

Advancements and Challenges in Technology-Enhanced Foreign Language Education in China: A Comprehensive Analysis

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Abstract. In the digital era, the demand for technology in the field of education has significantly increased, with technological advancements playing a crucial role in enhancing both teaching and learning processes. This research reviews and analyzes the application of technology in foreign language education in China, focusing on various aspects such as curriculum construction, classroom teaching, student literacy development, and educational assessment. The study aims to provide a comprehensive overview of the current state of technology integration in foreign language education in Chinese context, identify existing limitations, and provide future perspectives. By examining the design, implementation, challenges, and future directions of technology-enhanced foreign language education, this research contributes to the broader understanding of how technology can be effectively leveraged to improve foreign language learning outcomes.

Keywords: Technology in Education; Foreign Language Education; Curriculum Construction; Educational Assessment.

1. Introduction

1.1 The Increasing Demand for Technology in Education in the Digital Age

At the dawn of the 21st century, digital technology has advanced at an unprecedented pace, with emerging technologies such as artificial intelligence, big data, virtual reality, and augmented reality profoundly transforming every aspect of our lives. This wave of digital transformation presents the education sector with unprecedented opportunities for evolution.[1] In this context, the effective integration of advanced technologies into the educational systems has emerged as a significant academic issue.

In the realm of education, the extensive application of information technology has profoundly influenced pedagogical models and learning methodologies. Traditional instruction predominantly relied on printed materials and face-to-face interactions between teachers and students. However, contemporary education increasingly incorporates new forms of technological tools like multimedia classrooms, online courses, electronic textbooks, and educational apps as integral components of daily teaching practices.[2] These technological advancements contribute to enriching the content and forms of instruction, enhancing teaching efficiency, and catering to students' diverse requirements by providing personalized learning supports.

1.2 The Increasing Demand for Technology in Education in the Digital Age

The acquisition of a foreign language constitutes a complex and long-term endeavor, and therefore traditional classroom teaching methods can no longer fully address the diverse and personalized learning requirements of contemporary students. Integrating digital tools and technologies into foreign language education contributes to facilitating the sharing of instructional resources, the tracking of learning progress, the formulation of personalized learning plans, and the provision of immediate feedback through online interaction.[3] For instance, the use of speech recognition technology aids in refining learners' pronunciation, while intelligent translation tools enhance their comprehension and expression. Furthermore, online language exchange platforms provide invaluable opportunities for learners to engage in authentic communication with native speakers. The implementation of these technologies has significantly enhanced the efficacy and quality of foreign language acquisition.

Although there is a substantial body of international research exploring the application and effectiveness of technological tools in foreign language education, with numerous literature reviews summarizing the current state of this field, the majority of these studies predominantly focus on English articles regarding the current situation mostly in English-speaking countries. There is a relative scarcity of analyses and syntheses of indigenous Chinese research in this area. Given the differences between domestic and international educational contexts and cultural backgrounds, systematically reviewing the research outcomes within the Chinese context is of significant importance.

Therefore, this study aims to address this gap by systematically organizing and analyzing the relevant studies on the role of technology in enhancing foreign language education in China, with a special focus on its current status, potential challenges and future prospects. The study begins with a thorough review of existing literature to summarize key trends and directions in the application of technology within Chinese foreign language education. It then illustrates the practical implementation of technological tools across various educational settings. Finally, the study provides recommendations for future research and practice, aiming to offer valuable insights for educators and policymakers.

2. Data Sources and the General Research Trend

2.1 Literature Sources and Quantity

According to the research subject about to be explored, relevant keywords including "foreign language education", "technology application", "online learning", and "technological tools" were identified. Using these keywords, in order to ensure the quality of the literature, I limited the sources of literature to CSSCI journals published from 2021 to 2023, and selected 28 relevant literatures as research samples. The search results reveal that in recent discussions on the application of technology in foreign language education, scholars frequently reference technologies such as Virtual Reality (VR), Artificial Intelligence (AI), online foreign language learning systems, Massive Open Online Courses (MOOCs), smart classrooms, and ChatGPT [4], a conversational AI model. This result underscores the prominence of these technologies in the discourse on integrating technological advancements into foreign language education.

