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Research Article

A Study of Interactive Video Resource Teaching Model in Universities

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Abstract

The article introduces the essence of interactive teaching which is to promote students' self-directed learning, inquiry-based learning and collaborative learning to fully exert learning subjectivity. Then it clarifies the mode of interactive video teaching used in university education between individuals and between individuals and devices, mainly composed of interactive devices, interactive subjects and interactive behaviors. Next it analyzes the mode of interactive video teaching, which consists of interactive devices, interactive subjects, interactive behaviors, etc. The application of interactive videos resources is studied in creating teaching scenarios, effectively exploring teaching, innovating teaching modes, changing evaluation methods, and storing dynamic resources. Further it analyzes the curriculum system and evaluation system, software and hardware facilities, and teaching supervision so as to provide corresponding inspiration for teacher teaching and school management. Based on the above research and problems discovered during the review process, the article provides some opinions and suggestions from several aspects such as educators, teaching managers, software and hardware equipments. First, in terms of instructional design, educators can make more use of the characteristics of interactive video teaching to meet the learning needs of students with different learning styles. Second, in terms of teaching process, teachers can use the generative function of interactive video teaching to create a relaxed and enjoyable learning atmosphere. Third, in terms of teaching strategies, teachers should combine teaching content to formulate corresponding learning goals and continuously improve educational and teaching strategies. Fourth, in terms of post-class testing, teachers will utilize the storage function of the interactive video resource library to enable learners to review the learned content after class and effectively expand students' different learning needs. Fifth, universities will regularly conduct training in interactive video teaching to enhance the literacy and ability of teachers and learners in using interactive videos. At last, universities will establish interactive video teaching and research teams to conduct experimental teaching.

Keywords

Interactive Teaching, Interactive Videos, Video Resources, Video Teaching

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1. Introduction

The development and transformation of the information technology era have accelerated the development of information technology in university education. In order to accelerate the modernization of university education in China, build an educational powerhouse, and promote the process of educational informatization in the new century, the Ministry of Education of the People's Republic of China has issued the Action Plan for Educational Informatization 2.0, which aims to promote educational modernization through educational informatization, change traditional education models through information technology, and fully integrate information and intelligent technology into the entire process of education and teaching, forming new forms, models and formats of education in the information age [1]. At present, in the face of the new situation of the post-pandemic era, it is urgent to accelerate the pace of education and teaching informatization to adapt to the new normal of online teaching and learning integration. The deep integration of education and technology reflects that information technology has profoundly changed education and teaching mode of universities. In the era of artificial intelligence, university education must adapt to new situation and needs, establish a new education system that covers intelligent learning and interactive learning, and achieve optimal teaching processes and effects [2].

Interaction was originally a computer term, referring to the process by which a computer processes terminal information and provides feedback. In 1982, American educational psychologists A.L. Brown and A.S. Palincsar proposed Reciprocal Teaching [3], which is a teaching method in which teachers and students engage in equal communication and autonomous interaction around a certain problem. By changing the traditional teaching model of teacher-student roles and teaching design, it mobilizes students' learning enthusiasm, improves teaching efficiency, and enables students to better exert their subjective initiative in the classroom. With the application of science and technology in education and teaching, interactive teaching is not only the interaction between computers and individuals, but also includes the interaction between individuals [4]. In the multimedia technology environment, there will be interactions between teachers, students and multimedia.

The essence of interactive teaching is to promote students' self-directed learning, inquiry-based learning and collaborative learning to fully exert their learning subjectivity. Integrating interactive behavior with teaching video resources provides the possibility to stimulate learners' initiative and improve teaching methods [5]. It has become a hot topic for frontline educators to explore and research. Interactive video teaching have been developed and applied in university vocational education. Referring to the development and application of interactive video resources teaching, summarizing experience and applying it to education and teaching has important historical significance for promoting the development of educational informatization in China.

2. Design of Interactive Video Teaching Mode

The mode of interactive video teaching used in university education includes interactions between individuals and between individuals and devices, mainly composed of interactive devices, interactive subjects, interactive behaviors, etc.

