

# A Research Review on the Development Mechanism of Foreign Language Teachers' Digital Academic Competence

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## Abstract

In the digital-intelligent era, the advancement of digital technologies and artificial intelligence has profoundly reshaped the landscape of higher education, placing new demands on the professional development of foreign language teachers. While existing research, both domestically and internationally, has extensively explored digitally enhanced teaching models and teacher digital literacy, it predominantly focuses on pedagogical applications, overlooking the dimension of “digital scholarly competence”—the ability to integrate digital tools and methodologies into the entire research process. This paper reviews current studies, identifies gaps in the narrow focus on teaching rather than research, the lack of interdisciplinary integration, and the absence of systematic development mechanisms. It argues for the necessity of expanding foreign language teachers' roles from “instructors” to “researchers” equipped with digital scholarly capabilities. Finally, the paper proposes a holistic development framework encompassing a competency structure, interdisciplinary platforms, incentive-evaluation mechanisms, and embedded professional learning communities, aiming to foster a sustainable ecosystem for teacher growth and contribute to the paradigm shift in foreign language studies in the age of digital intelligence.

## Keywords

Development Mechanism; Foreign Language Teacher; Digital Academic Competence

## 1. Introduction

The deep integration of digital technology and artificial intelligence is driving an unprecedented transformation in higher education. Digital and intelligent technologies are not only reshaping teaching models and learning ecosystems but also imposing new demands on teachers' professional competencies. Particularly under the dual contexts of “New Liberal Arts” development and educational digital transformation, foreign language teachers are required not only to master digital teaching skills but also to possess the ability to integrate digital tools and methodologies into the entire process of academic research, i.e., “digital scholarly competence.” Current domestic research has begun to focus on the construction of digitally intelligent teaching models. For instance, He Chunying et al. (2025) constructed a college English intelligent teaching system based on an AI-powered digital teaching platform, and Guo Cong et al. (2025) proposed a university digital-intelligent English teaching model. These studies reflect practical progress in technology-enabled teaching. However, they predominantly concentrate on teaching scenarios,

lacking sufficient attention to teachers' "digital scholarly competence" as researchers. This article aims to systematically review domestic and international research trends regarding digital scholarship and teacher development, and, by incorporating China's recent practices in digitally intelligent teaching, explore the developmental pathways and mechanism construction for foreign language teachers' digital scholarly competence, hoping to provide references for related research and practice.

## **2. International Research Trends: Mature Systems of Digital Scholarship and Teacher Development**

International research on digital scholarship and teacher development started earlier and has formed a relatively mature theoretical system and practical framework.

### **2.1 The Theoretical and Practical Evolution of Digital Scholarship**

Digital scholarship originated from "humanities computing" and has now developed into an independent academic field. Scholars such as Burdick et al. (2012) and Weller (2011) systematically elaborated on the connotation of digital scholarship, emphasizing that it is not merely the application of digital tools but a profound transformation of academic paradigms, knowledge production, and dissemination methods. Digital scholarly tools like text mining, GIS, and data visualization, combined with open-access platforms (such as open-source journals, academic blogs, and social media), have promoted the democratization and efficiency of academic collaboration and dissemination of results. The research focus has shifted from the technology itself to its overall impact on the academic ecosystem, including challenges related to academic evaluation systems, intellectual property, and academic ethics. This shift from tool to paradigm aligns with the "knowledge transformation in the digital-intelligent era" proposed by Liu Li et al. (2025), namely, that knowledge production has transitioned from a single-subject, static-structure model to a human-machine collaborative, dynamic-ecosystem model.

### **2.2 Systematic Construction of Teacher Digital Competence Frameworks**

The European Union's Digital Competence Framework for Educators and UNESCO's ICT Competency Framework for Teachers provide authoritative global standards for developing teachers' digital literacy. These frameworks emphasize that teachers should possess comprehensive competencies across multiple dimensions, including digital resource utilization, teaching design, learning assessment, and learner empowerment. Crucially, these frameworks focus not only on technical operation but also on the integration of educational philosophy with digital technology, embodying the core idea of "technology serving education." This resonates with domestic scholars' discussions on teachers' digital-intelligent literacy, such as the connotation of teacher digital-intelligent literacy proposed by Xu Yafeng et al. (2020) and the teacher digital-intelligent competency model constructed by Fan Jianli et al. (2022), both emphasizing teacher development in areas like data ethics, human-machine collaboration, and higher-order thinking.