2.2 Trends in Research Development and Analysis of Underlying Factors

An examination of the relevant literature of recent years reveals a discernible trend in the integration of technology into foreign language education. The recurrent analyses of technologies such as VR, AI, online foreign language learning systems, MOOCs, smart classrooms, and ChatGPT have suggested a paradigm shift in language educational approaches. The proliferation of these technologies in scholarly literature can be attributed to several interrelated factors.

The rapid development of VR and AI technologies has opened new avenues for immersive and adaptive learning experiences. VR, for instance, offers simulated environments that enhance language acquisition through realistic scenarios, while AI-driven systems can personalize learning by adapting to individual student's needs and providing real-time feedback[5]. Additionally, the global shift towards online education, accelerated by the COVID-19 pandemic, has necessitated the adoption of robust online learning platforms. MOOCs and online foreign language learning systems have become pivotal in delivering accessible and scalable language education.

In conclusion, the trend towards incorporating advanced technologies into foreign language education is driven by the convergence of technological innovation, pedagogical shifts, and other factors. As these technologies continue to evolve, it is imperative for the academic community to remain abreast of their development and critically evaluate their integration into language educational practices.

3. Analysis

Based on the analysis of the relevant literature, the main content of the integration of technology into foreign language education concerns four aspects, including the integration of technology in foreign language curriculum construction, in foreign language classroom instruction, in students' language literacy cultivation, and in language learning evaluation. The four aspects are discussed in four aspects: instructional design, current status, potential challenges and future prospects of integration with technology.

3.1 The Integration of Technology in Foreign Language Curriculum Construction

With the rapid advancement of information technology, the application of technology in constructing foreign language curricula has become increasingly widespread, exerting a profound impact on the field of language education. This trend is particularly evident in the rise of MOOCs, the innovation of online and offline blended teaching models, and the deep integration of ideological and political education within curricula. MOOCs, as a novel form of online education, have transcended the temporal and spatial constraints of traditional education, allowing learners worldwide to access high-quality foreign language education resources. The online and offline blended teaching model combines the interactivity of traditional classroom education with the flexibility of online education, providing students with a more personalized and efficient learning experience [6]. Additionally, the integration of ideological and political education within curricula emphasizes the value-driven aspect of foreign language education, utilizing technological tools to organically combine ideological and political education with foreign language education, thereby promoting the holistic development of students' comprehensive qualities.

These technology-driven educational innovations have not only enriched the content and forms of foreign language courses, but also drove the updated evolution of educational philosophies and pedagogical approaches. As technology continues to advance and educational needs become increasingly diverse, the application of technology in constructing foreign language courses will become even more profound and extensive, providing robust support for cultivating foreign language talents with international horizons and innovative capabilities.[7]

(1) Design of Technology-enhanced Foreign Language Curriculum Construction

MOOCs, as a model of Massive Open Online Courses, offer foreign language learners flexible schedules and a wealth of resources [8]. Characterized by exceptional accessibility and cost-effectiveness, these courses provide a versatile learning platform for global learners, breaking the temporal and spatial constraints of traditional education. In designing MOOC foreign language courses, considerations are expected to include modularizing course content, designing interactive learning activities, and implementing diverse assessment methods.

The blended teaching model combines the strengths of traditional classrooms with the convenience of online learning. With regard to its design, a balance must be struck between online self-directed learning and offline interactive communication to ensure that learners can obtain compelling learning experiences in both contexts. In the era of information and intelligence, multimedia technologies, as well as modern information technologies such as big data, virtual reality, and artificial intelligence, have become essential tools in foreign language education.[9] Higher education institutions are encouraged to fully utilize information technology to implement blended teaching, guiding students towards active, self-directed, and personalized learning. Offline teaching typically employs methods such as classroom observation, learning logs, and interviews to understand the achievements, difficulties, and unresolved confusions encountered by students in university English courses.

Curriculum ideological and political education emphasizes the integration of ideological and political education within professional courses. In designing foreign language courses, this can be achieved through methods such as case analysis and thematic discussions, integrating ideological and political elements with language teaching to cultivate students' comprehensive qualities.

