English Language Teaching and Linguistics Studies
ISSN 2640-9836 (Print) ISSN 2640-9844 (Online)
Vol. 6, No. 6, 2024
www.scholink.org/ojs/index.php/eltls

Original Paper

Exploration on the Construction of a Demonstration Center for Digital and Intelligent Experimental Teaching of Foreign Languages

Jianguo Jiang[1]

[1] School of Foreign Languages, Zhaoqing University, Zhaoqing, China

E-mail: 156371778@qq.com

Received: October 19, 2024 Accepted: November 22, 2024 Online Published: December 11, 2024

doi:10.22158/eltls.v6n6p80 URL: http://dx.doi.org/10.22158/eltls.v6n6p80

Abstracts

Based on the ecosystem theory, the cognitive-emotional-social integration theory and the technology acceptance model, this paper discusses the construction path and practice mode of the demonstration center for digital and intelligent experimental teaching of foreign language. A teaching ecosystem of synergistic development has been built through the construction of a digital and intelligent foreign language teaching training room, a digital and intelligent foreign language teaching platform, a digital and intelligent testing platform and the creation of a digital and intelligent faculty. By innovating the teaching mode, optimizing the assessment mechanism, and integrating big data and intelligent technology, it effectively enhances students' practical language ability, intercultural communication ability and practical application ability, and promotes teachers' informatization literacy and awareness of teaching innovation. Feasible solution strategies are proposed for the technological integration, assessment system improvement and ethical issues faced during the construction, providing important theoretical and practical references for the deepening development of digital and intelligent foreign language teaching.

Keywords

Digital and Intelligent Technology, Experimental Teaching of Foreign Languages, Experimental Demonstration Center, Innovative Teaching Models

1. Introduction

With the rapid development of information technology, digital and intelligent technology has gradually been applied to the field of education, and in the field of foreign language teaching, the application of

digital and intelligent technology has brought about profound changes in the teaching method and learning experience. As a product of the deep integration of information technology and foreign language education, digital and intelligent foreign language teaching has gradually become an important direction of foreign language education innovation. The *Education Informatization 2.0 Action Plan* (Ministry of Education, 2018) explicitly proposes to "promote the in-depth integration of information technology and education" (JIANG, 2019), and encourages the intelligent development of various teaching platforms (CHEN & LIU, 2020). The *Outline of the Fourteenth Five-Year Plan for Education* (Ministry of Education, 2020) emphasizes that the deep integration of information technology and education is a key way to improve the quality of education and promote equity in education. Through the application of artificial intelligence, big data, virtual reality and other advanced technologies, digital and intelligent foreign language teaching not only provides students with a more diversified learning platform, but also makes the teaching process more personalized and interactive, which effectively improves the quality of teaching and promotes equity in education.

However, despite the great potential of digital and intelligent foreign language teaching, there are still many challenges in practice. For example, how to effectively integrate and optimize various advanced technologies, how to ensure the organic integration of technology and teaching content, and how to design a teaching model and assessment system that meets the needs of students remain challenges that cannot be ignored in the process of advancing digital and intelligent foreign language teaching. The Experimental Teaching Center of School of Foreign Studies, Zhaoqing University has been committed to the research of digital and intelligent foreign language education and teaching, exploring the construction path of the demonstration center for digital and intelligent foreign language teaching experiments, constructing experimental platforms integrating modern information technology and foreign language education, and providing a new paradigm for the development of foreign language teaching through the introduction of innovative teaching modes and intelligent tools. This paper will focus on the theoretical guidance and practical exploration of the experimental demonstration center for digital and intelligent foreign language teaching, aiming to provide actionable ideas and methods for foreign language education peers, as well as to provide a practical basis for future educational innovations. With the continuous improvement of the experimental demonstration center for digital and intelligent foreign language teaching and the continuous advancement of technology, foreign language education will gradually develop in the direction of being more personalized, interactive and efficient, and promote the improvement of the quality of foreign language teaching and the realization of equity in education.

2. Theoretical Guidance

The construction of the experimental demonstration center for digital and intelligent foreign language teaching requires scientific and systematic theoretical guidance to ensure the deep integration of technology, teaching content and educational goals. This paper proposes to take ecosystem theory,

cognitive-emotional-social integration theory and technology acceptance model as the core guiding ideology to support the construction of experimental demonstration center from three aspects: overall ecology, teaching innovation and technology application.

