Basic Research on the Construction of Stereoscopic Teaching Materials for College English in the Era of Wisdom Education

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Abstract: *The interactivity and multimodality of three-dimensional textbooks have natural advantages for language acquisition. Firstly, this article studies the evolution of knowledge service models in publishing enterprises in the era of smart education, from digital textbooks to digital education knowledge bases, from education platforms to smart learning application scenarios; Then, this article studies the comparative analysis between three-dimensional textbooks and traditional textbooks, including the forms of expression, internal functions, design ideas, and teaching applications; Finally, this article studies the key technologies for the construction of three-dimensional college English textbooks in the era of smart education, including multimedia technology, virtual reality technology, and augmented reality technology. The research results have laid the foundation for the three-dimensional teaching materials of college English in the era of smart education. In the actual construction process, three-dimensional textbooks should go beyond knowledge itself for overall guidance design, fully leverage the advantages of various media, and form interactive complementarity in various media aspects.*

Keywords: *Wisdom Education; College English; Stereoscopic Teaching Materials; Basic Research; Key Technology*

1. Introduction

Stereoscopic textbooks are a new form of teaching materials in the context of educational informatization. Compared to traditional paper-based textbooks, they integrate teaching content, methods, tasks, and technologies into a macroscopic presentation, with characteristics such as three-dimensional dynamic audio-visual, live experience, and network resource development. The three-dimensional teaching materials extend the plane paper teaching materials to the "Internet plus" environment, making the combination of online and offline teaching a normal situation. Teachers and students can conduct ubiquitous communication at any time and anywhere and use the intelligent platform for automatic evaluation, pushing the reform of teaching materials to a new height [1]. Stereoscopic textbooks originated in the education publishing industry in the United States in the 1950s and 1960s. Some critics argue that at that time, due to the innovation of printing technology and the integration with new media technology, the American textbook publishing industry faced great challenges. Subsequently, three-dimensional textbooks were seen as a product of addressing new challenges in the textbook publishing industry and received unanimous praise from the publishing industry, as well as teachers and students. In this century, stereoscopic textbooks have gained new development along with the development of the Internet and its penetration into all walks of life. However, the research and use of foreign stereoscopic textbooks have more occurred in colleges and universities. The content of textbooks used by colleges and universities shows the characteristics of stereoscopic textbooks and the elements of the stereoscopic textbook construction model from organizational construction to teaching application. At the same time, the distribution and publication of foreign stereoscopic textbooks have also increased year by year, which shows that the application of stereoscopic textbooks is increasingly common.

In the seminar on "Rethinking Textbooks" in the United States, three-dimensional textbooks will be regarded as the future development trend, integrating all learning resources and suitable for learners to flexibly collect the information they need to learn. In terms of practice, publishers such as Pearson, McGrow Hill, John Wiley&Sons have attempted to create three-dimensional teaching materials, mainly

by designing online teaching platforms where students and teachers can directly carry out teaching activities after logging in. The Course Compass project combines the company's existing digital resources with online courses, supports open online teaching, releases teaching content online, assigns homework online, conducts online assessments, and tracks student learning progress online. The Web Publishing System project has established a digital resource standard that can manage the resource structure of textbooks. The construction of digital textbook resources in foreign countries is increasing at a rate of 60% every year. Many countries or institutions have achieved some results in the development of three-dimensional textbooks. However, there are significant differences in the theoretical and practical aspects of three-dimensional textbooks among countries. Although they cannot be directly promoted worldwide, they also have certain reference value.

2. The Evolution of Knowledge Service Models in Publishing Enterprises in the Era of Smart Education

The rapid development of big data and artificial intelligence has blurred the boundaries between education, media, and publishing. From this perspective of integration, the positive cycle of the smart education ecosystem cannot be separated from the three cores of growth, connectivity, and qualitative change. Numerous educational publishing companies at home and abroad have begun to explore the path of transformation from textbook and teaching aids providers to learning resource providers, and then to learning solution providers. By integrating knowledge content, optimizing knowledge structure, and innovating knowledge presentation methods, they can use their existing content resources and knowledge development capabilities for educational knowledge services[2]. There are two main trends in the transformation of knowledge service models in educational publishing enterprises: firstly, from digital textbooks to digital education knowledge bases; Secondly, from educational platforms to smart learning application scenarios.

