ASCILITE 2026

The Future is Connection:

Collaboration, Creativity and Compassion in a Digital Society

A preliminary structure for developing a context-sensitive teacher professional development framework for pedagogical AI integration in EFL education

Guangyan Zhou, Michael Cowling, Edouard Amouroux
RMIT University

Xuan Pham
CQUniversity

Generative artificial intelligence (GenAI) is reshaping education, but its educational value depends on how teachers integrate it into practice. This is particularly salient in English as a Foreign Language (EFL) education, where large language models can directly mediate language practice, feedback, and instructional design. Although research has identified AI-related knowledge demands, it remains unclear how teachers' pedagogical concerns and knowledge gaps should be translated into meaningful teacher professional development (TPD). This position paper proposes a preliminary structure for a context-sensitive TPD framework. Its distinctive contribution is an evidence-to-design logic connecting AI-focused technological pedagogical content knowledge (AI-TPACK) diagnosis with TPD-informed professional learning and contextual adaptation. The proposed structure distinguishes potentially transferable development processes from components that require local adaptation. Taking Chinese higher education as its initial setting, the paper illustrates how contextual conditions may shape design decisions. The preliminary structure provides a conceptual basis for subsequent empirical research that will develop, evaluate, pilot, and refine proposed framework components through a qualitative-led sequential mixed-methods design.

Keywords: generative AI, pedagogical AI integration, teacher professional development, AI-TPACK, EFL education, Chinese higher education, mixed methods

Introduction

Generative artificial intelligence (AI) is becoming increasingly integral to higher education, reshaping established practices of teaching, feedback, and assessment (Kasneci et al., 2023). As access to AI expands, the central educational question is no longer simply whether these technologies should be adopted, but how teachers judge when, why, and for what purposes they can support learning. This question is especially significant in the field of English as a Foreign Language (EFL) education because AI can influence language production, feedback, assessment, and learner development. Yet the evidence base remains more developed around applications of AI than around the professional learning needed to support teachers' pedagogical judgement (Tan et al., 2025). Existing research has clarified important knowledge demands through AI-focused extensions of technological pedagogical content knowledge (TPACK), including Intelligent-TPACK and AI-TPACK (Celik, 2023; Ning et al., 2024), but identifying what teachers may need is not the same as designing how those needs should be addressed through professional learning.

Teacher professional development (TPD) research offers principles for designing professional learning connected to teachers' everyday practice (Nīmante et al., 2025; Sims et al., 2025). However, less is known about how AI-related pedagogical needs can be translated into appropriate professional learning responses. This paper addresses this design problem by proposing a preliminary evidence-to-design logic that connects AI-TPACK-informed needs diagnosis, TPD-informed design, and contextual adaptation. It makes explicit how these perspectives may inform the development and refinement of professional learning components for EFL teachers, while leaving their value and feasibility to be examined empirically.

AI integration in EFL education: Pedagogical and contextual challenges

Generative AI has particular implications for EFL education because language is both the medium through which these systems operate and the object of learning. Large language models can support text revision, conversational practice, feedback, and material development (Kasneci et al., 2023; Kohnke et al., 2023). However, more fluent AI-assisted writing may not reflect equivalent development in learners' independent language production (Warschauer et al., 2023). Teachers must therefore distinguish improved task performance from genuine learning and determine how AI can support, rather than replace, the linguistic work learners need to undertake.

For EFL teachers, the challenge is therefore not simply to adopt new technologies, but to judge the pedagogical fit of particular forms of AI use. Such fit depends on whether AI advances the intended language-learning goal and supports learners' cognitive and linguistic work, rather than simply making a task faster or producing a better immediate outcome. Teachers must therefore judge when and how AI can function as a productive scaffold for language learning, with its use adapted to learners' AI literacy, task planning, and teacher involvement in assessment (Li et al., 2026). These decisions require teachers to connect technological possibilities with pedagogical purposes and disciplinary knowledge while evaluating the ethical implications of particular AI uses (Celik, 2023). Pedagogical AI integration is therefore less a problem of technological adoption than one of professional learning and judgement.