2.1 Ecosystem Theory

The ecosystem theory was developed by the American psychologist Bronfenbrenner, who emphasized that the development of an individual is not determined by a single environmental factor, but by the interaction of multiple environmental systems (Bronfenbrenner, 1979). The construction of experimental demonstration center requires that technology, teachers, students, teaching content and the teaching environment be viewed as an interdependent and dynamic ecosystem. In the process of construction, we should pay attention to the coordinated development between these elements, optimize the interaction between teachers and students through technology, promote the achievement of teaching goals, and build a balanced teaching ecology.

2.2 Cognitive-emotional-social Integration Theory

Cognitive-emotional-social integration theory emphasizes that teaching activities should be comprehensively designed from three dimensions: cognitive, emotional, and social interaction [4]. Digital and intelligent technologies such as affective computing technology can capture students' learning emotions in real time, adjust teaching feedback, and stimulate learning interests; virtual simulation laboratories and task-based learning activities enhance students' practical language skills and social interaction experiences by simulating cross-cultural communication or collaborative tasks, so as to comprehensively develop students' cognitive abilities, affective experiences, and social adaptability.

2.3 Technology Acceptance Model

The technology acceptance model provides micro guidance for the technical design and later application during the construction of the experimental center, and emphasizes the ease of use and usefulness of each system (platform) (Davis, 1989), so the center needs to pay attention to the user experience of the teaching platform during the construction, reduce the threshold for use through intuitive interface and convenient operation, and improve the recognition and willingness of teachers and students to adopt technology by demonstrating the actual teaching value of technology, such as personalized learning path and intelligent assessment. In conjunction with teacher training and user feedback, the system's functionality is continuously optimized to ensure that the technology effectively serves the teaching goals.

3. Construction Practice of the Digital and Intelligent Experimental Demonstration Center for Teaching Foreign Languages

The construction of the experimental demonstration center for digital and intelligent foreign language teaching is based on four core areas, namely, digital and intelligent foreign language teaching laboratory, digital and intelligent foreign language teaching platform, digital and intelligent testing

platform, and digital and intelligent teaching staff, to build up a teaching ecosystem that is complementary and synergistic. The training room serves as a place for practice, providing real language application scenarios and technical support; the teaching platform serves as a hub for resource integration and learning organization, and transmits practical data from the training room back to the teaching optimization; the testing platform provides feedback on the learning effectiveness through accurate assessment, and supports the recommendation of resources and task design; and the faculty coordinates and enhances the overall effectiveness of the modules through technological guidance and instructional design (shown in Figure 2).

Figure 1. Demonstration Center for Experimental Teaching of Digital and Intelligent Foreign Languages

3.1 Digital and Intelligent Foreign Language Teaching Training Room

The digital and intelligent foreign language teaching training room is the core carrier of the intelligent development of foreign language teaching, and our center has developed from 2 laboratories in the early days of its establishment to 12 laboratories at present, covering a multi-functional digital and intelligent training system. These training rooms include AI human-computer coupled translation training room, digital experimental teaching training room for foreign language, intelligent cloud network learning room, business English comprehensive training room, international trade comprehensive training room and international business negotiation training room, etc. Through the introduction of big data analysis, natural language processing (NLP), virtual reality (VR), cloud computing and other technologies [6], a highly digitalized teaching environment has been created to

support diverse language learning and simulate real industry application scenarios to meet the needs of students' practical training.

These training rooms have a clear functional orientation and have their own characteristics. They not only enhance students' language skills through immersive simulation training, but also support students' personalized learning through intelligent assessment and dynamic learning resources. For example, the Translation Training Room strengthens students' translation skills, the Business English and International Trade Training Room focuses on students' industry adaptability, and the International Business Negotiation Training Room focuses on the cultivation of students' cross-cultural communication skills. Working as a platform for students' comprehensive development and providing strong support for the docking between foreign language teaching and industrial demand, these training rooms, playing an important role in improving teaching quality, cultivating practical ability, supporting innovation and entrepreneurship, and promoting international exchange, etc., have become the core scene of the center's experimental teaching of foreign languages.

3.2 Digital and Intelligent Foreign Language Teaching Platform

The Digital and Intelligent Foreign Language Teaching Platform is an important part of the Demonstration Center, building an intelligent teaching system with technology-enabled education as its core. The Platform includes a number of systems such as UNIPUS, Lindgecloud, cross-border e-commerce teaching and training software, foreign trade training platform, etc., which realizes the digital integration of teaching content (YANG, 2020), the personalized design of the learning process, and the accurate assessment of teaching effects through intelligent and data-driven means. Supported by artificial intelligence, big data analysis and cloud computing, these platforms break the time and space constraints of traditional teaching, form a student-centered multi-level learning path, and offer the possibility of comprehensively improving basic language skills and practical skills in the industry.