(2) Current Status of Technology-enhanced Foreign Language Curriculum Construction

Currently, the integration of technology in foreign language courses has become increasingly prevalent. Tools such as MOOCs and online learning platforms are extensively utilized to provide learners with diverse educational opportunities. MOOCs, in particular, not only enrich course content but also significantly enhance learners' engagement and learning outcomes through interactive and self-directed learning designs. Additionally, the global perspective and technological integration inherent in MOOCs offer learners opportunities to interact with individuals from diverse cultural backgrounds and experience modern, intuitive learning through advanced information technology. With the continuous updating of course content and the recognition of certificates and credits, MOOCs are gradually emerging as significant pathways for lifelong learning and professional development.

The effectiveness of foreign language teaching enhanced by technological application has been preliminarily validated, demonstrating notable improvements in learners' participation, learning efficiency, and satisfaction. The advancement of technology has prompted a shift in the role of educators from traditional knowledge disseminators to facilitators of learning and curriculum designers. This transition requires teachers to continuously update their technological expertise and pedagogical strategies to effectively leverage new tools. [10]

(3) Potential Challenges of Technology-enhanced Foreign Language Curriculum Construction

Despite the increasing prevalence of technology in the educational sector, certain regions and schools still face significant challenges due to the scarcity of technological resources, which severely constrain the comprehensive implementation of foreign language courses. There is a marked disparity in teachers' capabilities regarding technology application. Some teachers, lacking the necessary technical training, cannot fully harness the potential of technology in teaching, thereby impacting the overall effectiveness of instruction. [11] Additionally, individual differences among students in terms of self-directed learning abilities present further challenges. Some students, due to deficiencies in self-management skills, struggle to adapt to technology-driven learning models, exacerbating the issue of uneven distribution of educational resources.

(4) Future Prospects of Technology-enhanced Foreign Language Curriculum Construction

Looking ahead, a series of strategies need to be implemented to further promote the deep integration of technology in foreign language education and achieve an overall enhancement of educational quality. [12] Firstly, balancing the distribution of technological resources is foundational. Governments and educational institutions are expected to ensure that technological resources are accessible to all regions and schools, thereby eliminating digital inequality. Secondly, emphasis on teachers' professional development is crucial. By providing continuous training and learning opportunities for teachers, their capabilities in technology application and innovative teaching methods are able to be enhanced, allowing them to better utilize technology to facilitate teaching. Lastly, cultivating students' self-directed learning abilities is critical. This necessitates educators to design student-centered teaching activities, encouraging students to actively explore and utilize technological resources, and fostering their self-management and lifelong learning skills.

In summary, although the application of technology in foreign language education has achieved certain successes, it is still necessary to overcome potential challenges and limitations. Measures such as balancing technological resources, emphasizing teachers' professional development, and cultivating students' self-directed learning abilities are essential to enhancing educational quality. The implementation of these strategies will contribute to the construction of a more efficient, equitable, and sustainable foreign language education system.

3.2 The Integration of Technology in Foreign Language Classroom Instruction

As technological advancements continue to evolve, the realm of foreign language instruction is undergoing a transformation of unprecedented scale. Within this context, the integration of multimodal teaching, smart classrooms, VR, and AI-assisted instruction has opened new avenues for foreign language acquisition. This section aims to explore the application of these technologies in

foreign language classroom instruction, systematically analyze the current state of implementation, identify potential challenges, and provide a forward-looking conclusion of future prospects.

The multimodal teaching approaches have enhanced learning efficiency by incorporating various sensory experiences, including visual, auditory, and tactile elements, thereby increasing the interactivity and immersion of the learning process. Smart classrooms leverage technologies such as big data and cloud computing to facilitate intelligent management of educational resources and the customization of personalized learning pathways, significantly enhancing the flexibility and specificity of instruction. VR technology offers students simulated linguistic environments, enabling them to engage in practical exercises within lifelike scenarios, thereby strengthening the authenticity and practicality of language learning. AI-assisted instruction employs intelligent teaching tools and adaptive learning systems to provide students with personalized learning support and precise feedback, which is instrumental in stimulating students' interest and potential.