2.1 From Digital Textbooks to Digital Education Knowledge Base

Textbook publishing has always been a focus of educational publishing. Since the implementation of educational informatization, publishing companies have published various types of digital textbooks to provide learning resources. However, the application of digital textbooks has not fundamentally promoted the transformation of traditional teaching models, learning methods, and evaluation mechanisms, nor has it brought substantial growth in the revenue of textbook publishing units. Therefore, in addition to developing digital textbooks, educational publishing companies also need to develop integrated media digital education knowledge bases that are suitable for smart environments. On the one hand, building a resource library that covers a vast amount of knowledge and forming a dynamic knowledge generation mechanism for educational knowledge base; On the other hand, establishing knowledge connections to meet the higher demands for efficient querying of knowledge and effective interaction between knowledge and learners. For example, a knowledge graph is a knowledge base that can serve adaptive learning, providing adaptive learning content and services; Learners can acquire and use knowledge resources according to personalized needs, thus achieving the educational goal of "teaching according to their aptitude."

2.2 From Educational Platforms to Smart Learning Application Scenarios

In the field of digital education knowledge services, platform providers who master the new generation of information technology are engaged in the construction of digital education platforms and are in a leading position; Other service roles, including publishing companies, have been weakened, their discourse power has been weakened, and even the knowledge dissemination role of teachers has been marginalized to some extent. Therefore, although a large number of information technology products flood into the education field every year, they cannot meet the ever-changing and practical needs of smart education and cannot be used in specific educational scenarios. Smart education is driving the transformation of learning environments, teaching models, and learning assessments. This also prompts educational publishing enterprises to shift their knowledge service methods from platform based to knowledge application scenarios.

3. Comparative Analysis of Stereoscopic Textbooks and Traditional Textbooks

There are certain differences between three-dimensional textbooks and traditional textbooks in

terms of expression, internal functions, design ideas, and teaching applications[3].

3.1 Expressions

Traditional textbooks usually appear in paper printing form, which cannot visually express the course content. The three-dimensional teaching materials are connected with Internet technology, and absorb the characteristics of Internet digitalization and multimedia. They are more diversified in terms of content presentation and product presentation, including static information forms such as text and illustrations, as well as dynamic forms such as voice, animation, video and network streaming media; In terms of product presentation, there are both paper media forms and digital media forms such as digital textbooks, electronic lesson plans, courseware, micro courses, question banks, virtual simulation platforms, and academic forums, presenting a full media form.

3.2 Intrinsic Function

Traditional textbooks separate the development of teaching and learning, lacking a holistic perspective between teaching and learning. Media expression, content arrangement, and presentation methods are relatively singular, and can only provide a partial solution for teaching or learning. Stereoscopic textbooks are systematically developed for teaching and learning, guided by modern teaching theories and relying on information technologies such as networks and multimedia, to provide a comprehensive solution that maximizes the needs of teaching and learning. The main purpose is to update teaching concepts and models, improve teaching quality and efficiency. Its inherent essence is not the diversification of media forms, but the arrangement and presentation of three-dimensional content.

3.3 Design Ideas

Traditional textbooks are subject knowledge oriented designs, with core content composed of basic concepts, principles, categories, and laws of the subject. The knowledge logic structure of traditional textbooks, although beneficial for students to learn efficiently, is difficult to adapt to cultivating students' personality and improving their innovation and practical abilities. The three-dimensional teaching materials go beyond the knowledge itself for overall guidance design. At the macro level, they emphasize the multi-dimensional curriculum objectives, multi-level teaching objects, multimedia forms of expression, and multi angle problem-solving, fully leveraging the advantages of various media, and forming interactive complementarity in various media aspects; At the micro level, attention should be paid to the internal composition of textbooks, so as to organically integrate teaching ideas, teaching content, teaching objectives, and teaching strategies, forming a comprehensive knowledge system[4].

3.4 Teaching Operation

Traditional textbooks, due to their single resource form and limited quantity, have a monotonous arrangement and presentation, leaving limited space for teaching and learning to freely play, and lack flexibility. The three-dimensional teaching materials are based on Internet technology. The enrichment of curriculum content, the diversification of teaching activity organization, and the full media of information presentation provide feasible conditions for the expansion of the space-time structure and activity mode of teaching and learning; In terms of design, emphasis is placed on paying attention to the needs of different teaching objects, providing different learning content and goals for learners at different levels, constructing the most suitable learning resource environment, and infiltrating optimized learning methods. This greatly enhances the freedom, flexibility, creativity, and personalization of teaching and learning in three-dimensional textbooks compared to traditional paper-based textbooks.

4. Key Technologies for the Construction of Three-Dimensional Teaching Materials for College English in the Era of Smart Education

The rich media and interactivity of three-dimensional textbooks determine that the construction of three-dimensional textbooks must rely on technology. From the current perspective, technologies such as artificial intelligence and big data have begun to be applied to the development of three-dimensional textbooks. Through technological means, it facilitates information acquisition, enables interdisciplinary

communication, simplifies operational processes, and reflects the value brought by technology.