These platforms complement each other and form a synergistic teaching and learning ecology through data sharing and functional integration. They not only realize the optimal allocation of teaching resources, but also enhance students' learning experience and teachers' teaching efficiency through intelligent feedback and dynamic management. Driven by digital intelligence, foreign language education has been able to transform from single knowledge transmission to practical ability cultivation and professional literacy enhancement, while strengthening data support and technical guarantee in the teaching process, providing strong support for the innovation and promotion of digital and intelligent foreign language teaching mode.

3.3 Digital and Intelligent Testing Platform

The Digital and Intelligent Testing Platform realizes the accurate assessment of students' learning behavior and the dynamic optimization of teaching effect through big data analysis and intelligent assessment feedback (LI, 2021). Integrating multi-functional systems such as ITEST, Jukuu Big Data Essay Correction Network, Xue Xi Tong and Yu Ke Tang, the Platform relies on big data technology to comprehensively record and analyze students' learning trajectories and generate multi-dimensional

learning reports. These platforms are able to capture students' performance in modules such as listening, reading and writing, tap into group learning patterns, provide a scientific basis for teachers to formulate targeted teaching strategies, and establish personalized learning profiles of students to enhance the depth and precision of assessment.

The testing platform not only records and analyzes students' learning behaviors, but also establishes a dynamically adjusted assessment mechanism through the in-depth application of intelligent technology. With the support of big data analysis, the platform realizes real-time tracking of the whole process of student learning and generates a multi-dimensional data model covering learning progress, ability development and knowledge mastery. Through intelligent assessment feedback, the platform is able to provide personalized guidance for students' specific learning needs. In addition, taking "assessment-feedback-improvement" as the core, the platform builds a closed loop of dynamic optimization of teaching, which not only helps students adjust their learning strategies in time, but also provides teachers with a scientific basis for teaching improvement. Through data-driven accurate analysis and feedback, the Digital and Intelligent Testing Platform effectively promotes the transformation of foreign language education from experience-based to data-based, comprehensively improves the relevance and efficiency of teaching, and lays the foundation for an intelligent and personalized teaching model.

3.4 Teacher Development

The development of digital and intelligent teachers is an important guarantee for the construction of the center. In order to adapt to the needs of the digital and intelligent teaching environment and to improve teachers' informatization literacy and pedagogical innovation ability, our center has carried out a series of targeted initiatives around the two core objectives of "technology-enabled education" and "teachers' professional development", including but not limited to holding teachers' informatization learning salon, visiting and learning from famous enterprise "Iflytek", attending domestic informatization teaching conference, regularly inviting experts to the school to hold AI-enabled foreign language teaching and so on. In addition, our center has built a high-level team of teachers who are able to flexibly use digital and intelligent technology and proactively promote teaching innovation.

At present, our center has achieved remarkable results in building teachers' digital and intelligent capacity. Teachers' informatization literacy has been significantly improved, and they are able to skillfully use intelligent teaching tools to carry out personalized and interactive teaching, strengthen their instructional design skills and sense of innovation, and realize the deep integration of technology and content. Meanwhile, through visiting enterprises and participating in industry conferences, teachers find a balance between industry needs and teaching practice, which promotes school-enterprise cooperation and resource integration. These measures not only help teachers adapt to the changes in the digital and intelligent teaching environment, but also empower them with initiative and creativity, transforming them from technology users to technology-enabled facilitators, which is of great significance in promoting the innovation of teaching modes, enhancing students' learning effectiveness

and promoting equity in education, and provides solid teacher support for our center to become a demonstration base for digital and intelligent foreign language teaching.

4. Innovative Practices in Digital and Intelligent Practical Teaching of Foreign Languages

Our center has been forging ahead on the road of promoting the innovation of digital and intelligent practical teaching of foreign languages to meet the brand-new requirements of language application ability, professionalism and creativity in the age of informationization and intelligence. Combining the digital and intelligent technical means and teaching objectives, we have carried out systematic exploration and reform in the teaching environment, learning mode, teaching method and assessment mechanism, forming a complete set of innovative system of digital and intelligent practical teaching of foreign languages.