These pedagogical concerns are not unique to China. In Chinese higher education, however, they sit within a strong national policy drive to embed AI across curricula, teaching, and teacher development. The 2025 *Opinions on Accelerating Educational Digitalisation* called for AI to be integrated throughout education, alongside the development of university AI courses and stronger teacher capability (Ministry of Education of the People's Republic of China, 2025). EFL teachers nevertheless approach AI from different starting points, and concerns about academic integrity and overreliance shape their responses (Gao et al., 2024). Their professional learning needs are also tied to specific teaching and assessment conditions (Gan & Lam, 2020).

These policy and practice conditions are experienced unevenly. Chinese university foreign language teachers vary in their digital readiness because of differences in teaching experience, regional conditions, and access to training and institutional support (Lei & Jiang, 2025). Such variation may influence the level and format of professional learning, while course and assessment requirements may shape the appropriateness of particular AI-supported practices. A context-sensitive framework is therefore needed to support university EFL teachers in using AI in ways that are pedagogically meaningful, ethically informed, and responsive to local teaching needs.

Conceptual framing

The framework draws on three complementary sources with distinct functions. AI-TPACK informs the diagnosis of teachers' AI-related pedagogical knowledge needs (Ning et al., 2024). TPD research informs the organisation of professional learning that may address those needs (Sims et al., 2025). Contextual evidence informs how needs are interpreted and which responses are appropriate and feasible. Their integration provides a basis for moving from situated pedagogical problems to justified design decisions, rather than treating the three sources as independent additions.

AI-TPACK as a diagnostic lens

AI-TPACK serves as the primary diagnostic lens. Building on TPACK's account of the relationships among technological, pedagogical, and content knowledge (Mishra & Koehler, 2006), AI-TPACK extends this logic to AI-related knowledge domains and their relationships (Ning et al., 2024). Related work on Intelligent-TPACK foregrounds the AI-specific and ethical knowledge required for responsible integration (Celik, 2023). Its function in this paper is diagnostic rather than prescriptive. AI-TPACK can help identify and organise the knowledge demands implicated in teachers' pedagogical judgements, but it does not specify the professional learning processes through which identified needs should be addressed.

TPD research and professional learning design

TPD research informs how identified needs are addressed through professional learning. Desimone (2009) identifies content focus, active learning, coherence, duration, and collective participation as core features of effective professional development. Different designs combine learning mechanisms in different ways (Sims et al., 2025). Accordingly, a diagnosed need does not imply a single predetermined activity. The design task is to select and organise coherent professional learning responses that address the underlying pedagogical problem.

Contextual evidence as a cross-cutting design condition

Contextual evidence serves a cross-cutting function. In Chinese higher education, national policy expectations may influence institutional priorities and access to professional learning; course and assessment requirements may shape which AI-supported practices are appropriate; and teachers' prior AI experiences may affect the level and form of support required. Institutional resources, workload, and regional differences may further influence participation and delivery (Gan & Lam, 2020; Gao et al., 2024). This potential relationship will be examined through teacher and institutional evidence. Context, therefore, informs both the interpretation of needs and the design and feasibility of professional learning responses.

The framework-development logic is therefore integrative rather than additive. It links situated pedagogical problems, AI-TPACK-informed diagnosis, TPD-informed learning processes, and contextual implementation supports into an evidence-to-design logic. Its potentially transferable element is the process of diagnosing needs, developing and evaluating professional learning responses, and refining them through evidence. Specific learning content, activity formats, sequencing, and support arrangements may be adapted to local conditions. This distinction provides a basis for examining how the framework-development logic may be applied across different national, institutional, and disciplinary settings without assuming that identical professional learning components will be appropriate in every context.

Table 1 presents the provisional components and their design functions. Subsequent evidence may lead to components being revised, merged, extended, qualified, or removed.

Table 1
Preliminary structure and design functions

Framework layer	Illustrative provisional focus	Design function
Pedagogical AI integration	AI-supported task design; evaluation of AI-generated outputs and feedback; assessment and responsible use	Supports teachers' judgement of the pedagogical fit of AI use
Professional learning processes	Collaborative design; modelling and experimentation; artefact-based reflection; professional dialogue	Informs the selection and organisation of practice-connected professional learning responses to identified needs
Contextual implementation supports	Institutional guidance; workload and time; course and assessment alignment; resources and local support	Shapes adaptation, feasibility, participation, and implementation

Illustrative example: A teacher in a large first-year college English class wants students to practise job-interview speaking with GenAI but is unsure how to structure the interaction and assess learning. AI-TPACK-informed diagnosis identifies needs in designing speaking tasks, providing linguistic scaffolding, evaluating AI feedback, and managing responsible use. A TPD workshop then brings teachers together to analyse sample AI conversations, model effective prompts, and co-design a role-play task. Students prepare interview questions, practise with AI, and discuss their language choices with peers before receiving teacher feedback. Teachers trial the activity and review student work to refine it. Where individual devices are limited, the task is adapted for paired use of an institutionally approved tool. This hypothetical example illustrates how diagnosed needs inform professional learning and how classroom conditions shape its implementation.

