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Research on Strategies for Enhancing Digital Literacy of Foreign Language Teachers in Colleges and Universities under the Background of Digital and Intelligent Education

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Abstract

The digitalization and intelligence of education, characterized by technology empowerment and data-driven approaches, have driven foreign language education in colleges and universities into a new stage of "intelligent transformation." The digital literacy of foreign language teachers in colleges and universities has become a key variable affecting the quality of digital transformation in foreign language education. Based on the core constituent dimensions of digital literacy, this paper constructs a systematic strategic framework for enhancing the digital literacy of college foreign language teachers in the context of educational digitalization from five dimensions: the construction of a training system, the creation of a collaborative community, the improvement of an evaluation mechanism, the strengthening of resource development, and the improvement of institutional guarantees. The aim is to empower the professional development of college foreign language teachers. Help optimize and upgrade the digital ecosystem of foreign language education.

Keywords

Digitalization and intelligence of education; College foreign language teacher; Digital literacy improvement strategy; Digital transformation of foreign language education

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1. Introduction

The digitalization and intelligence of education is an advanced form of the deep integration of digital technology and education and teaching. Its core lies in the innovative application of digital technologies such as artificial intelligence, big data, and cloud computing to reconstruct the education and teaching process, optimize the allocation of educational resources, and enhance the efficiency of education and teaching. As an important carrier of humanistic education and language skills cultivation, foreign language education in colleges and universities is facing all-round changes in teaching models, resource forms, and evaluation methods in the wave of digital and intelligent education. As the core

implementers of the digital transformation of foreign language education, the digital literacy of foreign language teachers in colleges and universities directly determines the depth of integration between digital technology and foreign language teaching, and affects the realization of goals such as personalized teaching and intelligent education. Therefore, focusing on the core demands of digital literacy for foreign language teachers in colleges and universities and building a scientific and effective improvement strategy system is not only an inherent need for teachers' professional development, but also an inevitable choice to promote the high-quality development of foreign language education in colleges and universities and adapt to the digital and intelligent transformation of education.

2. The core components of digital literacy for foreign language teachers in colleges and universities

Under the background of digital and intelligent education, the digital literacy of foreign language teachers in colleges and universities is not merely the ability to operate digital technologies, but an organic integration of multi-dimensional capabilities. Its core components include the following five levels:

Digital technology application literacy: It refers to the ability of foreign language teachers to operate and adapt to digital teaching tools, platforms, and technologies, covering the proficient use of dedicated digital teaching platforms for foreign languages, corpus tools, multimedia production tools, big data analysis tools, etc. It is the basic dimension of digital literacy [1].

Digital teaching integration literacy: Emphasizing the deep coupling ability between foreign language teaching methods and digital technology, that is, the ability of teachers to organically integrate digital technology, digital resources and teaching models such as blended teaching, flipped classrooms and project-based learning based on foreign language teaching goals, such as language knowledge imparting, language skills training and cross-cultural communication ability cultivation, to construct intelligent teaching scenarios and design personalized teaching plans It is the core dimension of digital literacy.

Digital content creation literacy: It refers to the ability of teachers to independently develop, integrate, and optimize digital teaching resources based on the needs of foreign language teaching, including the compilation of digital teaching materials, the design of multimedia courseware, the construction of online test question banks, the customization of corpus resources, and the development of digital teaching cases, etc. It requires that the resources have adaptability, interactivity, and timeliness, and is the practical dimension of digital literacy [2].

Digital research innovation literacy: It refers to the ability to conduct foreign language teaching research using digital technology, covering the application of digital teaching research methods such as quantitative research tools and qualitative research tools, the mining and analysis of teaching big data, the application for digital teaching reform projects, and the writing of related academic papers etc. It is a dimension for enhancing digital literacy.

Digital ethics and norms literacy: It refers to the moral standards and behavioral norms that teachers follow in digital teaching practice, including student privacy protection, such as learning situation data and personal information security, digital resource copyright protection, such as legal use and reasonable citation, fairness in digital teaching, such as technical accessibility guarantee, and behavioral norms in cyberspace, etc. It is the bottom-line dimension of digital literacy [3].

3. Strategies for enhancing digital literacy of foreign language teachers in colleges and universities under the background of digital and intelligent education

3.1. Building a step-by-step digital literacy training system to achieve precise empowerment

Stratified and classified design of training modules: Based on teachers' teaching experience, professional titles, and current digital literacy levels, a three-level training system of "basic level–advanced level–high-level level" is constructed. The basic layer focuses on the application ability of digital technology, offering courses such as "Practical Operation of Foreign Language Digital Teaching Tools," "Basic Application of Corpora," and

"Operating Standards of Online Teaching Platforms," to address the issue of teachers' "knowing how to use." The advanced level focuses on the integration ability of digital teaching, setting up modules such as "Design of Blended Foreign Language Teaching Mode," "Analysis of Students' Learning Situation and Teaching Optimization Based on Big Data," and "Integration of Digital Resources in Flipped Classroom," to achieve the goal of teachers' "effective use." High-level research focuses on digital research innovation and ethical norms, conducting training sessions such as "Research Methods for Foreign Language Digital Teaching," "Mining and Application of Teaching Big Data," and "Digital Ethical Norms and Legal Risk Prevention," achieving the effect of teachers' "practical application" [4].

