World Journal of Education and Humanities
ISSN 2687-6760 (Print) ISSN 2687-6779 (Online)
Vol. 8 No. 4, 2026
www.scholink.org/ojs/index.php/wjeh

Original Paper

PLC-Mediated Synergy: Digital-Intelligent Teaching Ability and Scholarship of Teaching and Learning in University English Education

Xu Rui[1]

[1] School of Foreign Languages and Literature, Zhaoqing University, Zhaoqing City, Guangdong Province, China

Received: October 20, 2026 Accepted: November 09, 2026 Online Published: November 27, 2026
doi:10.22158/wjeh.v8n4p135 URL: http://dx.doi.org/10.22158/wjeh.v8n4p135

Abstract

Digital-intelligent teaching ability and scholarship of teaching and learning (SoTL) are increasingly imposed on university English teachers as parallel yet disconnected mandates. This conceptual paper advances a professional learning community (PLC)-supported synergistic development model, theorizing PLC as the social-organizational condition, digital-intelligent teaching as the generative practice field, and SoTL as the mechanism of reflective inquiry and knowledge conversion. Integrating communities-of-practice theory, TPACK, CALL literacy and SoTL scholarship, the model delineates four constitutive pathways and five boundary conditions through which classroom experimentation is transmuted into public, reviewable professional knowledge. It argues that the two competencies are mutually constitutive rather than additive, with PLC functioning as the catalytic hinge. Testable propositions are derived for subsequent empirical investigation, offering a middle-range framework for teacher development in Chinese higher education.

Keywords

professional learning community, digital-intelligent teaching ability, scholarship of teaching and learning

1. Introduction

Digital transformation has become a defining feature of higher education in China. For university English teachers, this transformation is not merely a matter of replacing chalkboards with screens or adding applications to existing lesson plans. It entails redesigning learning environments, orchestrating data-informed assessment, coordinating human and machine contributions, and making ethical

judgments about algorithmic tools. At the same time, universities are increasingly expected to treat teaching as a form of scholarship: systematic inquiry into teaching and learning, public sharing of results, exposure to peer critique and subsequent improvement of practice (Boyer, 1990; Shulman, 1999). These two expectations are rarely experienced as integrated. Teachers may attend workshops on educational technology while remaining unfamiliar with how to convert digital teaching experiments into inquiry questions; conversely, they may produce teaching research papers that have little connection to their actual classroom technology use. This separation is particularly consequential for English-education teachers. Their subject matters involve both language proficiency and cultural-literary knowledge; their pedagogy must balance accuracy, fluency, intercultural awareness and learner agency; and their technology use is mediated by discipline-specific affordances such as corpora, concordancers, speech recognition, machine translation and multi-modal text design. Generic digital-literacy frameworks therefore capture only part of what these teachers need. Tafazoli (2025) conceptualizes CALL (computer-assisted language learning) literacy as an emergent configuration in which linguistic, pedagogical and digital literacy continuously reshape one another. Crucially, this configuration is embedded in institutional and cultural settings, so that what counts as competent technology use cannot be specified independently of context.

In the Chinese policy context, the Ministry of Education's "Teacher Digital Literacy" standard defines five domains—digital consciousness, technical knowledge and skills, digital application, digital social responsibility and professional development—and positions digital competence as an obligation as well as an ability (Ministry of Education, 2022). The project that anchors this paper investigates English-education teachers at Zhaoqing University and proposes a five-stage research design: (a) survey of current levels and needs; (b) theoretical model construction; (c) analysis of PLC mechanisms; (d) action research on a development pathway; and (e) mixed evaluation and case refinement. Its central proposition is that a PLC can support the coordinated growth of digital-intelligent teaching ability and SoTL ability. The present paper addresses only the second stage: theoretical model construction. It does not report empirical findings. Its purpose is to clarify constructs, specify pathways and boundary conditions, and derive testable propositions for subsequent investigation.

Two research questions guide the paper. First, what are the theoretical grounds for treating digital-intelligent teaching ability and SoTL ability as synergistic rather than independent? Second, through what mechanisms does a PLC enable this synergy? In addressing these questions, the paper makes three contributions. It extends TPACK-based research by linking technology integration to scholarly knowledge conversion; it contextualizes SoTL in foreign-language teacher education; and it offers a middle-range model that can guide both action research and evaluation in local Chinese universities.