In terms of teaching environment, with the help of “Internet+” and digital and intelligent training room, we break through the time and space constraints of traditional teaching, and expand the practical teaching scenarios by means of virtual simulation training bases and intelligent learning platforms, so as to enable the students to learn foreign languages and carry out industry simulations in immersive and multimodal environments. In terms of learning modes, we implement a model combining personalized learning and collaborative learning to provide students with more flexible learning choices through big data-driven learning path design, while focusing on teamwork and multi-dimensional interactions to stimulate students' initiative and innovative thinking. In terms of teaching methodology, we construct the teaching mode of deep integration of theory and practice through the forms of “task-driven + combination of class and competition + innovative experiments” (LIU, 2019), which provides students with practical opportunities and display platforms. In terms of assessment mechanism, we integrate intelligent assessment, self-assessment and mutual assessment and industry mentor assessment to achieve multi-dimensional and whole-process dynamic assessment (DAI, 2020) and enhance the scientificity and fairness of assessment.

Table 1. Innovative Practice Explanation of Digital and Intelligent Practical Teaching of Foreign Languages

Direction of innovation	Concrete measures	Application cases	Objective achievement
Expand the teaching space	Build the teaching environment through the “digital and intelligent teaching platform + virtual simulation scenarios +	Utilize virtual simulation laboratories for international business negotiation simulation training, where students practice	Build an open and flexible teaching environment to enhance students' vocational adaptability and language

	enterprise collaborative practice" to achieve immersive language training and enterprise mentor guidance, breaking through the time and space constraints.	language application in immersive scenarios.	application skills.
Enrich practical teaching methods	Adopt the mode of "task-driven + combination of classes and competitions + innovative experiments", stimulate the innovation ability of students through the completion of tasks and competitions, and transform the learning outcomes into industrial docking.	Enhance students' language skills and innovative thinking in practical exercises in combination with the cross-border e-commerce competition and the Business English Innovation Experimental Program.	Stimulate students' interest in learning and innovative thinking, and realize the effective docking between teaching achievements and industrial needs.
Innovative forms of learning	Enhance students' independent thinking, teamwork and practical problem-solving skills through the mode of "personalized learning + collaborative learning + team learning", and form a multi-interactive learning ecology.	Design teamwork tasks, such as completing an international market analysis report, through an AI-driven language learning platform.	Cultivate students' independent learning ability, teamwork spirit and innovative practical ability.
Improve the evaluation mechanism	Dynamically assess the practical learning effect of students and optimize the teaching content in combination	Carry out voice tone correction tasks based on an intelligent assessment platform and optimize learning	Enhance the scientific and fairness of the assessment to fully reflect students' learning outcomes and

	with "intelligent assessment + multivariate evaluation + feedback and improvement" through the combination of self-assessment, mutual assessment and assessment by industry tutors.	performance through self-assessment and mutual assessment.	optimize teaching strategies.	

The implementation of this system not only effectively improves students' language practice ability and intercultural communication ability, but also provides a guarantee that the cultivation of students' professionalism is in line with the needs of the industry. Through the empowerment of digital and intelligent technology and the in-depth reform of practical teaching, our center has successfully constructed a new model of student-centered digital and intelligent practical teaching of foreign languages, which provides practical examples and theoretical support for the innovative development of modern foreign language education.

5. Challenges and Response Strategies

We faced the following major challenges during the construction of the Digital and Intelligent Experimental Demonstration Center for teaching foreign languages: First, technology integration challenges are more prominent. Due to the lack of unified standards among different teaching platforms and tools, compatibility problems often arise, leading to difficulties in data sharing and poor functional docking, thus affecting the overall teaching effect. Secondly, the system for assessing teaching effectiveness is not yet perfect. Existing assessment methods are mostly single-dimensional, making it difficult to comprehensively reflect students' learning outcomes in digital and intelligent teaching, while the lack of assessment criteria between different platforms limits the integration and comparison of teaching data. Finally, students' reliance on technology may raise ethical and literacy issues, such as weakening self-directed learning skills or over-reliance on AI-generated feedback. In addition, the lack of data privacy protection and technical use norms may also lead to potential ethical risks and affect the cultivation of students' long-term learning habits.

