

Application and Research on Foreign Language Teaching in the Context of Digital Transformation

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Abstract: Digital transformation of education is the focus and hot spot of education reform at present, and digital transformation will bring radical changes to the field of education and teaching. Foreign language teaching, because of its special characteristics, can receive more attention and changes, and can produce a process from quantitative to qualitative changes. How to make a good digital transformation of foreign language teaching is very important to promote foreign language teaching methods, innovation and application as well as to explore new teaching modes under digital conditions. Through the introduction of the current background and the research of the current situation at home and abroad, this paper elaborates the significance of digital transformation of foreign language teaching, and introduces the teaching scenarios, teaching contents and teaching forms under digital transformation respectively, and finally summarizes the current opportunities and challenges.

1. Introduction

Informatization and digitization are constantly changing every aspect of people's lives. With the support of technologies such as Internet+, big data, cloud computing, artificial intelligence and blockchain, people's production, life and way of thinking have undergone significant changes, which also profoundly affect the development of the education system. In 2021, Facebook founder Zuckerberg said that the metaverse was the next frontier and officially announced the company's name change to Meta^[1]. Tech giant Microsoft also announced its full-scale entry into the metaverse, and the metaverse concept quickly swept the world. The year 2021 is also defined as the first year of the metaverse by the Internet, which has attracted great interest from governments, technology, finance, education and other fields. This also means that digital transformation has reached a whole new level, and a new digital era has opened up from now on.

Chinese Party Central Committee has made a series of important strategic plans around education modernization, digital China and digital transformation, and the 14th Five-Year Plan and the Long-Range Objectives Through the Year 2035 clearly put forward the following: to accelerate digital development, build a new advantage in digital economy^[2], collaborate To promote digitalization and industrial digital transformation, accelerate the pace of digital society construction, improve the level of digital government construction, create a good digital ecology, and build a digital China. In the future, China will promote the construction of a strong network, accelerate the construction of digital economy, digital society, digital

government, digital transformation of the overall drive production methods, and drive the overall economic development.

In December 2022, CPC Central Committee and State Council issued the Opinions on Building a Data Infrastructure System to Better Play the Role of Data Elements. The Opinions point out that the construction of the data foundation system is related to the overall situation of national development and security. In order to accelerate the construction of the data foundation system, give full play to the advantages of China's massive data scale and rich application scenarios, activate the potential of data elements, make stronger, better and bigger digital economy, enhance the new momentum of economic development, and build a new national competitive advantage, relevant opinions are put forward.

In the field of foreign language education, from education system, organization form, teaching mode and learning paradigm, all of them are facing the challenges of brand new development in the digital era, and it is urgent for universities to carry out digital reform and innovation. How to do the transformation from informationization to digitalization? What are the connotation and core of digital transformation in colleges and universities? The research on these questions will help to explore the essence of digital transformation of colleges and universities and correctly grasp the work focus and practice direction of digital transformation of colleges and universities in the future.

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2. Current status of domestic and international research

Some developed countries and regions in the world have been making efforts to promote the digital transformation of education and drive the development of education reform in the world. In the United States, for example, as early as 1994, the U.S. Department of Education established the U.S. Office Of Educational Technology (OET)^[3], whose main function is to develop a national education technology policy, establish how to use technology to transform teaching and learning as well as enable K-12 education, higher education and adult education to learn anywhere and anytime. The agency has released six consecutive editions of the National Education Technology Plan through July 2022.

In China, blended learning with microlearning, MOOC, smart classroom, flipped classroom, etc. has been deeply rooted, and various models and platforms for online teaching have emerged. In the exploration of new digital technologies and experiences, major universities are continuously conducting research and support. Some universities in China have not only started digital transformation, but also started to teach people to fish, for example, Nanjing University of Information Engineering, a "double first-class" university, has renamed its "Department of Information Engineering" as "Department of Metaverse Engineering". "For example, Nanjing University of Information Engineering has renamed the Department of Information Engineering as the Department of Metaverse Engineering, Tsinghua University and Beijing University of Posts and Telecommunications have established the Metaverse Lab, and the Hong Kong Polytechnic University has set up a new major in Metaverse Technology.

At present, the digital innovation era represented by the "education metaverse" is flourishing.

3. The significance of digital transformation of foreign language education

The construction of high-quality education system in the context of the digital age needs to give full play to technological advantages. The integration application of "metaverse+education" is being constantly explored, and the demand for multi-level integrated education model is obvious.