### **2.3 Continuous Exploration of Teacher Development Mechanisms**

International research widely agrees that the development of teachers' digital competence is a systematic and continuous process that goes beyond short-term training. Wenger's (1998) "communities of practice" theory emphasizes that teachers enhance their abilities through collaboration with peers. Additionally, institutional support (such as technological platforms, policy incentives, and reform of evaluation systems), formative assessment mechanisms, and teachers' own agency are considered key factors. In recent years, research has begun to focus on disciplinary differences, exploring the unique challenges faced by humanities teachers during digital transformation, such as the digital migration of traditional research methods and the disciplinary suitability of digital resources. This institutionalized developmental perspective shares a similar logical starting point with domestic scholars' reflections on "teaching presence" and teachers' professional connections (Chen, 2021) and the construction of evidence-based teaching evaluation systems (Mou et al., 2021), namely, that teacher development must be grounded in practice, rely on communities, and be embedded within institutional environments.

### 3. Domestic Research Trends: Policy-Driven Rapid Development and Disciplinary Limitations

Driven by national strategies like “Digital Education” and “New Liberal Arts,” domestic related research has developed rapidly in recent years, producing numerous empirical studies and model explorations focusing on the integration of digital-intelligent technology and education. However, obvious disciplinary limitations and mechanism gaps persist.

#### 3.1 Macro-Level Advocacy for New Liberal Arts and Exploration of Disciplinary Integration

Since the concept of “New Liberal Arts” was proposed, academia has extensively discussed its connotation, pathways, and significance. The consensus is that New Liberal Arts construction must deeply integrate with information technology to promote systematic innovation in research methods and teaching models (Fan Liming et al., 2020). This provides a policy basis and disciplinary context for the development of foreign language teachers’ digital scholarly competence. At the practical level, digital-intelligent technologies have been widely applied in curriculum reform and teaching model innovation. For example, Li Wenfang (2025) explored pathways for digital-intelligence enabling deep learning in college English based on OBE principles; Zhao Yuyang (2024) integrated digital-intelligent technology with the BOPPPS teaching model in business English curriculum reform; Chen Mingxuan et al. (2024) constructed a vocational education project-based teaching paradigm promoting deep learning. These studies show that digital-intelligent transformation has deeply penetrated teaching practices. However, current discussions and practices exhibit a clear tendency towards “technology-empowered teaching, “while” technology-empowered research”—i.e., the systematic application of digital scholarship in foreign language disciplines—is still in its infancy. The specific research pathways for realizing “interdisciplinary integration of arts and sciences, enabled by digital intelligence” within the foreign language discipline remain unclear.

#### 3.2 Foreign Language Teacher Professional Development: The Gap from “Teaching Technology” to “Research Capability”

Domestic research on foreign language teacher professional development is abundant, often focusing on teacher beliefs, pedagogical content knowledge, classroom behavior, etc. With the advancement of educational informatization, some studies have begun to pay attention to foreign language teachers’ “information technology application ability,” but they are mostly limited to operational aspects like multimedia courseware creation and the use of online teaching platforms, lacking focus on the teacher’s role as a “researcher.” Even amidst the current focus on digital-intelligent teaching, the research spotlight remains on “how to teach” rather than “how to research.” For example, numerous studies explore the construction of AI-empowered intelligent teaching models (He et al., 2025), blended teaching reform (Wang et al., 2023; Wang et al., 2024), and the transformation of classroom teaching formats (Li et al., 2024). While these achievements have greatly enriched digital teaching theory, they have not substantively propelled the digital transformation of foreign language teachers’ research paradigms. Although Yang Shun’e (2025) discussed the transformation of English teaching models in the digital-intelligent era, the framework still revolves around the three elements of textbooks, teachers, and students, without touching upon the reconstruction of teacher research capability. Xu Ling et al. (2024), in their analysis of 200 papers, proposed pathways for digitally empowering foreign language teaching, but the focus remained on the teaching level.

