Pathways to Enhance Digital Literacy of Foreign Language Teachers in Application-Oriented Universities amidst the Educational Digitalization and Intellectualization

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Abstract: Under the background of educational digitalization and intellectualization, the demand for digital literacy among foreign language teachers in application-oriented universities has become increasingly prominent. This transformation presents significant challenges to foreign language teachers who often face a digital literacy gap. This research addresses the urgent need to bridge this gap by investigating viable pathways for professional development. It identifies key barriers and driving factors, and the findings propose a multi-faceted framework for capacity building, which includes institutional support and policy guidance, practical workshops and tailored training and external exchange and resource utilization. This study highlights the importance of a coordinated approach to facilitate foreign language teachers' digital adaptation and professional growth.

Keywords: foreign language teachers; digital literacy; educational digitalization and intellectualization; promotion pathways

Introduction

In the context of the digital intelligence era, higher education is undergoing a transformation marked by digitalization and smartification. For foreign language teachers' competency in application-oriented universities, the current situation presents a mixed picture. As application-oriented universities aim at cultivating students' practical skills and real-world competencies, these teachers are uniquely positioned to lead the way under the background of educational digitalization and intellectualization. Application-oriented undergraduate education focuses more on cultivating skilled talents with practical abilities. While foreign language teachers have solid theories in core language knowledge and traditional teaching methods, there is an urgent need to address critical gaps between traditional teaching modes and creative pedagogical models under the background of educational digitalization and intellectualization. Telling Chinese stories to the world and cultivating students with digital competence requires the enhancement of teachers' digital literacy. The current status indicates that the imperative to enhance their digital literacy is necessary. According to the above status, foreign language teachers' lacking of robust data analysis skills, superficial integration of digital technologies into classroom teaching and students' insufficient initiative in collaboratively producing and sharing information make enhancing teachers' digital literacy an urgent priority. It requires that foreign language teachers use up-to-date digital platforms to create diverse learning materials or simulate real-world communication scenarios.

As the real-world teaching mode lacks practical integrating methods to bridge the gap between theoretical courses and up-dated digital devices, this study aims to summarize the gaps in real teaching environments and discuss the pathways to enhance digital literacy of foreign language teachers in application-oriented universities amidst the educational digitalization and intellectualization based on collecting, reading and analyzing professional papers and studies. It hopes that this paper can help provide some reference for enhancing digital literacy of foreign language teachers and thus guide students to use digital assistants simultaneously. It is the process of mutually beneficial process. Advancing foreign language teachers' digital proficiency is not merely an option but a fundamental aspect of their professional identity and effectiveness as educators in modern times.

Digital literacy is a dynamic concept that continually evolves with the emergence of new technologies such as artificial intelligence and big data. [1] It necessitates that teachers possess the capacity for lifelong learning and the ability to critically adapt to technological change. Enhancing digital literacy of foreign language teachers in application-oriented universities amidst the educational digitalization and intellectualization can transform traditional classrooms into dynamic learning place where students not only learn the language but also apply it in professionally relevant scenarios. This digital shift is essential for ensuring that graduates possess the technological fluency required in a rapidly evolving global job market. Tackling obstacles in the traditional teaching setting (a relative deficiency in digital literacy; a lack of systematic training in applied teaching methodologies; and generally underdeveloped research capabilities) and addressing these multifaceted issues is significant for enhancing the overall quality of education and has a profound influence.

Literature Review

The digital transformation of higher education has positioned digital literacy as a cornerstone of teachers' competency, especially for foreign language teachers in in application-oriented universities. The digital literacy in this paper mainly references from *European Framework for the Digital Competence of Educators: DigCompEdu.* Its general definition is as follows: "Digital competence for foreign language educators, is defined as the holistic combination of knowledge, skills,

and attitudes required to access, evaluate, manage, integrate, create, and share digital information and resources, thereby effectively fulfilling teaching, research, and professional development activities in a digitalized teaching environment." [2] Thus digital education has been carried out globally and advances irresistibly.