(1) Design of Technology-enhanced Foreign Language Classroom Instruction

In contemporary education, the integration and innovation of technology have emerged as pivotal factors in enhancing the quality of instruction. [13] Multimodal instructional design, by synthesizing various sensory modalities such as visual, auditory, and tactile experiences, aims to enrich the learning journey and bolster students' linguistic comprehension and application skills. In the context of foreign language classrooms, this pedagogical approach is realized through various formats, including videos, audio recordings, images, and interactive activities, thereby constructing a comprehensive and multidimensional learning milieu. Such a design not only ignites students' interest in learning but also fosters profound and flexible understanding and utilization of linguistic knowledge, offering learners a more vivid and intuitive educational platform.

Intelligent classroom design, on the other hand, focuses on leveraging advanced information technology to create an interactive and resource-rich learning environment. The design of intelligent classroom instruction integrates, smart devices, cloud platforms, and big data analytics to support the customization of personalized learning paths and the provision of real-time feedback, thereby enhancing the specificity and efficiency of classroom instruction.[14] Through data analysis, intelligent classrooms can precisely gauge students' learning progress and difficulties, providing teachers with scientific decision-making support and students with more individualized learning experiences, significantly elevating the interactivity of instruction and students' engagement levels.

Moreover, VR/AI-assisted instructional design employs VR technology to immerse students in a dynamic language learning environment, complemented by AI to deliver personalized learning recommendations and immediate feedback. This approach aims to create an engaging and efficient educational experience by harnessing the synergistic effects of these technological tools. VR technology enables students to practice language skills within a virtual context, thereby enhancing the immersion and practicality of their learning. Simultaneously, AI technology offers precise guidance and feedback based on each student's learning conditions and requirements, facilitating a more effective acquisition of linguistic skills.

(2) Current Status of Technology-enhanced Foreign Language Classroom Instruction

In the context of the widespread adoption of educational technologies, advanced methods such as multimodal instruction, smart classrooms, and VR/AI-assisted teaching have progressively integrated into foreign language education. [15] Nevertheless, the extent of their implementation varies significantly across different regions and educational institutions. Preliminary empirical studies indicate that the incorporation of these technological tools has notably enhanced students' enthusiasm for learning and their engagement in the classroom. Moreover, with the evolution of teaching paradigms, the role of teachers is also undergoing a profound transformation.

(3) Potential Challenges of Technology-enhanced Foreign Language Classroom Instruction

In the contemporary era of widespread educational technology, advanced methods such as multimodal instruction, smart classrooms, and VR/AI-assisted teaching hold significant promise for enhancing foreign language education. However, their practical implementation encounters several challenges. Firstly, the limited availability of technological resources constrains the deployment of

these innovations, particularly in certain regions and schools where resource allocation is inadequate. Secondly, disparities in teachers' technological proficiency pose another challenge. Some teachers, lacking comprehensive training, struggle to effectively utilize these technologies in their pedagogical practices. Lastly, students' adaptability must be considered. Variations in students' ability to adjust to technology-driven learning paradigms can lead to difficulties, especially for those with weaker self-management skills. Therefore, a thorough evaluation of their long-term impact on students' academic performance remains to be further investigated through rigorous scientific research.

(4) Future Prospects of Technology-enhanced Foreign Language Classroom Instruction

In the context of the rapid advancement in educational technology, future educational policies should focus on several key areas to ensure equitable resource distribution and maximize the benefits of technological innovations. Firstly, there should be increased investment in technological resources to ensure that both remote and urban schools can equally benefit from the advancements in educational technologies. Secondly, there should be a heightened emphasis on the enhancement of teachers' professional development, particularly concerning their technological application skills. Teachers are required to shift from traditional knowledge transmitters to technology integrators and learning facilitators, thereby adapting to and leading the ongoing wave of educational technological innovation. Systematic training programs should be implemented to help teachers stay abreast of the latest developments in educational technology, thereby enabling them to integrate these tools more efficiently into their teaching practices. Lastly, curriculum design and instructional strategies should be optimized to foster students' autonomous learning abilities. This approach will allow students to independently explore and learn within technology-driven learning environments, thereby strengthening their capacity for lifelong learning. Implementing these measures will enhance educational quality, promote educational equity, and establish a solid foundation for students' holistic development.