#### 3.3 Preliminary Introduction of Digital Scholarship and Disciplinary Barriers

In recent years, disciplines like library and information science and journalism and communication have begun systematically introducing digital scholarship (e.g., Wang et al., 2010) and attempting localized practices. However, within the foreign language discipline, digital scholarship remains at the stage of conceptual advocacy, lacking systematic and empirical research. Although some scholars have called for attention to the implications of digital humanities for foreign language research, how foreign language teachers can systematically integrate digital tools and methods into the entire process—from topic selection, data collection, and analysis to publication—has not yet formed an operable model. A few studies have begun to touch upon this area. For example, Zhou Wenjie et al. (2025) explored knowledge graph-supported digital-intelligent teaching strategies for college English; Jiang Xianfa et al. (2024) explored the “ABC” pathway for translation teaching; Guo Xiaolin (2023) attempted to construct a

“digital-intelligent” translation teaching model. These studies provide valuable cases for the application of digital scholarship in foreign language disciplines, but they mostly concentrate on translation or specific skill teaching, not covering mainstream areas of foreign language disciplines such as literature, linguistics, and cultural studies. Furthermore, mechanisms for interdisciplinary collaboration between foreign language disciplines and fields like computer science and data science have not been established, and disciplinary barriers remain evident. Zhu Ke et al. (2025) explained the importance of digital-intelligent technology empowering the construction of an education powerhouse from a five-fold logic, and Xiao Jinghua et al. (2024) also proposed new requirements for talent cultivation in the digital-intelligent era from the perspective of industry-education integration. These macro-level discussions provide theoretical support for interdisciplinary collaboration, but how to implement them specifically within the foreign language discipline still requires exploration.

#### **4. Research Review and Entry Points for Mechanism Construction**

Synthesizing domestic and international research reveals the following gaps and deficiencies. Meanwhile, China’s rich practices in digital-intelligent teaching provide an important experiential foundation and problem-oriented basis for mechanism construction.

##### **4.1 Narrowing of Research Focus: Expanding Identity from “Teacher” to “Researcher”**

Domestic research generally confines foreign language teachers’ digital competence to the “teaching” scenario, severely neglecting the digital scholarly competence required for their role as “researchers.” Foreign language research in the digital-intelligent era is no longer limited to close reading and theoretical speculation; it can employ digital tools like corpora, text mining, network analysis, and virtual reality to conduct empirical and interdisciplinary research. Therefore, “digital scholarly competence” must be incorporated as a core dimension of foreign language teacher professional development. Domestic research on the application of knowledge graphs (Zhou et al., 2025) and generative AI (Jiang et al., 2024) in teaching has already demonstrated the potential of digital tools. The next step is to systematically migrate them into academic research processes, achieving the leap from “using technology to teach” to “using technology to research.”

##### **4.2 Insufficient Interdisciplinarity: The Need to Integrate New Liberal Arts, Educational Technology, and Foreign Language Disciplines**

Existing research either leans towards macro-level educational technology theories or is confined within the foreign language discipline itself, lacking effective integration. Future research should, based on the interdisciplinary concept of New Liberal Arts, combine the practical pathways of educational technology, and address specific problems within the foreign language discipline (such as cross-cultural corpus analysis, multimodal discourse studies, digital simulation of translation processes, distant reading and visualization of literary texts, etc.), construct a digital scholarly competence framework with disciplinary characteristics. Explorations into the digital-intelligent upgrading of course systems for economics and management majors by Wang Weiguo et al. (2022) and discussions on the innovation of virtual-reality integrated teaching paradigms by Shi Qiheng et al. (2022) provide references for interdisciplinary transformation in foreign language disciplines. Meanwhile, research by Sun Jia et al. (2025) on the dissemination mechanism of excellent traditional Chinese culture based on the ASSURE model suggests possible pathways for combining digital scholarship with curriculum ideology and political education, and cultural heritage.