Innovative training implementation methods: Adopt a combined model of "theory + practice," "centralized training + self-study," and "online + offline." National-level online teacher development platforms, such as China University MOOC and the National Smart Education Public Service Platform, offer courses to support teachers in conducting fragmented learning. Offline teaching seminars, practical operations, training camps, and special workshops are held. Practical abilities are enhanced through case analysis, on-site drills, and simulated teaching. One-on-one guidance is provided to strengthen the training effect. A "mentorship system" research and training mechanism is established, with selected teachers with outstanding digital literacy serving as mentors.

Strengthen the adaptability of training content to foreign language subjects: Focus on the characteristic demands of foreign language teaching and avoid general digital technology training. For instance, in terms of language skills training, courses such as "Operation and Optimization of Automatic Writing Correction System," "Application of Digital Oral Training Platform," and "Development of Digital Listening Resources" should be offered. For cross-cultural communication teaching, modules such as "Integration and Application of Multilingual Digital Resources" and "Construction of Digital Cross-Cultural Communication Scenarios" are designed to ensure that the training content is closely and deeply integrated with foreign language teaching practice [5].

3.2. Building a digital collaborative development community for foreign language education and pooling efforts for improvement

Inter-school collaboration: Establishing a mechanism for resource co-construction and sharing. Establish a digital literacy training resource library, relying on the regional university foreign language teaching alliance, to achieve the sharing of high-quality courses, teaching tool manuals, resource development templates, etc. Carry out cross-school joint digital teaching discussion activities, and promote the mutual learning and exchange of digital teaching experiences among teachers through offline exchange meetings, online forums, and other forms. Jointly apply for provincial, ministerial, and national digital education-related projects, and jointly build a cross-school digital teaching research team to promote the improvement of quality through scientific research [6].

School-enterprise collaboration: Deepening the integration of industry and education for talent cultivation. Establish long-term cooperative relationships with technology enterprises and educational technology companies to jointly develop exclusive digital teaching tools for foreign languages and design customized training courses. Introduce enterprise technical experts to participate in teaching and training, interpret the application trends of cutting-edge digital technologies in the field of education, and provide guidance for teachers to solve technical problems in digital teaching. Provide teachers with a platform to support digital teaching practice and innovation, and jointly build a "Foreign Language Digital Education Practice Base" [7].

Teacher-student collaboration: Establishing a co-construction and symbiotic mechanism for teaching. Encourage students to participate in the screening, optimization, evaluation, and feedback of digital teaching resources; Establish a collaborative relationship of "teacher-led–student participation" in digital teaching, build an interactive platform for digital teaching between teachers and students, and help teachers promptly obtain the demands and suggestions raised by students regarding digital teaching, thereby flexibly adjusting teaching strategies. In the collaborative process, enhancing teachers' digital teaching feedback and resource optimization capabilities can guide students to participate in the development of teachers' digital teaching resources [8].

3.3. Improving the evaluation mechanism for teachers' professional development oriented towards digital literacy and strengthening incentives and constraints

Establish a scientific evaluation index system for digital literacy: Build a "four-dimensional integration" evaluation index system based on the core constituent dimensions. The dimension of technical application capabilities covers secondary indicators such as proficiency in tool operation and resource integration capabilities. Indicators such as the implementation effect of personalized teaching, the design of teaching models, and adaptability are covered in the dimension of teaching integration ability. The dimension indicators of research and innovation capabilities include digital teaching, research achievements, and the quality of resource development etc. The indicators for setting the dimension of ethical norms capability cover privacy protection compliance, copyright usage standardization, etc. To ensure the scientificity and objectivity of the evaluation, the Analytic Hierarchy Process (AHP) is employed to determine the weights of each indicator [9].

Implement a multi-dimensional and three-dimensional evaluation approach: Integrate process evaluation with summative evaluation, and combine quantitative evaluation with qualitative evaluation. Quantitatively assess process evaluation through data such as training participation, frequency of digital teaching practice, quantity and quality of resource development, teaching discussions, and participation status. A comprehensive assessment of the terminal evaluation is conducted by integrating the effectiveness of digital teaching, research achievements in digital teaching, and evaluations from students and peers [10]. Introduce third-party evaluation institutions to ensure that the evaluation results are fair and authoritative.

Establish a closed-loop mechanism of evaluation–feedback–optimization: Build a feedback system for digital literacy assessment results, clearly present the strengths and weaknesses of teachers in the form of reports, and formulate personalized improvement plans for each teacher based on the evaluation results, clearly defining the key contents of improvement goals and implementation paths. Establish a special reward system for enhancing digital literacy, offer recognition and incentives to outstanding teachers, and stimulate their intrinsic motivation to take the initiative to improve [11]. At the same time, the evaluation results will be directly linked to the review of teachers' professional titles, performance assessment, commendation and awards, and project application, etc.