In the application of education, especially in the field of foreign language education immersion and interactivity are the most prominent advantages of VR technology. It facilitates students to learn cooperative collaboration, communication, substance, critical thinking, creative innovation and self-knowledge and self-confidence, and to engage in gamified learning scenarios that are active, focused, meaning-driven, socially interactive, iteratively updated, joyful and fun to learn. The educational metaverse creates playful scenarios that allow students to learn actively, iteratively, and joyfully through "hands-on" exploration and experience in a new environment that they have never

visited before. In learning substantive content and meaning-driven learning. Students learn better in augmented reality game scenarios than in traditional classrooms, and they can easily transfer what they learn from the virtual world to the real world.

Teachers and students participate in the classroom with digital identities and interact in virtual teaching places. The application scenarios of the educational metaverse can be summarized as: ubiquitous verifiable intelligent learning, deeply immersive experiential learning, deeply collaborative discovery learning across time and space, and collaborative knowledge generation learning with virtual and real integration.

To sum up, the digital transformation of foreign language education is reshaping the future in the following ways:

- (1) Empowering smart foreign language teaching environment
- (2) Providing immersive foreign language resources
- (3) Realize personalized foreign language learning activities
- (4) Realize intelligent teaching evaluation
- (5) Innovative intelligent foreign language education services

4. Teaching Scenes

Foreign language teaching is very important in terms of context and scenario, and based on various digital technologies, foreign language teaching can produce very positive results in listening, speaking, reading, writing and translation. Students who participated in the empirical study at home and abroad highly recognized technologies such as big data, AR and VR to assist language teaching, saying that the experimental classes were vivid and interesting. Teachers have a variety of flexible and intuitive means to enhance students' interest, attention, motivation and creativity, relieve classroom anxiety, improve communicative skills, and ultimately improve students' language expression skills and quality. In language teaching based on virtual reality technology, foreign language teaching classrooms with a variety of digital means use the immersive nature of virtual reality technology to immerse students in the language learning environment and in real-time communication with native learners, providing students with a language learning environment that cannot be achieved in traditional classrooms, greatly reducing students' foreign language learning anxiety and enabling them to improve the quality of spoken output.

Even introverted students can actively participate in interactive teaching and learning, increasing their self-confidence and self-efficacy, and actively learning to speak a foreign language. In the digital classroom, students can make full use of technologies such as virtual reality to experience and explore simulated scenarios and experience real content through a first-person perspective. Virtual reality technology can help enrich students' imagination and improve their language expression, vocabulary expression, and overall writing skills in foreign language writing. It can eliminate

students' unfamiliarity with the scene of language expression in speaking and translation, thus achieving effects such as a decrease in the number of students' descriptive errors and an increase in their comprehensive interpretation ability. In addition, the digital technology provides students with visual information and spatial perception elements that are indispensable in interpretation, preparing students for the actual interpretation. Students explore how to apply their learning with the high sense of immediacy and immersion in the virtual reality environment as the main experience. At the same time, foreign studies do not have too many restrictions on the number of lecturers, duration, equipment and research methods, which provide implications for domestic experimental teaching research.

One of the major advantages of digital foreign language education is that it can bring about significant changes in teaching scenarios^[4]. A new teaching platform based on VR/AR/MR technologies to create a virtual-reality connection can create more immersive, realistic and friendly teaching scenarios, where learners carry out deep cognitive activities and actively construct knowledge in an immersive experience. In language learning, the educational meta-universe can provide learners with a highly realistic language learning environment and support learners to preview language communication skills needed in different environments. In special education, it can target learners' barriers in social interaction, emotional expression and self-perception, build structured social scenarios, simulate real emotions and user behavior, and help learners improve interpersonal skills, emotional control ability and self-confidence.

In addition, this expansion of sensory experience will also stimulate unique cognitive experiences, enrich the perceptual dimension of all aspects of social life, enhance synaptic derivation, and surpass the experience brought to users by any previous media form.

5. Teaching Content

Compared with traditional teaching methods, the content of foreign language teaching in the digital era will be richer. In the traditional mode, only limited teaching content can be displayed through textbooks and board books, and students and teachers cannot form an effective consensus and interaction.

Now, through digital means, we can show the teaching content in various multimedia forms, including pictures, voice, video, Ar and Vr scenes, which can let students quickly integrate into the teaching scene. At the same time, teachers can also design some problems in different scenes, or even show them in the form of games, so that teaching can really be heard, seen and touched. Students can take the initiative to think, work with their hands and work together.