3.3 The Integration of Technology in Students' Language Literacy Cultivation

In the contemporary global educational landscape, fostering foreign language literacy has emerged as a pivotal element of language education. The rapid advancement of information technology has not only transformed traditional pedagogical models but also provided students with a richer, more flexible, and personalized learning experience. This section explores the integration of technology in developing students' language literacy, focusing on the enhancement of reading and writing skills as well as the promotion of cross-cultural communication abilities by analyzing the current state of technological applications, the challenges encountered, and the future prospect.

(1) Design of Technology-enhanced Students' Language Literacy Cultivation

In designing Technology-enhanced tools and approaches for foreign language proficiency development, emphasis should be placed on the diversity and interactivity of technology. Multimedia resources, such as interactive e-books and animations, can significantly enhance students' listening and reading comprehension skills. [16] Online platforms offer a variety of language input and output opportunities, including real-time communication and personalized feedback. VR technology creates immersive learning environments that simulate authentic cross-cultural communication scenarios, enriching practical experience.

(2) Current Status of Technology-enhanced Students' Language Literacy Cultivation

The application of technology in foreign language instruction has made significant strides, providing students with convenient access to a wide array of learning opportunities and educational resources. [17] Nevertheless, the dissemination and effectiveness of these technological tools vary across different regions and institutions. A notable portion of schools and teachers demonstrate limited receptiveness and proficiency in adopting and implementing these innovations, resulting in an uneven distribution of educational resources and technological integration.

(3) Potential Challenges of Technology-enhanced Students' Language Literacy Cultivation

Despite the immense potential technology holds for foreign language instruction, its application is constrained by several challenges. [18] Primarily, the scarcity of technological resources hinders its

widespread adoption in remote areas, perpetuating educational disparities. Secondly, the deficiency in teachers' technological proficiency and innovative pedagogical approaches impedes the effective integration of technology into the curriculum, thereby limiting the maximization of instructional outcomes. Additionally, the heterogeneity in students' technological adaptability and self-directed learning capabilities affects the efficacy of technological interventions, necessitating the development of more personalized and adaptive instructional strategies. To overcome these challenges, there is a critical need to increase investment in technological resources, enhance teachers' technological literacy and innovative teaching competencies, and develop pedagogical models that cater to the diverse needs of students.

(4) Future Prospects of Technology-enhanced Students' Language Literacy Cultivation

Looking ahead, the application of technology in cultivating students' foreign language literacy is poised to become more extensive and profound. [19] Firstly, there is a pressing need to increase investment in technological resources to ensure equitable access and utilization of advanced educational technologies for all students. These technologies should incorporate personalized learning paths, adapting to students' learning rhythms and styles, and providing flexible learning plans and dynamic adjustment mechanisms to ensure the depth and breadth of technological application. Secondly, enhancing the technological training and professional development of educators is crucial, elevating their understanding and adeptness with new technologies. Finally, by refining curriculum design and instructional strategies, students' autonomous learning skills and cross-cultural communication abilities can be nurtured, enabling them to effectively use foreign languages in a global context. Through these initiatives, the holistic enhancement of students' foreign language literacy can be achieved, fostering the modernization and internationalization of education, and laying a robust foundation for students' future endeavors.

3.4 The Integration of Technology in Language Learning Evaluation

As technology continues to advance, the evaluation system for foreign language education is undergoing profound transformations. This section aims to explore the application of technology in assessing reading, writing, and speaking skills, analyzing the underlying design principles, the current state of implementation, the limitations encountered, and the future directions. Design of Technology-enhanced Language Learning Evaluation

The integration of technology in foreign language evaluation is not merely a trend but a necessity driven by the evolving educational landscape. [20] The design of technological tools for reading evaluation incorporates sophisticated algorithms to evaluate students' comprehension and critical thinking skills. For writing evaluation, the focus shifts to automated grammar and style analysis, along with evaluations of content relevance and coherence. Speaking evaluation utilizes advanced speech recognition and pronunciation evaluation technologies to measure fluency and articulation. These tools are designed to ensure the objectivity and fairness of the assessment process, while providing immediate feedback to enhance learning outcomes.