2. Conceptual foundations

2.1 Professional Learning Communities and Communities of Practice

The idea that teachers learn best in sustained, inquiry-oriented collegial settings has a long lineage. Hord (1997) identified five characteristics of professional learning communities: supportive and shared leadership, collective creativity, shared values and vision, supportive conditions, and shared personal practice. While Lave and Wenger (1991) shifted attention from institutional structures to learning as participation, introducing legitimate peripheral participation and later defining communities of practice through joint enterprise, mutual engagement and a shared repertoire (Wenger, 1998). In teacher education, these strands converge: a PLC is both an organizational arrangement and a social learning space in which teachers negotiate meaning about practice.

This dual character matters for the proposed model. If a PLC were treated only as a formal structure—regular meetings, observation schedules, documentation requirements—it could easily degenerate into what Hargreaves might call contrived collegiality. If treated only as an informal community, it would lack the time, resources and leadership support needed to sustain inquiry. The model therefore adopts a degree-based view: a teaching unit may exhibit PLC characteristics to a greater or lesser extent. Shared vision, collaborative lesson study, reflective dialogue, public demonstration of teaching and distributed leadership are treated as dimensions rather than binary attributes.

This view is consistent with Cheah, Chai and Toh (2019), whose activity-theory case study showed that movement between a joint-school PLC and a within-school PLC produced tensions in tools, rules and division of labour, thereby constraining the teacher's TPACK development. The lesson is that PLC support is not automatic; it must be designed.

2.2 Digital-intelligent Teaching Ability: From TPACK to CALL Literacy

Shulman's (1986) notion of pedagogical content knowledge established that effective teaching requires more than content knowledge plus generic pedagogy. Mishra and Koehler (2006) added technology to this configuration, proposing TPACK as the intersection of technological knowledge (TK), pedagogical knowledge (PK) and content knowledge (CK). Subsequent clarification emphasized that TPACK is situated, ill-structured and context-sensitive rather than an additive combination of three independent domains (Koehler et al., 2013). Measurement work, notably Schmidt et al. (2009) and Koh et al. (2010), made the framework operational across different pre-service populations, while later studies warned that the seven-factor structure is not stable across contexts. For language teachers, TPACK requires disciplinary specification. The framework further identifies a cluster of mediators—teachers' qualifications, cognitive and communicative capacities, intercultural and managerial competence, creativity and cultural responsiveness—that condition how the three literacies combine in practice (Tafazoli, 2025).

Rather than treating these as additive inputs, the model views them as filters through which technological affordances are interpreted and enacted. This framework is crucial because it prevents the

reduction of digital teaching ability to tool proficiency. A university English teacher who uses an AI writing assistant, for example, must understand how the tool affects genre awareness, feedback practices, academic integrity and learner autonomy. These are simultaneously linguistic, pedagogical and ethical judgments. Chinese evidence reinforces the need for a contextualized approach. Hu and Zhang (2023) found a complex relationship between university foreign-language teachers' beliefs about digital literacy and their actual practice, suggesting that positive attitudes do not guarantee transformation. Wang and Xie (2025), surveying 260 university foreign-language teachers, reported an overall moderate TPACK level, with TPK, TCK, TK and TPCK all moderate and significant differences by professional title in PK, PCK and TPCK. Zhang and Yu (2025) identified weaknesses in technology integration, digital instructional design and multi-modal expression.

In the model developed here, digital-intelligent teaching ability is therefore defined as the situated capacity to design, enact and evaluate language teaching in which digital and intelligent tools are integrated with language content, pedagogy and ethical responsibility. It comprises four dimensions: digital pedagogical design, intelligent technology integration, data-driven evaluation, and human–machine collaborative ethics.

2.3 Scholarship of Teaching and Learning as Knowledge Conversion

Boyer (1990) broadened the concept of scholarship by distinguishing the scholarships of discovery, integration, application and teaching. Hutchings and Shulman (1999) further elaborated the scholarship of teaching, and Shulman (1999) specified that scholarly work must be public, open to critical review and capable of being built upon by colleagues. Trigwell et al. (2000) proposed a model of scholarship of teaching that includes knowledge, reflection, communication and conceptions of teaching. Hutchings, Huber and Ciccone (2011) documented how SoTL became institutionalized in higher education, while also noting persistent tensions around academic reward structures.