4.1 Multimedia Technology

In English teaching such as listening, speaking, reading, writing, and translation, multimedia technology plays an important role. Teachers use multimedia and other auxiliary teaching resources to teach English. The teaching content is presented in a three-dimensional way that combines images, sounds, animations, and texts, which changes traditional teaching methods and greatly improves teaching efficiency. Teachers use multimedia technology to create a real learning environment for students. In this real language learning environment, students construct the meaning of knowledge through both visual and auditory stimuli, and engage in listening exercises; Teachers use multimedia networks to collect materials needed for oral training for students, and display them through presentation software such as PPT; Teachers utilize the advantages of online resources to expand students' learning horizons and space, so that teaching is no longer confined to the classroom and extends to the internet.

4.2 Virtual Reality Technology

Virtual reality technology is a computer system that can create and experience a virtual world, reflecting the latest achievements in multiple fields such as computer graphics, multimedia technology, display technology, ergonomics, human-computer interaction theory, and artificial intelligence. It is a real-time simulation and interaction human-computer interface that can achieve vision, hearing, touch, smell, and taste through multiple sensory channels. According to the degree of immersion and interaction in virtual reality technology, it can be divided into four types. With the development of virtual reality technology and the application of digital media, especially communication and interaction between people, emotional and personalized approaches have been developed, thereby improving the expressive and infectious power of virtual reality environments[5]. In the process of constructing three-dimensional college English textbooks, the application of VR technology provides a new experience and an unusual learning perspective. During the process of using VR technology for learning, the entire interaction process is like a game process, real and interesting[6]. After leaving the classroom, students can complete autonomous learning through mobile terminals based on VR technology, breaking the limitations of time and space on classroom teaching. The virtual English environment and the real English world are the best learning environments constructed by three-dimensional textbooks for college English teaching. The learning environments such as multiplayer online interaction scenes, target language classroom virtual scenes, and target language virtual social scenes promote the development of college English teaching towards contextualization, collaboration, autonomy, diversification, and personalization[7].

4.3 Augmented Reality Technology

With the promotion of 5G technology and the popularization of big data and cloud technology, it is designed and implemented in the form of "mobile APP+Internet plus+cloud storage". Through scanning and image recognition technology, it is possible to match the knowledge points of paper textbooks with digital teaching resources, quickly retrieve relevant digital resources from the resource platform, and realize the three-dimensional visual learning process corresponding to the paper textbooks. Augmented reality technology includes new technologies such as digital media technology, multi-sensor fusion, scene modeling, scene fusion, real-time image detection, target tracking, and registration, allowing users to receive richer and more diverse information [8,9]. Applying AR technology to the development of three-dimensional college English textbooks, mainly utilizing AR's digital display technology and human-computer interaction technology. The combination of augmented reality and various technologies applied in college English teaching can unleash greater potential: visualizing and visualizing abstract learning content, deepening the perception of abstract concepts and invisible phenomena; Support situational learning in ubiquitous environments, play virtual games in real space, and enhance perception of the environment; Enhance the presence, intuition, and focus of students, enhance reality software and other immersive learning media, and cultivate their intuition through feedback or prompts; Combining formal learning with informal learning, fully utilizing spare time. A three-dimensional teaching material for college English based on augmented reality technology is in line with the modern developmental education concept represented by Piaget, Rogers, and Tao Xingzhi. Education should enable students to achieve self-development, and students are active creators. The role of teachers is to create a suitable educational environment for students.

5. Conclusions

Textbooks are the main carrier of education, the fundamental support for enhancing the core competitiveness of education, and the key to ensuring teaching effectiveness and learning quality. The interactivity and multimodality of three-dimensional textbooks have natural advantages for language acquisition. In response to the problems of insufficient emphasis, vague concepts, fragmented tendencies, systematic deficiencies, and poor sharing in the construction of three-dimensional English textbooks in domestic universities, this article analyzes the current research status of three-dimensional English textbooks in the era of smart education in China, focusing on the key technologies of three-dimensional construction, laying a foundation for three-dimensional English textbooks in the era of smart education. In the actual construction process, three-dimensional textbooks should go beyond knowledge itself for overall guidance design. At the macro level, they emphasize the multi-dimensional goals of college English teaching, the multi-level teaching objects, the multimedia forms of expression, and the multiple perspectives of problem-solving, fully leveraging the advantages of various media, and forming interactive complementarity in various media aspects. At the micro level, emphasis is placed on the internal composition of textbooks, emphasizing the organic integration of teaching ideas, teaching content, teaching objectives, and teaching strategies, complementing each other, and forming a comprehensive knowledge system.

Acknowledgements

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