Research design

Developing the proposed framework requires both an in-depth understanding of situated teacher needs and broader evidence concerning how proposed components are evaluated. A qualitative-led sequential mixed-methods design is appropriate for integrating these forms of evidence across three connected phases (Creswell & Plano Clark, 2018). Phase 1 examines situated teacher needs, Phase 2 evaluates proposed framework components, and Phase 3 investigates how a feasible framework is implemented and adapted in practice (Figure 1). Each phase builds on the previous one, progressively developing and refining the framework rather than validating a predetermined model.

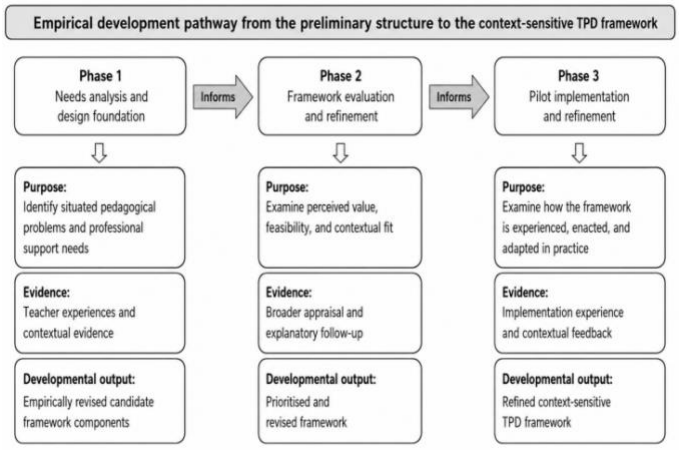


Figure 1. Empirical development pathway from the preliminary structure to the context-sensitive TPD framework

Phase 1: Needs analysis

Phase 1 uses qualitative needs analysis to examine Chinese university EFL teachers' situated experiences of pedagogical AI integration. Purposive maximum-variation sampling will seek meaningful variation across AI-use profiles, institutional settings, and EFL course contexts (Palinkas et al., 2015). Semi-structured interviews, considered alongside relevant institutional and policy documents, will generate evidence on current practices, pedagogical tensions, support needs, and contextual conditions. AI-TPACK will inform diagnosis, while TPD research will guide the development of possible professional learning responses. The phase will produce a needs map and an empirically revised set of candidate framework components.

Phase 2: Framework evaluation

The candidate framework will be evaluated through a two-stage process. A broader questionnaire will establish patterns in participants' appraisal of the relevance, usefulness, feasibility, clarity, and contextual fit of the proposed components. Purposively selected EFL teachers and relevant stakeholders will then take part in qualitative follow-up to examine the reasoning underlying agreement, disagreement, and uncertainty. Integrated evidence will inform the prioritisation and revision of components before pilot implementation.

Phase 3: Small-scale pilot implementation

The revised framework will be examined through a small-scale pilot with EFL teachers. The pilot will explore how selected components are implemented, experienced, and adapted in relation to course goals, learner needs, assessment expectations, workload, and institutional conditions. Evidence from implementation, teacher reflection, and feedback will be used to examine usefulness, feasibility, and contextual fit. The aim is to generate implementation-based evidence for refining the framework and clarifying the conditions under which particular components are workable.

Conclusions and next steps

This paper proposes a preliminary structure for developing a context-sensitive TPD framework to support EFL teachers' pedagogical integration of AI. Its contribution lies in an evidence-to-design logic that connects knowledge-needs diagnosis with professional learning design while treating context as a condition shaping decisions throughout development. The proposed distinction between potentially transferable development processes and adaptable components offers a basis for considering wider relevance without prescribing uniform training. The subsequent needs analysis, framework evaluation, and small-scale pilot will be used to refine these assumptions, including how contextual conditions influence the selection, adaptation, and feasibility of framework components.