(1) Current Status of Technology-enhanced Language Learning Evaluation

Currently, the application of technology in foreign language evaluation has been on the rise. [21] Online platforms and intelligent scoring systems are being increasingly utilized for the assessment of reading, writing, and speaking abilities. [22] These systems offer quick and consistent scoring, which alleviates the workload of educators and boosts the efficiency of the evaluation procedure.

Nevertheless, the implementation and efficacy of these technologies differ among various regions and institutions. Some teachers and institutions face difficulties in fully adopting and making effective use of new technological tools.

(2) Potential Challenges of Technology-enhanced Language Learning Evaluation

Despite the promising potential of technology in foreign language evaluation, several challenges persist. [23] The scarcity of technological resources in remote areas continues to perpetuate educational disparities, restricting equitable access to advanced evaluation tools. Additionally, the lack of technological proficiency and innovative pedagogical approaches among teachers hinders the

effective integration of technology into the curriculum, limiting the maximization of instructional outcomes. Furthermore, variations in students' technological adaptability and self-directed learning capabilities affect the efficacy of technological interventions, highlighting the need for more personalized and adaptive instructional strategies.

(3) Future Prospect of Technology-enhanced Language Learning Evaluation

Looking ahead, the integration of technology in foreign language evaluation is expected to become more extensive and sophisticated. [24] Significant investment in technological resources is necessary to ensure equitable access for all students. Enhancing the technological training for teachers to facilitate their professional development is also crucial, aiming to elevate their competencies in technology application and innovative pedagogy. Moreover, it is crucial to refine curriculum design and instructional strategies to cultivate students' autonomous learning skills and cross-cultural communication abilities. By addressing these aspects, the holistic enhancement of students' foreign language literacy can be achieved, thereby fostering the modernization and internationalization of language education, and providing a robust foundation for students' future success.

4. Discussion and Conclusion

If you follow the “checklist”, your paper will conform to the requirements of the publisher and facilitate a problem-free publication process. In the context of the digital wave, the educational sector is experiencing an unprecedented transformation. The profound integration of technology has emerged as the central driving force propelling innovation in foreign language education. This study, through an in-depth analysis of a substantial corpus of academic literature, not only reveals the extensive applications of technological tools in foreign language education in Chinese educational practice, but also precisely delineates its implementation status across different levels and the challenges encountered. Therefore, this section aims to provide a summary and prospective reflections on the analysis of previous literature, with regards to the methods, thematic concentration, and practical implications.

4.1 Research Methodology

The previous research methods include literature review, case analysis and empirical research. Previous studies mainly adopted the method of case analysis. Through in-depth analysis of specific teaching cases, practical issues such as the ideological and political innovation model of English teachers' curriculum with the assistance of information technology, the application of data-driven learning in the acquisition of English color words with object constructions, and the teaching effect and influencing factors of VR assisted interpretation were discussed. Case analysis makes the research more concrete and vivid, helps find the problems and challenges in teaching, and provides the basis for proposing the targeted solutions. Empirical research is also the core part of previous research, through the design and implementation of specific teaching experiments, first-hand data collection and quantitative analysis. For example, in "Exploring the Ideological and Political Innovation Model of English Teachers' Major Curriculum with the assistance of Information Technology [25] ", the researcher collected students' mastery of teaching method knowledge and Chinese cultural English knowledge through self-assessment questionnaires before and after the course. In "An empirical study on Data-driven Acquisition of English color Words with accusative constructions [26] ", pre-and post-test papers are adopted, and data-driven teaching is carried out with the help of Sketch Engine online language learning tool. In "Research on the Teaching Effect and Influencing Factors of VR Assisted Interpretation [27] ", researchers conducted comparative teaching between traditional teaching week and VR assisted teaching week on seven themes, and collected students' learning experience and evaluation data. These empirical studies provide strong support for verifying research hypotheses and drawing conclusions.