For example, the same statement in different scenarios will have different meanings through different intonation, which is difficult for students to understand quickly through traditional teaching methods, but now

we can easily achieve it through VR scenario mode, so that students can be immersed in different contexts, combined with the surrounding environment, contextual reminders, so that they can fully feel and understand how to use the corresponding grammar and semantics, and can be impressed.

With the addition of big data and the Internet, teachers can access and collect content related to teaching and learning through multiple channels, moving away from the traditional information gathering model. Access and share relevant teaching and learning information through a rich set of means. They can easily refer to other schools' teaching methods and experiences to improve and enhance their own teaching materials, tools and quality.

6. Teaching Form

Traditional forms of teaching are based on offline teaching, which is greatly affected by objective factors such as space, time and personnel. The digital transformation can bring an all-round change, breaking through the limitations of physical space and showing richer educational contents. Through Internet+, big data+ and other technologies, foreign language teaching is no longer limited by the venue and form, online teaching mode stands out^[5]. Teachers can teach remotely and interact with students through the Internet.

The development of online teaching shows the trend of diversification of teaching platform, richness of resources and innovation of teaching mode: MOOC, NetEase Open Class, Tencent Classroom, DingTalk, Tencent Meeting, etc. Students can watch live and recorded lectures, and learn anytime and anywhere through cell phones, PCs and other devices. Teachers can also teach through the Internet. Before the class, the content and knowledge points related to the lesson can be sent to students in advance through text, pictures, audio, video and other forms, so that students can have a targeted pre-study.

During the class, the teacher can enhance classroom interaction through interesting procedures such as check-in, random roll call, questioning, and scenario replay, etc. The use of face recognition technology can help the teacher capture the facial expressions of each student at different times when listening to the class, such as closing eyes, snorting, swaying back and forth, and record the changes. The teaching method can be adjusted accordingly so that the teaching quality can reach the best state. In addition, the live detection function can effectively avoid the use of photos or videos to falsify listening to the lessons and ensure the attendance and quality of online classes. After the class, the attendance is automatically counted, as well as the online learning status of each person. Through online homework and online exams, the answers and results of homework and exams are given instantly, relieving the teachers' pressure after the class and putting more energy into analyzing and explaining the course and knowledge points, which can greatly improve the teaching quality and efficiency.

Pronunciation and diction in foreign language learning is always a problem for beginners. Practicing pronunciation to pictures or videos may not be able to find their mistakes for a long time, using face recognition technology can capture and record facial expressions while users are pronouncing, and at the same time compare with standard data and identify the state and details of mistakes, so as to achieve the purpose of quickly finding and correcting mistakes.

Through virtual reality technology, a lesson can be set up as a type of scene, allowing teachers and students to learn foreign languages in an immersive environment. The immersive characteristics of VR itself can fully mobilize students' emotions and thinking, and effectively enhance students' concentration. Secondly, the all-round immersive, interactive form of foreign language teaching mode can reduce students' psychological pressure more for traditional person-to-person teaching, help enhance students' self-confidence and cognition, and enable students to speak out more boldly in foreign language learning.

7. Conclusion

The new way of teaching foreign languages in the context of digital transformation is facing some difficulties and challenges while helping teachers and students. For teachers, in addition to doing a good job of traditional foreign language knowledge mapping, they need to move the educational ecosystem into the digital space based on new technological tools and need to build their own teaching resources for the new situation.

We also need to make efforts in the following areas.

(1) Improve hardware conditions and increase the popularity of digital teaching equipment.

(2) To align with personalized education and enrich the teaching software related to foreign language teaching.

(3) Make full use of the advantages of big data to collect and create high-quality and targeted foreign language teaching resources.

(4) Improve classroom management and teaching ability, and enrich online and offline teaching methods.

(5) Cultivate students' interest in learning and sense of inquiry, and improve the efficiency of foreign language teaching.

Education informatization has brought us changes in teaching methods. Informatization has improved the efficiency of education and teaching, provided rich resources, and well assisted the traditional education model. The digitalization of education has brought about a qualitative change. It has changed the teaching means and the original teaching form. From offline to online, from virtual to real, it has turned more impossible into possible. The digital transformation of education provides support for teaching services through various advanced technologies, which will open a new chapter of wisdom in foreign language education and teaching.

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