In China, the digitalization process in higher education mainly begins in 2016 (The 13th Five-Year Plan for Educational Informatization) and its importance is becoming increasingly prominent. All the related official documents emphasize that the digital transformation of education requires the innovation and transformation of teaching modes. Zhao Shuang and Zhao Yan pointed out the significance of improving digital literacy of university teachers in the digital intelligence era and emphasized the strategies in general education. [3] Wang, R., and Cao, Y. mentioned that the improvement of digital literacy in higher education requires collaboration in many ways. [4] Liu Yan and Wan Xin pointed out that enhancing the digital literacy of university teachers is a multidimensional and systematic process, which requires a balanced focus on stimulating their internal motivation and fostering guidance from the external environment. [5] Liu, S., and Zhang, H. highlighted that the current digital literacy monitoring system lacks a scientific basis and it has the features of fragmentation and inefficiency. [6] These findings provide theoretical support and practical guidance for pathways to improve teachers' digital literacy in higher education. However, specific research targeted on foreign language teachers in application-oriented universities is relative insufficient and lacks systematic pathways. Meanwhile, some strategies mentioned in the studies are not specific and difficult to handle. Therefore, this paper takes a specific group of teachers and specific education system as the center to explore efficient and practical promotion pathways based on literature review method, thus lending a hand in building a data-based model for education.

Pathways to Implementation

The enhancement of digital literacy for foreign language teachers in application-oriented universities is a multi-faceted endeavor and it is crucial for adapting to the evolving educational landscape. Such digital literacy is the practical embodiment of integrative competence, referring to the comprehensive ability to work effectively and innovate in digital environments. It serves as the core pathway and foundation for achieving higher-level digital competence. The cultivation of information literacy is a professional manifestation of foreign language teachers' digital literacy. [3] The following pathways to improve digital literacy for foreign language teachers in application-oriented universities are presented based on document investigation and logical analysis for reference.

Institutional and Policy Support

The Government Work Report explicitly calls for building a high-caliber, professional teaching workforce. It underscores the integration of artificial intelligence with education and emphasizes empowering teachers' development through digital technologies. However, according to the survey of Wang, X. and Xie, L., a large number of tested teachers are at the middle level for TPACK (Technological Pedagogical Content Knowledge). [7] Thus the development of teachers' digital literacy cannot rely solely on individual initiative; it requires robust and systematic support from both educational institutions and government policies. During the improving process, the government plays the role of a commander; universities must play a role as the designer. At the institutional level, universities must move beyond providing sporadic training sessions and instead build a comprehensive ecosystem for continuous professional development. This begins with establishing a dedicated Center for Teaching Excellence or Digital Learning Hub, staffed with instructional designers and technology specialists who can offer continuous, just-in-time support. Furthermore, universities should strategically invest in infrastructure by not only ensuring reliable access to modern hardware and software but also by subsidizing subscriptions to key digital platforms and tools, thus removing financial barriers for teachers. Furthermore, universities can implement a tiered and mandatory training program that moves beyond one-off workshops to a structured program that recognizes different skill levels. For instance, the foundation level (Mandatory) is a required short course on the university's core learning management system, digital assessment tools, and basic data privacy. Application level (Elective) is themed workshops on "AI-Powered Scenarios: Enhancing Intercultural Communication & Negotiation," or "Text Data Visualization for Literary Analysis," directly linking tools to disciplines. Leadership Level (Selective) is an advanced cohort for faculty to lead peer-training, research tech integration, and mentor colleagues. A tiered development pathway addresses foundational skill gaps through short-term, hands-on training, while it tackles the bottleneck in applying digital literacy via mid-term industry-education projects. [8] Most critically, universities must formally recognize and reward digital upskilling efforts. This can be achieved by integrating digital proficiency into promotion, providing grants or release time for faculty to develop digital course materials, and establishing an awards system to praise innovation in digital pedagogy.

For application-oriented universities, providing digital literacy training for faculty is of paramount importance, as it directly conforms to their core mission of cultivating practice-ready professionals. Unlike traditional academic institutions, application-oriented universities prioritize equipping students with practical skills and industry-relevant competencies, making the integration of digital tools into teaching and learning not merely an enhancement but a fundamental requirement. [3] Such training empowers teachers, especially foreign language teachers to move beyond theoretical instruction and design immersive, technology-driven learning experiences—such as simulations and data analysis projects—that mirror real-world working environments. Furthermore, by mastering emerging technologies like AI and data visualization, foreign language teachers can better guide students in solving complex, authentic problems, thereby bridging the gap between academia and industry. Ultimately, investing in faculty digital literacy is an investment in the institution's credibility and the employability of its graduates, ensuring that the education provided remains responsive to the rapidly evolving demands of the digital economy.

Related institutional and policy support can provide strong financial and technical guarantee for foreign language teachers to enhance digital literacy and help develop a path model for enhancing the digital literacy especially in application-

oriented universities.