SoTL is especially relevant to teacher digital development because it supplies the missing conversion mechanism. Digital teaching generates abundant traces: lesson designs, interaction logs, assessment data, student feedback, teacher reflections and iterative revisions. Without a scholarly routine, these traces remain private and episodic. SoTL enables teachers to formulate inquiry questions, collect and interpret evidence, publicize findings and invite peer critique. In this sense, teaching scholarship is not an additional publication burden imposed on teaching; it is the process by which teaching experience becomes cumulative professional knowledge.

The project under discussion defines SoTL ability through reflection, teaching research, public dissemination and teaching improvement, which aligns with the classical criteria of publicness, critical scrutiny and community communication.

2.4 The Gap: Parallel Agendas and Missing Mechanisms

Existing literature has established that PLCs support teacher learning, that TPACK and CALL literacy describe technology-integrated teaching knowledge, and that SoTL turns teaching into public scholarship. What remains under-theorized is the relationship among the three. Research on PLCs and

TPACK often stops at technology adoption or knowledge growth (Cheah et al., 2019; Sari & Binawan, 2025). Research on SoTL often treats digital technology as a dissemination channel rather than as a generative teaching context. Conversely, research on digital literacy rarely asks how digital practice becomes scholarly knowledge. This gap is consequential in Chinese higher education, where policy encourages both digital transformation and teaching excellence, but institutional incentives may reward research publications more visibly than teaching inquiry.

The proposed model addresses this gap by locating PLC as a mediator, digital-intelligent teaching as a practice field and SoTL as a conversion mechanism. The model's central claim is that PLC enables the two abilities to reinforce each other through a recursive cycle: digital practice produces inquiry problems; inquiry produces public knowledge; public knowledge re-enters the community and reshapes subsequent digital practice.

2.5 Why university English Teacher Education Matters

University English teacher education provides a particularly informative site for the proposed model because it combines three forms of knowledge that are often treated separately in policy and institutional practice: linguistic knowledge, pedagogical knowledge and technological knowledge. English teachers are expected to model language use, explain linguistic and rhetorical choices, design communication tasks and respond to culturally diverse texts. When digital tools enter this ecology, they do not simply transmit pre-existing content; they reorganize what counts as evidence of learning. Automated speech scoring may redefine pronunciation feedback; corpora may change how grammatical patterns are discovered; generative AI may complicate the distinction between authorship and assistance. These changes require teachers to make disciplinary judgments that generic technology training cannot supply.

The professional identity of English-education teachers further strengthens the case for a PLC-mediated approach. Many teachers enter universities with strong disciplinary training but limited preparation for scholarly inquiry into their own teaching. Conversely, those who publish teaching research may not regard classroom experimentation with digital tools as a legitimate source of data. A PLC can bridge this identity split by giving teachers a shared vocabulary for describing practice and a legitimate audience for tentative findings. In such a community, a lesson failure becomes a collectively analysable event, open to shared scrutiny. This is the cultural precondition for SoTL: teachers must believe that their teaching problems are worth investigating and that their interpretations can be criticized without threatening their professional worth.

Finally, the Chinese local-university context adds both urgency and constraint. Policy documents promote educational digitalization and teacher digital literacy, while institutional evaluation systems often continue to privilege disciplinary research outputs. Teachers therefore face competing signals: innovate in the classroom, but publish in recognized journals; collaborate, but compete for individual credit; adopt technology, but demonstrate pedagogical stability. The proposed model treats these contradictions as contextual variables that shape whether PLC support can translate into genuine

synergy. Accordingly, the model's outcome layer includes teacher agency and institutional learning alongside individual competence.

3. A Proposed PLC-supported Synergistic Development Model

3.1 Model Overview

The Professional Learning Community–Supported Synergistic Development Model (PLC-SSDM) consists of five layers. The contextual layer includes institutional policy, technology infrastructure, assessment culture, workload and the demographic composition of the teacher community. The support layer comprises PLC dimensions. The practice layer is digital-intelligent teaching. The conversion layer is SoTL ability. The outcome layer is synergistic teacher development, including enhanced adaptability, teacher agency and improved student learning. Table 1 summarizes the layers.

