)”. The role of human teachers cannot be ignored or replaced by machines. However, in practice, some language teachers may have worries about being replaced by AI tools, leading to potential identity crises. In this regard, the AI CFT helps teachers to understand that AI is a supportive tool rather than a replacement (Kasneci et al. 2023). Notably, language teachers, with their advanced linguistic communication skills and critical thinking abilities, are often

better positioned to approach AI with a more discerning and informed perspective. What's more, according to the "create" level in the AI CFT, teachers are not only expected to use AI but also actively promote and lead the transformation of education. By empowering teachers to take accountability for their teaching practice, this framework strengthens teachers' roles in the teachers-students-AI triangle relationship, ensuring that AI serves to enhance rather than undermine the human element in education.

Secondly, another strength of the AI CFT is its emphasis on the ethical use of AI in language teaching and learning. As outlined in this framework's competencies, teachers should be aware of ethical issues, including AI's potential to perpetuate biases and undermine cultural diversity. For example, AI tools like ChatGPT have raised concerns due to their reliance on corpora primarily based on English-language data, which may limit their effectiveness in diverse linguistic and cultural contexts (Liu and Xiao 2025). Furthermore, studies have highlighted that language teachers often lack the ability to address complex ethical issues associated with AI integration in education (Du et al. 2024; Feng and Sumettikoon 2024). This underscores the critical need for teachers to be aware of the potential risks of AI, to ensure these tools support learners from diverse backgrounds and respect cultural differences. Incorporating ethics-focused training into teacher education programs can help educators navigate these challenges, fostering an inclusive and responsible approach to AI-enhanced language teaching.

Thirdly, the AI CFT provides a valuable guide for teachers to apply AI tools in their teaching practices. The competency of AI pedagogy is explained through various examples of how teachers can leverage the pedagogical benefits of AI tools in their teaching. By equipping foreign language teachers with the necessary skills, AI can automate routine tasks such as grading and feedback, saving teachers tremendous time and energy for more complex tasks (Kiryakova and Angelova 2023; Zhang 2021), including personalized instruction and student engagement. AI-assisted language teaching has now been integrated into various aspects of education, with AI technologies playing a pivotal role in language testing, assessment, and the development of learning resources (Zhang and Wang 2022). Nowadays, even traditional platforms like massive open online courses (MOOCs), which are often regarded as outdated, are evolving to incorporate AI-driven elements in their design, reflecting the ongoing advancements in AI technology (Zhang and Tang 2024). This shift underscores the need for expanded research in the digital transformation of language education to refine teaching practices and guide policy development. This involves studying various aspects of curriculum design, instructional strategies, and assessment methods. By examining the impact of digital tools, especially AI technologies, on learning outcomes and teacher efficacy,

researchers can uncover actionable insights that inform best practices and inspire innovative approaches to education.

Furthermore, the AI CFT calls for collaborative efforts to enhance teachers' AI competency. As implied by the framework, teachers' professionalism is evolving to encompass not only traditional pedagogical skills but also digital literacy and the ability to effectively and ethically integrate technology into the classroom, which requires multiple training programs. Therefore, this shift requires not only teachers to continuously update their skills but also the government to give supportive programs. In response, effective policies must be provided to promote digital literacy, ongoing professional development, and the ethical use of technology in education. The collaborative efforts among teachers, teacher educators, researchers, and technology experts are essential for driving innovation in practice and research, as well as for crafting policies that address the evolving needs of educators. For example, in Chinese higher education, initiatives such as virtual professional learning communities for teachers (Zhang and Dong 2024) and the National Standards for the Education Industry – *Teachers' Digital Literacy* (2022) by the Ministry of Education of China exemplify efforts to provide ongoing training in digital tools and AI integration, aiming to support educators in navigating the complexities of technology-enhanced teaching. Existing research, policies, and frameworks in China offer valuable insights into the development of teachers' digital literacy, highlighting the importance of addressing gaps in educators' ability to critically engage with AI tools and manage ethical challenges in their application. The AI CFT serves as an internationally oriented reference, offering opportunities to bridge local practices with global perspectives. This framework can help ensure that teacher education and training programs empower educators to use AI responsibly, inclusively, and effectively in their teaching practices.

### 3.2 Challenges in implementing the AI CFT

Despite its strengths, implementing the framework globally faces several challenges that may hinder the effective integration of AI tools in foreign language teaching. One primary challenge lies in localizing the framework within diverse educational contexts. While advancements in digital development have been made in many regions, disparities in resource allocation and internet accessibility persist, impacting the integration of AI tools. Another challenge is the varied levels of AI competency among teachers. Studies focusing on foreign language teachers reveal variations in ICT competence, AI literacy and acceptance levels (Du et al. 2024; Moradi 2025) among teachers. This may hinder the effective adoption of AI-assisted foreign language teaching practices. Additionally, in many parts of the world,

traditional teaching methods dominated by testing and teacher-centered approaches continue to prevail. According to Ren et al. (2015), the overall integration of information technology into education remains limited, with the greater the focus on exams, the lower the level of information technology application. In such settings, teachers often struggle to adopt innovative, technology-driven strategies, such as task-based pedagogy. The shift to AI-enhanced approaches further complicates the teaching ecology, making it even more challenging for teachers to adapt and effectively manage new methods.

To address these challenges, collaborative efforts are essential. First, governments and institutions can play a pivotal role by continuously investing in technological infrastructure and collaborating with tech companies, offering schools access to the latest AI tools and resources. Second, given the variations in ICT competence and AI acceptance, professional development programs should be tailored to meet the diverse needs of foreign language teachers across different regions. These programs should accommodate teachers at varying levels of AI literacy, ICT competence, and acceptance of technology, offering hands-on training, mentoring, and a gradual introduction to alleviate anxieties and build confidence. Furthermore, pedagogical innovation should be promoted through institutional policies that encourage a balance between testing and the adoption of innovative, technology-driven teaching methods, allowing AI to enhance, rather than hinder the learning process.

## 4 Conclusions

The AI CFT serves as a valuable global reference for integrating AI into education. Its human-centered and ethical guidance is essential for enhancing teaching efficiency, supporting personalized learning, and fostering professional development in language education. However, successful implementation requires collaborative efforts to localize the framework, address digital disparities, promote pedagogical innovation, and adapt to the rapid advancements in AI technologies. By addressing these challenges, key stakeholders – including language teachers, teacher educators, researchers, and policymakers – can effectively integrate AI into educational practices. Ultimately, this integration has the potential to enrich students' learning experiences and elevate the quality of language pedagogy in the digital age.

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