Integrate Digital Tools in Pedagogy

Besides institutional and policy support, integrating digital tools in pedagogy by foreign language teachers emphasizes a thoughtful and reflective approach to integration. According toXu Xiaohui and Peng Yan, digital literacy requires that teachers possess professional communication and development skills, enabling them to utilize digital platforms for collaboration, resource acquisition, and lifelong learning. [9] As the application-oriented foreign language programs comprise a range of courses, each course has distinct teaching priorities and teaching objectives. It begins with pedagogically-driven selection, where the teacher's starting point is a specific learning objective—such as fostering collaborative writing, enhancing intercultural understanding, or providing personalized feedback—rather than the tool itself. It requires teachers to critically evaluate and strategically select digital tools based on specific pedagogical objectives, rather than using them as novelties.

Based on the research of Liu, S., and Zhang, H, teachers can choose a collaborative platform for brainstorming, and it can also be used to facilitate a pre-reading activity that activates prior knowledge and creates a shared resource for the entire class in practical environment. [6] Those tools are helpful for specific teaching aims, for instance in reading and writing courses. Tools like DeepSeek and Doubao have innovative application and practical value in curriculum. As leading domestic large language models, those tools provide diversified innovative solutions for course teaching in application-oriented universities. Their synergistic application can not only enhance teaching efficiency but also deepen the learning experience and promote the development of personalized education. For foreign language teachers in the digital age, the integration of DeepSeek and Doubao represents not merely a technological enhancement but a fundamental transformation in pedagogical practice. These AI tools serve as powerful helpers in addressing the unique challenges of language instruction while creating more dynamic, personalized, and effective learning environments.

DeepSeek functions as an analytical powerhouse that empowers teachers to design more sophisticated learning experiences. Its ability to process complex linguistic structures and generate nuanced content makes it invaluable for developing advanced materials that challenge students' critical thinking and analytical skills. Meanwhile, Doubao serves as the interactive bridge that brings language learning to life through immediate, contextual practice. Teachers can use Doubao to create authentic communication scenarios where students practice negotiating meaning, managing conversations, and employing pragmatic strategies in low-stakes environments before transitioning to real-world interactions. However, the educator's role remains significant. The teacher's pedagogical expertise guides the selection of appropriate tasks, facilitates reflection on learning experiences, and helps students contextualize their AI interactions within broader communicative competencies. These tools amplify their impact, freeing them from routine tasks to focus on higher-value instructional activities like mentoring, providing nuanced feedback, and fostering intercultural understanding, rather than replacing teachers in professional teaching process.

Digital literacy is a comprehensive system of competencies, not a single skill. It represents the integration of knowledge, abilities, awareness, and ethics that teachers require for their digitalized teaching, research, administration, and professional development. [5] Teachers need to maintain critical reflection when integrating AI tools, continuously assessing their actual impact on student learning outcomes to ensure that the application of technology always serves teaching objectives rather than dominating them. Through this conscious integration and reflection, digital tools can truly become effective catalysts for promoting educational innovation and enhancing teaching quality and thus improve teachers' digital literacy amidst the educational digitalization and intellectualization.

Build Supportive and Collaborative Workshops

Besides individual efforts, teachers should actively establish or join a Community of Practice (CoP) within the department or university. A professional community or workshop is a powerful and sustainable pathway for continuously improving digital literacy under the background of educational digitalization and intellectualization. [9] This approach transforms digital literacy from a solitary pursuit into a shared, supportive journey. These workshops should be regular, informal gatherings of colleagues who share the common goal of enhancing their digital teaching skills. The focus is on practical collaboration. Members can co-design lesson plans and brainstorm the most effective pedagogical approaches. During the practical communication, members can Organize "Tech Playdown" Workshops where a colleague shares a tool they love—followed by an open block of time for everyone to play, explore, and ask questions in a safe, supportive space.

The benefits include that those communities and workshops can be used as a think tank to solve common technical or pedagogical challenges, such as how to better facilitate online discussions or assess student contributions on a collaborative platform. Secondly, the learning process can expand your horizons by participating deep, contextual communication and offer breadth and constant inspiration teachers need. Thirdly, platforms that focus on Foreign Language Teaching and Educational Technology are often vibrant hubs where educators share the latest articles, free webinars, and practical tips. The information is critical for teachers who urgently need digital skills. This keeps teachers informed about emerging trends and global best practices. This not only gives teachers diverse perspectives but also allows them to contribute their own expertise to the wider community.