3.4. Strengthening the ability to develop and apply digital teaching resources and consolidate the practical foundation

Build a modular digital resource development system: In accordance with the idea of "general resources + specialized resources," establish a framework for foreign language digital teaching resources. General resources include digital textbooks, multimedia courseware, online test question banks, general corpora, etc., which meet the basic teaching needs. Specialized resources are developed for different languages, such as English, Japanese, French, etc., different teaching modules, such as language knowledge, language skills, cross-cultural communication, and different teaching targets, such as undergraduate, postgraduate, and adult education students [12]. such as professional English digital textbooks, business foreign language case libraries, and multilingual oral follow-up reading training resources, to enhance the adaptability of resources.

Establish a dynamic mechanism for resource development and optimization: Form a digital resource development team, which is based on the teacher development center of the foreign language college of the university. At the same time, formulate resource development standards and norms, such as format requirements, content quality standards, and copyright review mechanisms. The frequency of resource usage, compatibility, and teaching effectiveness is fed back through student situation data. Big data is used to analyze the application effect of resources, and the resources are optimized, updated, and supplemented from time to time. Encourage teachers to join the national foreign language Digital resource development alliance, participate in the construction of national and provincial digital teaching resource libraries, expand the scope of resource sharing, and enhance their authority [13].

Enhance teachers' ability to screen and integrate digital resources: Guide teachers to master the search

skills of professional digital resource platforms such as JSTOR, ProQuest, and the Foreign Language Special Topic Database of China National Knowledge Infrastructure (CNKI), and offer the course "Foreign Language Digital Resource Search and Evaluation" to cultivate teachers' ability to identify resources from dimensions such as accuracy, timeliness, adaptability, and interactivity. The methods of integrating professor resources such as achieving the organic connection of multiple types of resources through online platforms, using mind mapping tools to build a digital resource system, and then forming personalized digital teaching resource packages.

3.5. Improving the institutional guarantee and resource support system for enhancing digital literacy to lay a solid foundation for development

Improve the institutional guarantee mechanism: The "Implementation Measures for Enhancing Digital Literacy of Foreign Language Teachers in Colleges and Universities" is formulated at the school level, clearly defining the improvement goals, responsibility division, implementation paths, and guarantee measures. Incorporate digital literacy as an important part of teachers' onboarding training, on-the-job research and development, and professional title promotion, and include it in teachers' professional development plans. Incorporate the relevant work achievements into the college's performance assessment, establish a digital literacy improvement work assessment mechanism, and thereby solidify work responsibilities [14].

Strengthen resource support: Establish a special fund for enhancing digital literacy to be used for the construction of training courses, the recruitment of experts, the development of resource libraries, and the renewal of teaching equipment, such as the upgrade of smart classrooms, the purchase of corpus servers, and the provision of mobile teaching terminals etc. Integrate training resources, evaluation tools, resource libraries, discussion communities, and other functions to build a school-level foreign language digital education service platform, providing one-stop services for teachers. Enhance network bandwidth, expand the coverage of wireless networks, and optimize the digital infrastructure of the campus to ensure the smooth implementation of digital teaching and training.

Create a cultural atmosphere for digital teaching innovation: Regularly hold activities such as foreign language digital teaching innovation competitions, resource development evaluations, and teaching achievement exhibitions, and build a platform for teachers to showcase and exchange their digital literacy. Strengthen the promotion of digital education concepts. Through channels such as the campus official website, public accounts, and internal publications, popularize knowledge related to digital literacy and disseminate advanced digital teaching concepts. Encourage teachers to boldly carry out attempts at digital teaching reform, tolerate mistakes during the reform process, and create a favorable atmosphere of "daring to innovate and being willing to explore" [15].

4. Conclusion

The digitalization and intelligence of education is an inevitable trend in the reform and development of education in the new era. The improvement of digital literacy of foreign language teachers in colleges and universities is the core support for promoting the digital transformation of foreign language education and achieving high-quality development. Based on the core constituent dimensions of digital literacy, this article constructs improvement strategies from five aspects: a step-by-step training system, a collaborative development community, a professional evaluation mechanism, resource development capabilities, and an institutional guarantee system, providing a systematic solution for enhancing the digital literacy of foreign language teachers in colleges and universities. In the practical process, it is necessary to fully consider the differences in the educational positioning, foreign language discipline characteristics, and teaching staff structure of different universities, flexibly adjust the implementation path and key contents of the strategy, and ensure the pertinence and operability of the strategy. In the future, it is necessary to further deepen the research on the relationship between the digitalization and intelligence of education and the digital literacy of foreign language teachers, explore the innovative application of cutting-edge technologies such

as artificial intelligence and big data in the improvement of literacy, continuously improve the strategy system for improvement, assist foreign language teachers in universities to achieve sustainable professional development in the digital age, and promote the foreign language education cause to a new height.

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