Table 1. Components of the PLC-supported Synergistic Development Model

Layer	Core constructs	Main function	Illustrative indicators
Context	Policy, infrastructure, reward system, leadership, teacher profile	Enables or constrains all other layers	Digital policy clarity; platform access; recognition of teaching scholarship
PLC support	Shared vision, collaborative inquiry, reflective dialogue, public practice, supportive leadership, boundary crossing	Provides social and organizational mediation	Frequency of collaborative design; quality of reflective dialogue; trust
Digital-intelligent teaching practice	TPACK, CALL literacy, digital design, data-informed assessment, human–machine ethics	Generates authentic problems and evidence	Technology-integrated lesson designs; assessment data; ethical decision-making
SoTL conversion	Reflection, inquiry, public dissemination, peer review, teaching improvement	Converts practice into shareable knowledge	Inquiry questions; teaching portfolios; peer-reviewed outputs; revised practice
Synergistic outcome	Mutual enhancement of two abilities, teacher agency, student learning	Produces sustainable professional growth	Integrated competence; transferable cases; improved learning experience

3.2 Pathways and Mechanisms

The model specifies four linked pathways. Together they describe how PLC support initiates digital experimentation, how experimentation generates scholarly questions, how the resulting knowledge returns to the community, and how the two competencies reinforce one another over time.

3.2.1 PLC to Digital-intelligent Teaching: Externalizing Tacit Knowledge

Collaborative lesson planning, co-observation and structured post-lesson dialogue allow teachers to externalize tacit knowledge. When a teacher experiments with a corpus-based vocabulary task or an AI-supported feedback workflow, colleagues can question the design, suggest alternatives and jointly interpret student responses. Such interaction converts individual trial-and-error into collective problem-solving. It also distributes technological knowledge: teachers with stronger TK can support colleagues in tool use, while colleagues with stronger pedagogical or content knowledge prevent technology from dominating the lesson.

3.2.2 Digital Teaching to SoTL: Problematizing Practice

Digital practice is rich in inquiry potential precisely because it is unstable and problematized. A teacher may notice that automated feedback improves submission speed but weakens revision quality; that students rely excessively on machine translation; or that multi-modal tasks motivate some learners while increasing cognitive load for others. These are not merely technical problems. They are scholarly questions about language learning, assessment and equity. When teachers frame them as research questions, collect evidence and interpret outcomes, digital practice becomes the object of teaching scholarship.

3.2.3 SoTL Back to PLC: Turning Episodes into Artefacts

Public workshops, teaching portfolios, case reports and peer-reviewed articles re-enter the community as shared artefacts. They enrich the community's repertoire and provide language for discussing practice. Crucially, publicness changes the status of teaching knowledge: it becomes reviewable rather than merely anecdotal. This aligns with Shulman's (1999) criterion that scholarship must be communicated and critiqued within a community.

3.2.4 Recursive Feedback: The Upward Spiral

SoTL inquiry often reveals limitations in digital practice—for example, insufficient theoretical grounding or weak methodological control—which motivates renewed technical and pedagogical learning. Similarly, more sophisticated digital competence generates more complex inquiry questions. The relationship is better described as cumulative: each cycle of inquiry raises the level of both competencies.

3.3 Propositions

On the basis of these pathways, five propositions are advanced for empirical testing.

P1. The extent to which a teacher community exhibits PLC characteristics positively predicts teachers' digital-intelligent teaching ability.

P2. PLC support promotes SoTL ability indirectly by increasing the quality and quantity of inquiry questions generated from teaching practice.

P3. Digital-intelligent teaching ability positively predicts SoTL ability when teachers have access to evidence tools and structured reflective dialogues.

P4. SoTL activity strengthens the PLC by converting private teaching episodes into public, reviewable and reusable community knowledge.

P5. The strength of the PLC–ability relationship is moderated by institutional recognition of teaching scholarship, leadership support and the stability of technologically enhanced teaching infrastructure.

These propositions are deliberately framed as relationships among constructs rather than as causal effects. The project's subsequent mixed-method design—survey, interview, observation, action research and case analysis—will be positioned to test them.