In response to these challenges, we have developed the following strategy: First, compatibility between different teaching platforms is promoted through the use of modularized design and open standards (Li, 2021), which improves the efficiency of system integration and reduces the impact of technical barriers. Second, it is necessary to improve the teaching assessment system, combine quantitative data with qualitative analysis, build a multi-dimensional assessment framework to comprehensively capture

students' learning performance, and use big data analysis to optimize the assessment results and provide data support for teaching improvement. In addition, it is necessary to strengthen students' technological literacy and ethics education, integrate information ethics and technology use norms into the curriculum content (ZHOU, 2019), guide students to use digital intelligence tools reasonably, and cultivate independent learning ability and independent thinking habits. Through these measures, the core issues in technology and teaching practice can be effectively addressed to promote the sustainable development of the Digital and Intelligent Experimental Demonstration Center for teaching foreign languages and further enhance the quality and equity of foreign language education.

6. Conclusions

The construction of the Digital and Intelligent Experimental Demonstration Center for teaching foreign languages has achieved remarkable results in theoretical guidance and practical exploration. By integrating the ecosystem theory, the cognitive-emotional-social integration theory and the technology acceptance model, our center has constructed a teaching ecosystem that is supported by digital and intelligent technology and centered on students. The innovative teaching mode and perfect assessment mechanism not only enhance students' language practice ability and cross-cultural communication ability, but also promote teachers' informatization literacy and teaching innovation consciousness. However, challenges such as technology integration, improved assessment systems, and ethical issues continue to require sustained attention and resolution.

Looking forward to the future, our center will deepen the integration of technology, improve the level of intelligence, continue to introduce emerging technologies such as artificial intelligence and virtual reality, and optimize the functions of the teaching platform and training room. By improving the assessment system, strengthening teacher training, focusing on ethical education and promoting the integration of industry and education, our center will continue to improve the quality of teaching and cultivate foreign language talents to meet the needs of the new era. At the same time, our center will actively summarize experience, expand the radiation effect, help other colleges and universities to reform digital and intelligent foreign language teaching, and jointly promote the improvement of equity in education and teaching quality.

Funded program

2024 Guangdong Provincial Education Science Planning Project (Higher Education Project) "Research on the Construction and Application of Foreign Language Education Evaluation System Enabled by Digital and Intelligent Technology in Colleges and Universities" (Program No. 2024GXJK254, host: JIANG Jianguo);

2022 Zhaoqing University Quality Project and Teaching Reform Project “Digital and Intelligent Foreign Language Experimental Teaching Center” (Project No.: zlgc202203, host: JIANG Jianguo);

Zhaoqing University 2024 Education Evaluation System and Mechanism Reform Project "Research on the Construction of Foreign Language Education Evaluation System Enabled by Digital and Intelligent Technology in Colleges and Universities" (Project No.: JYPJ202409, host: JIANG Jianguo)

References

Bronfenbrenner, U. (1979). The Ecology of Human Development: Experiments by Nature and Design. Harvard University Press.

CHEN, H. J., & LIU, H. (2020). Research on the Innovation of Foreign Language Teaching Mode in Colleges and Universities based on Big Data. *Educational Research*, *41*(5), 88-92.

DAI, L. (2020). Optimization of Foreign Language Teaching Assessment Mechanism with Intelligent Technical Support. *KECHENG JIAOCAI JIAOXUE JANJIU*, (4), 78-84.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319-340.

JIANG, J. G. (2019). Structure and Application of Practical Teaching Platform of Information Business English. *Theory and Practice of Contemporary Education*, (1), 122-126.

LI, F. (2021). Construction of English Testing and Teaching Evaluation System Based on Big Data. *Foreign Language World*, (2), 36-42.

Li, M. (2021). Modular Design and Implementation of Platform Technology in Education Information. *Educational Information Technology*, (6), 45-50.

LIU, L. (2019). Research on the Teaching Mode of "Task-driven+Combination of Class and Competition" in Foreign Language Practice Teaching. *Journal of Higher Education Management*, *13*(3), 123-129.

WANG, H. (2021). Research on the Innovation of Foreign Language Teaching Mode under the Perspective of Cognitive-Emotional- Social Integration. *Technology Enhanced Foreign Language Education*, *43*(2), 55-61.

YANG, Y. (2020). Innovation of English Teaching in Colleges and Universities Driven by Artificial Intelligence Technology. *Modern Education Management*, (5), 68-73.

ZHANG, X. L., & HUANG, J. L. (2022). Innovative Practice of Virtual Reality Technology in Foreign Language teaching. *Modern Educational Technology*, *32*(4), 99-104.

ZHOU, Y. (2019). Research on Ethical Issues of Educational Technology: Challenges and Responses. Research in Educational Development, (8), 82-87.