In future research, in order to ensure the comprehensiveness, systematicness and depth of the research results, scholars can apply a variety of research methods such as case analysis and empirical

research comprehensively, rather than limiting themselves to a single research method. Case analysis will select representative cases for in-depth analysis, verify theoretical hypotheses from the practical level, and reveal potential problems and challenges. At the same time, empirical research will collect accurate and reliable data through the design of scientific experiments or surveys, and use statistical analysis and other methods to process and analyze the data, so as to draw research conclusions with universal and popularization value. This diversified research strategy will enable us to explore research issues in an all-round and multi-angle manner, improve the accuracy and reliability of research, and provide powerful theoretical support and practical guidance for the development of related fields.

4.2 Research Themes

In the broad field of the application of technology to foreign language education, the research topics cover several dimensions such as curriculum design, teaching methods, student ability development, and educational assessment. Through systematic review and analysis of these topics, this study has laid a rich theoretical and practical foundation for subsequent research.

4.2.1 Course Design

In terms of curriculum design, the research explores how technology can be used to optimize curriculum content and structure to suit different learning needs and goals. For example, research on “the Teaching Effect and Influencing Factors of VR Assisted Interpretation [27]” shows how virtual reality technology (VR) can provide near-real situational experience for interpreting teaching, thereby overcoming the limitations of traditional classrooms in simulating real interpreting scenarios. The study not only enriched the means of teaching interpretation, but also provided a new idea for curriculum design, that is, combining the emerging technology to improve the situational and interactive teaching.

4.2.2 Teaching Methods

In terms of teaching methods, research focuses on how technology can change traditional teaching models and promote more efficient and personalized learning. For example, “An empirical study on Data-driven Acquisition of English color Words with accusative constructions [26]” adopts the data-driven learning (DDL) model, and the Sketch Engine online language learning tool is used to guide students to independently discover language rules and patterns from rich corpus data. This teaching method emphasizes students' initiative and exploration, which helps to improve the effect and depth of language learning.

4.2.3 The Development of Students' Abilities

Student ability development is one of the core objectives of foreign language education. With the help of technology, the study discusses how to improve students' language, thinking and cross-cultural communication abilities. For example, in the VR-assisted interpretation teaching research, by comparing the effects of traditional teaching week and VR-assisted teaching week, it is found that VR technology can significantly improve students' interpreting performance and sense of acquisition, and also promote literacy to some extent. This shows that technology can not only enhance language skills, but also promote the overall development of students.

4.2.4 Educational Evaluation

Educational evaluation is an important link to ensure teaching quality and learning effectiveness. In the process of applying technology to foreign language education, the research explores how technology can be used to make a more scientific, objective and comprehensive assessment. For example, in the study of data-driven teaching model, students' progress in comprehension and application of color words with object constructions was evaluated by comparing pre-test and post-test data. This kind of assessment can not only quantify learning outcomes, but also provide strong support for teaching improvement.

With the continuous development of science and technology, emerging technologies such as artificial intelligence (AI), big data, and blockchain have broad application prospects in foreign language education. Future studies can further explore the integration and application of these technologies to promote the innovation and development of foreign language education. For example, AI technology can be used for the generation and recommendation of personalized teaching resources, big data can be used for learning behavior analysis and learning effectiveness prediction, and blockchain technology can be used for the certification and management of education certificates. The application of these emerging technologies will help build a more efficient, intelligent and personalized foreign language education system.

4.3 Implications for Practice

In the current educational environment, technology has begun to play a role in curriculum design, but there are still many shortcomings. Traditional curriculum framework is often fixed, lack of flexibility and interaction, it is difficult to meet the diverse needs of different learners. Although some courses have tried to introduce some simple technical elements, such as online learning platforms to provide electronic versions of course materials, but this is only a preliminary integration, has not yet formed a deep integration system. The presentation of the course content is also relatively simple, mainly text and static pictures, and lacks a multi-modal display, which is not conducive to stimulating students' learning interest and improving learning results. Future research should focus on using technology to create more flexible and interactive curriculum frameworks. For example, virtual reality (VR) and augmented reality (AR) technologies can be used to create immersive learning scenes, allowing students to experience different language and cultural environments, which is particularly important for the cultivation of cross-cultural communication skills in foreign language learning. Use big data to analyze students' learning data, so as to accurately adjust the course content and progress to adapt to each student's learning pace. At the same time, multimedia interactive teaching materials are used to organically combine text, images, audio, video and other elements to make the course content more lively and interesting and improve the participation of students.