3.4 Boundary Conditions

Four boundary conditions deserve emphasis. **Time.** Time is a scarce resource; Sari and Binawan (2025) found that limited discussion time and insufficient post-session support constrained PLC effectiveness. **Organizational alignment.** Routines can produce misalignment; Cheah et al. (2019) showed that volatile school routines and weak leader–teacher partnerships hindered TPACK implementation. **Subdomain malleability.** TPACK subdomains are not equally malleable: technological-pedagogical knowledge may be easier to develop through shared infrastructure, while technology–content knowledge depends more on disciplinary expertise and individual agency. **Incentives.** If promotion and evaluation privilege disciplinary research, teaching scholarship may remain symbolic. The model therefore treats institutional recognition as a constitutive condition of the PLC–ability relationship.

4. Discussion

4.1 Theoretical Implications

The model makes three theoretical moves. **Integration.** It brings together TPACK and SoTL, two traditions that have typically developed in parallel: TPACK explains what teachers need to know in order to teach with technology, while SoTL explains how teachers turn teaching into public knowledge. Linking them allows researchers to move beyond whether teachers can use technology and ask whether and how they learn publicly from using it. **Disciplinary contextualisation.** The model situates digital competence in language education by adopting CALL literacy as a disciplinary lens (Tafazoli, 2025) and aligning it with national standards (Ministry of Education, 2022). Language teachers' technology decisions are inseparable from linguistic, cultural and ethical considerations: a teacher selecting an AI feedback tool is also deciding what kind of writing competence the tool should cultivate. **Mechanisms over containers.** PLC is specified as a mediator. Its effects depend on the quality of interaction, the availability of shared artefacts, the legitimacy of inquiry and the presence of supportive leadership. This account explains why bringing teachers together is rarely sufficient and why collegial structures sometimes succeed and sometimes fail.

4.2 Practical Implications

For university English departments, the model suggests a development pathway with five moments: diagnosis, collaborative inquiry, digital classroom experimentation, reflective inquiry and scholarly conversion. Diagnosis maps current competence and needs. Collaborative inquiry builds shared language and joint plans. Classroom experimentation generates authentic evidence. Reflective inquiry transforms that evidence into questions and findings. Scholarly conversion produces public artefacts such as teaching cases, workshops, portfolios and articles, which then return to the community.

This pathway has implications for workload design. If teachers are expected to produce SoTL outcomes, departments must protect time for collaborative inquiry and recognize teaching scholarship in appraisal. It also has implications for leadership. Leaders do not merely allocate resources; they define what counts as legitimate knowledge. A leader who treats teaching portfolios as equivalent to research outputs creates a different PLC culture from one who treats them as administrative paperwork.

For teacher educators, the model indicates that technology training should be organized around problems of practice rather than tool demonstration. A workshop on AI-assisted feedback, for instance, should require participants to formulate an inquiry question, examine evidence of student response and subject their interpretation to peer critique. In this way, technical training and scholarly development become a single activity.

4.3 Limitations and Future Research

Because this is a conceptual paper, its propositions remain untested. The model is also context-specific: it is designed for university English-education teachers in a Chinese local university, where policy expectations, institutional constraints and teacher identities may differ from those in other systems. Future research should operationalize the constructs, validate measurement instruments and test the pathways longitudinally. Mixed methods are particularly appropriate: surveys can estimate relationships, interviews can reveal mechanisms, observations can capture PLC quality, and case analysis can trace the conversion of digital practice into scholarly output.

Another avenue is to examine subgroup differences. The existing literature suggests that professional title, teaching experience and course type may moderate development (Wang & Xie, 2025). It would be valuable to ask whether early-career teachers and senior teachers benefit from different PLC configurations, and whether digital-intelligent teaching and SoTL ability develop in the same sequence across groups. Finally, the role of generative AI deserves explicit attention. As AI tools become embedded in language teaching, the ethical and interpretive dimensions of digital-intelligent teaching will become more salient, and SoTL may become the primary means by which teachers collectively develop responsible practices.

5. Conclusion

The two questions posed at the outset can now be answered. The theoretical grounds for synergy lie in the complementarity of TPACK-based practice and SoTL-based knowledge conversion; the enabling

mechanism is a PLC whose quality—not mere existence—determines whether the conversion occurs. This account holds only where institutions recognize teaching scholarship and protect time for collaborative inquiry.