In essence, a supportive community or workshop provides both a safety platform for when things go wrong and a springboard for innovation. It reduces the isolation that can come with trying new technologies and provides a continuous source of motivation, new ideas, and collective wisdom, making the journey of digital upskilling far more effective and enjoyable. By integrating the format of short-term "AI-Empowered Teaching Skills Workshops" with foreign language classrooms, a new reference model for enhancing the digital literacy of language teachers is provided.

Establish Intelligent Evaluation Systems

Under the backdrop of various supportive policies, there remains a need to effectively assess the improvement in foreign

language teachers' digital literacy. It can be achieved through multi-dimensional evaluation systems. These multi-dimensional evaluation systems should move beyond traditional assessment methods. [9] First and foremost, the system's foundation should be a competency framework tailored for foreign language teachers. This framework would outline specific proficiencies across several tiers, from basic skills like using a Learning Management System (LMS) to advanced capabilities such as designing AI-mediated conversational practice, organizing digital cultural artifacts, and analyzing learner data to inform instruction. For instance, the system has the following functions. The first one is **Performance Analytics**. This function can automatically track a teacher's activity within digital platforms—such as the diversity of tools used, the complexity of online tasks designed, and the effectiveness of feedback mechanisms provided to students. The second one is **Teaching Material Analysis**. That means using efficient tools to evaluate the quality of digital teaching materials created by the teacher, such as interactive videos, multimedia presentations, and online collaborative projects, assessing them for pedagogical soundness, accessibility, and engagement potential. The third one is **Reflective Portfolios**. It requires teachers to compile and annotate a digital portfolio that showcases their integration of technology, explaining their choices and reflecting on the impact on student learning. Some professional tools could help analyze these reflections for depth and critical insight. The system also has **Student Outcome Correlations** which anonymously correlate teaching practices with student outcomes, not just in terms of grades, but also engagement metrics (e.g., participation in online forums, completion of digital tasks) and the development of students' own digital communication skills.

Such systems can use data analytics and artificial intelligence to provide a holistic, dynamic, and formative measurement of teachers' digital competencies. Specifically, it could track and analyze a teacher's proficiency across key dimensions—such as the integration of digital tools in lesson design, the use of AI for personalized feedback, the creation of multimedia resources, and the facilitation of online collaborative learning. Rather than focusing solely on fixed skill checklists, the system would assess how effectively these competencies translate into improved student engagement and learning outcomes. By offering real-time diagnostics and personalized development insights, such an intelligent system would not only identify gaps but also empower teachers with clear, actionable pathways for continuous growth. This transforms evaluation from a static event into an ongoing cycle of reflection and improvement, ultimately ensuring that digital literacy development is aligned with the evolving demands of modern English language education.

Discussion

The improvement of digital literacy of foreign language teachers brooks no delay, especially in application-oriented universities. As application-oriented universities focus more on deep industry-academia collaboration and competency-based cultivating mode, it requires its faculty possess both solid academic ability and strong information literacy to put theories into practice. Based on the research of professional experts, four pathways to implement are discussed here to provide reference for future study. However, there are certain limitations that need to be noted. Since the number of selected documents is limited, some elaborations lack strong data support. Furthermore, the proposed modes would be more persuasive if questionnaire survey or interview methods are included. The current research is dependent on pre-existing materials that may be biased and unrepresentative. Further study should focus on data collection and analyzing based on large-scale field investigation to propose more practical and effective pathways.

In general, enhancing the digital literacy of faculty members is not merely an option but a fundamental necessity. By empowering faculty with the digital competencies and confidence to design more engaging and effective learning environments, application-oriented universities can truly fulfill their educational mission in the digital age.

Conclusion

This study has delineated structured pathways for improving the digital literacy of foreign language teachers in application-oriented universities. The proposed pathways underscores that effective digital literacy development is not a one-off event but a continuous process. It hopes that institutional and policy support can be in place to empower teachers' development through digital technologies. For individuals, integrating digital tools in pedagogy can truly become effective catalysts for promoting educational innovation and enhancing teaching quality under the background of educational digitalization and intellectualization. Beside individual efforts, build supportive and collaborative workshops can provide a continuous source of motivation and new ideas. The process of integrating digital tools in pedagogy can not neglect the assessment of the improvement in foreign language teachers' digital literacy, thus establishing intelligent evaluation systems has subsequently ensued. The findings confirm that a successful digital literacy enhancement path must be collaborative, sustained, and context-specific. Future research should focus on the data collection and longitudinal impact of such models on student learning outcomes and explore discipline-specific adaptations to further refine this critical aspect of faculty development.

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