##### **4.3 Absence of Mechanism Research: From Linear Countermeasures to Systemic Mechanism Construction**

Most research remains at the linear “problem-countermeasure” thinking level, lacking in-depth analysis of the complex system of “developmental mechanisms.” What motivates teachers to engage in digital scholarship? How to provide continuous and effective technical support and training? How to establish incentive-based and developmental evaluation systems? These questions need to be answered through mechanism construction and empirical research. We can draw on international concepts such as “communities of practice,” “institutional support systems,” and “formative assessment,” combine them with the realities of Chinese universities, and refer to domestic scholars’ existing mechanistic reflections, such as Chen Jianlin’s (2025) strategies for constructing foreign language teachers’

digital teaching competence from national, institutional, and individual levels; Guo Chaohua et al.'s (2025) analysis of the dilemmas and optimization approaches in digital-intelligent classroom teaching evaluation; and Tian Yongjing et al.'s (2024) study on the mutual construction mechanism of digital-intelligent technology empowering the practical teaching of the "Great Ideological and Political Education" course. This can help construct a four-in-one developmental mechanism encompassing "policy guidance, platform support, community collaboration, and evaluation incentives."

## **5. Preliminary Thoughts on Mechanism Construction**

Based on the above analysis and incorporating existing domestic practical explorations, this article proposes the following directions for development mechanism construction.

### **5.1 Developing a Tiered and Categorized Digital Scholarly Competence Framework**

Design differentiated competence standards and development pathways based on teacher development stages (novice, proficient, expert) and research types (theoretical, empirical, applied). This framework should integrate dimensions from international frameworks like DigCompEdu while incorporating digital scholarly competence elements suited to the characteristics of the foreign language discipline, such as knowledge graph construction, textual data mining, and digital dissemination of academic achievements, referencing Hu Liqun et al.'s (2025) thinking on competence-oriented, process-guided evaluation in the transformation of university teaching paradigms.

### **5.2 Building Interdisciplinary Collaboration Platforms and Learning Communities**

Promote collaboration between foreign language departments/faculties and units like computer science, data science, and design to create physical or virtual platforms such as "Digital Humanities Labs," "Corpus Research Centers," and "Cross-cultural Digital Research Studios," facilitating collaboration and mutual assistance among teachers. Drawing from the "live" case-based education and teaching model (Xiao et al., 2024), genuine research projects can drive the formation of interdisciplinary teams and knowledge sharing, forming stable communities of practice.

### **5.3 Reforming Teacher Evaluation and Incentive Mechanisms**

Incorporate recognition of digital scholarly achievements into professional title reviews, project applications, and performance evaluations, encouraging teachers to engage in digital and interdisciplinary research. The evaluation system should move beyond sole reliance on traditional papers and monographs, recognizing the value of new academic outputs such as datasets, digital tools, visualization achievements and open-source code, establishing a multi-dimensional evaluation system aligned with the characteristics of knowledge production in the digital-intelligent era, responding to Niu Baorong's (2024) call for "teaching for thinking" and the transformation of knowledge teaching.

### **5.4 Implementing Continuous, Embedded Teacher Development Activities**

Go beyond short-term training, offering various forms of development activities such as workshops, project-based learning, teaching research projects, and digital scholarly seminars, emphasizing "learning by doing" and "using through research." Development activities should closely revolve around specific research questions within the foreign language discipline, for example, organizing thematic seminars on "diachronic language change research based on large-scale corpora," "digital narrative and literary mapping," or "cross-cultural discourse analysis on social media," enhancing the relevance and effectiveness of training.

## **6. Conclusion**

The digital-intelligent era presents both brand-new challenges and unprecedented development opportunities for foreign language teachers' professional ability. Digital scholarly competence has become key for foreign language teachers to achieve teaching innovation and research breakthroughs. The extensive domestic research and practice on digital-intelligent teaching provide fertile ground for contemplating teacher development issues and also highlight the urgency of extending from "digitalization of teaching" to "digitalization of research." Future research

should go beyond surface-level discussions of “technology application,” deeply explore pathways for integrating digital scholarship with the foreign language discipline, and construct systematic and sustainable teacher development mechanisms, thereby promoting the paradigm shift and high-quality development of the foreign language discipline in the digital age, ultimately serving the strategic goals of building an education powerhouse and cultivating talents for the new era.

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