The central argument is that digital competence and teaching scholarship should not be treated as separate professional agendas. When teachers investigate their own technology-rich teaching and share the results within a critical community, digital practice becomes a source of scholarly knowledge, and scholarship in turn improves digital practice. For university English teacher education, this synergy offers a plausible route from fragmented innovation to sustainable professional growth.

References

[1] BOYER E L. Scholarship reconsidered: priorities of the professoriate[M]. Princeton: Carnegie Foundation for the Advancement of Teaching, 1990.

[2] CHEAH Y H, CHAI C S, TOH Y. Traversing the context of professional learning communities: development and implementation of technological pedagogical content knowledge of a primary science teacher[J]. Research in Science & Technological Education, 2019, 37(2): 147-167.

[3] HARGREAVES A. Changing teachers, changing times: teachers' work and culture in the postmodern age[M]. London: Cassell, 1994.

[4] HORD S M. Professional learning communities: communities of continuous inquiry and improvement[M]. Austin: Southwest Educational Development Laboratory, 1997.

[5] HUTCHINGS P, HUBER M T, Ciccone A. Scholarship of teaching and learning reconsidered: institutional integration and impact[M]. San Francisco: Jossey-Bass, 2011.

[6] HUTCHINGS P, SHULMAN L S. The scholarship of teaching: new elaborations, new developments[J]. Change, 1999, 31(5): 10-15.

[7] KOEHLER M J, MISHRA P, CAIN W. What is technological pedagogical content knowledge (TPACK)?[J]. Journal of Education, 2013, 193(3): 13-19.

[8] KOH J H L, CHAI C S, TSAI C C. Examining the technological pedagogical content knowledge of Singapore pre-service teachers with a large-scale survey[J]. Journal of Computer Assisted Learning, 2010, 26(6): 563-573.

[9] LAVE J, WENGER E. Situated learning: legitimate peripheral participation[M]. Cambridge: Cambridge University Press, 1991.

[10] MISHRA P, KOEHLER M J. Technological pedagogical content knowledge: a framework for teacher knowledge[J]. Teachers College Record, 2006, 108(6): 1017-1054.

[11] SARI V D A, BINAWAN H. A study on professional learning community (PLC) methods for enhancing pre-service English teachers' quality in TPACK[J]. Journal of English Learning and Teaching, 2025, 10(6).

[12] SCHMIDT D A, BARAN E, THOMPSON A D, et al. Technological pedagogical content knowledge (TPACK): the development and validation of an assessment instrument for preservice

teachers[J]. Journal of Research on Technology in Education, 2009, 42(2): 123-149.

[13] SHULMAN L S. The scholarship of teaching: new elaborations, new developments[J]. Change, 1999, 31(5): 10-15.

[14] SHULMAN L S. Those who understand: knowledge growth in teaching[J]. Educational Researcher, 1986, 15(2): 4-14.

[15] TAFAZOLI D. Development of computer-assisted language learning literacy framework for foreign language teachers[J]. Online Learning, 2025, 29(1): 32-57.

[16] TRIGWELL K, MARTIN E, BENJAMIN J, et al. Scholarship of teaching: a model[J]. Higher Education Research & Development, 2000, 19(2): 155-168.

[17] WENGER E. Communities of practice: learning, meaning, and identity[M]. Cambridge: Cambridge University Press, 1998.

[18] Hu Jiehui, Zhang Tiefu. A Study on Beliefs and Practices of Digital Literacy among Foreign Language Teachers in Chinese Higher Education Institutions [J]. Foreign Language and Foreign Language Teaching, 2023(5).

[19] Wang Xiaojing, Xie Lingling. A Survey Study on the Current Status of TPACK Level among Foreign Language Teachers in Higher Education Institutions [J]. Sino-Arab Science and Technology Forum (Chinese and English), 2025(11): 153-157.

[20] Zhang Wei, Yu Jiamin. Realistic Challenges and Practical Responses to Enhancing Digital Literacy of Foreign Language Teachers in Higher Education Institutions [J]. Educational Science, 2025, 41(6): 53-59.

[21] Ministry of Education of the People's Republic of China. Teacher Digital Literacy: JY/T 0646—2022 [S]. Beijing: Ministry of Education of the People's Republic of China, 2022.