References

Celik, I. (2023). Towards Intelligent-TPACK: An empirical study on teachers' professional knowledge to ethically integrate artificial intelligence (AI)-based tools into education. *Computers in Human Behavior, 138*, Article 107468. https://doi.org/10.1016/j.chb.2022.107468

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3), 181–199. https://doi.org/10.3102/0013189X08331140

Gan, L., & Lam, R. (2020). Understanding university English instructors' assessment training needs in the Chinese context. *Language Testing in Asia, 10*, Article 11. https://doi.org/10.1186/s40468-020-00109-y

Gao, Y., Wang, Q., & Wang, X. (2024). Exploring EFL university teachers' beliefs in integrating ChatGPT and other large language models in language education: A study in China. *Asia Pacific Journal of Education, 44*(1), 29–44. https://doi.org/10.1080/02188791.2024.2305173

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., … Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences, 103*, Article 102274. https://doi.org/10.1016/j.lindif.2023.102274

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. *RELC Journal, 54*(2), 537–550. https://doi.org/10.1177/00336882231162868

Lei, H., & Jiang, Z. (2025). Assessing the digital competence and its influencing factors among foreign language teachers in Chinese universities. *Humanities and Social Sciences Communications, 12*(1), Article 966. https://doi.org/10.1057/s41599-025-05394-7

Li, Y., Shadiev, R., & Chiu, T. K. F. (2026). Applying generative artificial intelligence to task-based language teaching and learning: A systematic review and meta-analysis. *TechTrends, 70*(1), 150–163. https://doi.org/10.1007/s11528-025-01140-7

Ministry of Education of the People's Republic of China. (2025, April 16). *教育部等九部门关于加快推进教育数字化的意见* [Opinions of nine departments, including the Ministry of Education, on accelerating educational digitalisation]. https://www.moe.gov.cn/srcsite/A01/s7048/202504/t20250416_1187476.html

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record, 108*(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Ning, Y., Zhang, C., Xu, B., Zhou, Y., & Wijaya, T. T. (2024). Teachers' AI-TPACK: Exploring the relationship between knowledge elements. *Sustainability, 16*(3), Article 978. https://doi.org/10.3390/su16030978

Nīmante, D., Kokare, M., Baranova, S., & Surikova, S. (2025). Transferring results of professional development into practice: A scoping review. *Education Sciences, 15*(1), Article 95. https://doi.org/10.3390/educsci15010095

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Sims, S., Fletcher-Wood, H., O'Mara-Eves, A., Cottingham, S., Stansfield, C., Goodrich, J., Van Herwegen, J., & Anders, J. (2025). Effective teacher professional development: New theory and a meta-analytic test. *Review of Educational Research, 95*(2), 213–254. https://doi.org/10.3102/00346543231217480

Tan, X., Cheng, G., & Ling, M. H. (2025). Artificial intelligence in teaching and teacher professional development: A systematic review. *Computers and Education: Artificial Intelligence, 8*, Article 100355. https://doi.org/10.1016/j.caeai.2024.100355

Warschauer, M., Tseng, W., Yim, S., Webster, T., Jacob, S., Du, Q., & Tate, T. (2023). The affordances and contradictions of AI-generated text for writers of English as a second or foreign language. *Journal of Second Language Writing, 62*, Article 101071. https://doi.org/10.1016/j.jslw.2023.101071

Zhou, G., Cowling, M., Amouroux, E., & Pham, X. (2026). A preliminary structure for developing a context-sensitive teacher professional development framework for pedagogical AI integration in EFL education. In Cochrane, T., Narayan, V., Poole, T., Lai, P., Lake, P., Moore, O., & Li, L. (Eds.), *The Future is Connection: Collaboration, Creativity and Compassion in a Digital Society*. Proceedings ASCILITE 2026. Brisbane (pp. 944–949). https://doi.org/10.65106/apubs.2026.3281

Note: All published papers are refereed, having undergone a double-blind peer-review process.

The author(s) assign a Creative Commons by attribution license enabling others to distribute, remix, tweak, and build upon their work, even commercially, as long as credit is given to the author(s) for the original creation.

© Zhou, G., Cowling, M., Amouroux, E., & Pham, X. 2026