At present, teachers' integration of technology in the teaching process is uneven. Some teachers are already trying to incorporate emerging technologies into their teaching, such as using online teaching tools to teach remotely or assign assignments. However, many teachers face many challenges in the application of technology. On the one hand, teachers have limited opportunities for technical training, resulting in a lack of understanding of the operation and function of some advanced technologies, which can not give full play to the potential of technology in teaching. On the other hand, teachers have difficulty in integrating technology with teaching objectives and often simply use technology as a supplement to traditional teaching methods without fundamentally changing the teaching model to improve teaching results. Future research should explore how teachers can effectively integrate technology to improve teaching outcomes and address the challenges posed by technological advances. First of all, the technical training system of teachers should be strengthened, and systematic and continuous training courses should be provided to enable teachers to master various advanced teaching technology tools, such as the use of intelligent teaching software and the management of online teaching platforms. Teachers can use the AI-assisted teaching system to provide personalized teaching guidance according to students' learning conditions. In addition, teachers should actively participate in research projects on the integration of technology and teaching, and collaborate with educational technology experts to jointly explore innovative teaching models, such as the combination of project-based learning (PBL) and technological tools, so that students can improve their foreign language skills in the process of solving practical problems.

For students, technology has already played a role in promoting independent learning and improving foreign language ability, but there is still a lot of room for improvement. In the existing learning environment, students can make use of some online learning resources for independent learning, such as the functions of word memory and grammar exercises provided by foreign language learning apps. However, these resources are often fragmented and lack systematic learning planning.

When students use technology for independent learning, they also lack effective self-supervision and management ability, which is easy to be disturbed by the outside world, resulting in poor learning results. In the improvement of reading, writing and intercultural communication skills, technology has not been applied deeply enough to fully explore the potential of technology for the development of these skills. Future research is needed to delve deeper into how technology can facilitate students' self-directed learning and improve their foreign language proficiency, especially in reading, writing and intercultural communication skills. Intelligent learning assistants can be developed to make personalized learning plans for students according to their learning history and ability level, and guide students to learn systematically. For example, in reading, the intelligent recommendation system is used to provide students with foreign language books and articles suitable for their reading level and interests, and provide real-time reading AIDS, such as vocabulary interpretation and grammar analysis. In terms of writing, with the help of artificial intelligence writing correction tools, it can not only correct grammar errors, but also provide advice on content structure, language expression and other aspects. For the cultivation of intercultural communication skills, the online international communication platform can be used to allow students to communicate and interact with people from different cultural backgrounds in real time, and provide an instant query function of cultural background knowledge to help students better understand and adapt to cross-cultural communication situations.

To conclude, this article systematically analyzes the multi-dimensional application of technology in foreign language education in terms of curriculum design, classroom teaching, students' language literacy training and language learning evaluation. We delve into the current status and positive changes brought about by technologies such as MOOCs, mixed online and offline teaching models, virtual reality (VR)-assisted and artificial intelligence (AI)-assisted teaching. The integration of these technologies not only enriches the course content, improves teaching efficiency and interactivity, but also meets the individualized and diversified learning needs of students. The study found that the extensive application of technology in foreign language education has achieved initial results, and students' participation, learning efficiency and satisfaction have been improved. However, at the same time, they are faced with challenges such as the uneven ability of teachers to apply technology and the large difference in students' adaptability. Therefore, this article emphasizes the importance of strengthening the integration of technical resources, improving the professional training of teachers, and optimizing the curriculum design and evaluation system. In the future, in order to more comprehensively promote the deep integration of technology in foreign language education and achieve the overall improvement of education quality, researchers, educators and policymakers need to work together to explore more innovative education models and technology application paths. With the continuous progress of technology and the continuous renewal of educational concepts, technology-enhanced foreign language education will usher in broader prospects for development and contribute to the cause of foreign language education in our country and even in the world.

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