2.1. Interactive Devices

Interactive devices are the central medium for teachers to provide teaching and for students to learn, as well as the center for information exchange between teachers and students. Universities have established a non-profit portal website that enables knowledge sharing and innovation through free access to interactive videos, providing convenient and effective ways for teachers and students to acquire knowledge [6]. With the support of information technology, teaching materials and cases, related video resources, question banks, knowledge points and other resources are uploaded to the terminal to provide services for those in need, promote the sharing of teaching resources, and improve the utilization of teaching resources [7]. At the same time, educators can also upload teaching tasks, teaching objectives, teaching priorities, and other content, develop and utilize teaching resources, monitor and evaluate teaching in real-time on the platform, and strengthen communication and interaction with learners [8]. In addition to breaking the limitations of time and space, learners can engage in online training while watching videos, instantly testing their learning effectiveness, browsing and learning other course resources, and self-cultivating and sublimating to establish their own learning resource library and learning plan. In addition, they can communicate with teachers and students through the platform based on relevant questions to solve doubts. The development and application of this device have provided a large number of high-quality learning resources and methods for the development of university education, as well as more learning opportunities for students at this stage of learning. It has also provided necessary guidance for future career adaptation.

2.2. Interactive Subject

The interactive subject consists of learners, educators, and teaching environment. Teaching activities revolve around the learner as the center, and the design of teaching and interaction links is closely related to the achievement of the learner's learning goals. Learners play a leading role in the interaction subject [9]. As organizers of the teaching process, developers of teaching resources, and guides and supervisors of student learning, educators play a leading role in the interactive sub-

ject. The teaching environment includes teaching video carriers, teaching content, and surrounding environmental facilities. Teaching video carrier refers to the software, hardware facilities, and portal websites that provide resources for playing videos [10]. Teachers and learners interact in real-time and offline through the carrier, exchange relevant content, and engage in individual device of remote interaction. The teaching content includes knowledge content, training questions, relevant cases, and resources, serving as both the subject and object of interaction.

2.3. Interactive Behavior

Individual nature tends towards visual sensory experience, and among the many sensory channels of individuals, visual experience accounts for the vast majority. Interactive videos integrate real-life interactive experiences into non-linear teaching videos through various information technologies, providing users with intuitive feelings and immersive interactive activities to absorb knowledge. The interactive elements generated in different teaching stages vary. Combined with teaching activities, interactive elements can be roughly divided into four modes: intuitive interaction, reflective interaction, generative interaction, and immersive interaction.

2.3.1. Intuitive Interaction

Learners can understand the learning content by watching interactive instructional videos and combining them with key knowledge points, or obtain relevant knowledge content through direct sensory experience, without the need for deep thinking and making corresponding judgments and choices based on individual experience, thus creating a simple and basic interactive experience [11]. The knowledge content involved in this stage of interactive activities is simple and easy to understand, which will not deter learners from losing interest in learning and stimulate their sense of learning efficacy. This simple process of acquiring new knowledge through watching instructional videos can be called intuitive interaction.

2.3.2. Reflective Interaction

Learners can analyze, summarize, think and reflect on the problems they encounter while watching instructional videos, or explore and communicate knowledge points through interactive activities [12]. Individual functions can further process and internalize knowledge points, input and output knowledge in both directions, and generate interactive experiences with accompanying self-thinking. The teaching activity requires challenging and exploratory knowledge provision, which can highly attract learners to stimulate their self-learning potential and enhance their sense of self-worth.

2.3.3. Generative Interaction

After completing the intake of certain knowledge content, learners can freely exchange new insights, viewpoints, and share new resources with teachers and other learners, thereby achieving the integration of theory and practice to complete the interactive construction of knowledge content. This teaching stage is conducive to improving students' thinking habits and innovation abilities, breaking down and reconstructing knowledge content, constructing new knowledge and content, exploring new fields [13]. The requirements for knowledge in this stage need to be scalable and deep, which is conducive to university education learners internalizing knowledge and applying it in production practice.

2.3.4. Immersive Interaction

Learners construct a virtual reality environment through interactive video teaching and immerse themselves in specific learning contexts to complete the construction and transfer of knowledge content, resulting in deep level interactive activities. Universities build a model that provides realistic and specific scenarios for learners to perceive corresponding knowledge and skills, and engage in role substitution, simulation training, and communication in this context [14]. This stage is often used in specific teaching activities, with embedded communication and interaction, immersive interaction, deepening communication and exploration between teachers and students. University students are required to complete learning tasks on campus and conduct practical operations within the company by signing an apprenticeship system. The use of interactive videos can compensate for the shortcomings in normal teaching.

3. Application of Interactive Video Teaching

The interactive video teaching in university education has a series of advantages, which can be reflected in technology, resources, and interactive functions. Many universities build a teaching environment where teachers and students collaborate with each other in teaching and learning. The integration of tradition and innovation, communication between virtual and reality, and mutual adaptation of different teaching structures and modes have been achieved, which not only enriches teaching activities, enhances students' learning interests, but also greatly improves teaching efficiency [15]. The interactive teaching mode has laid a motivating and inspiring foundation for teaching activities in the information age.

3.1. Create Teaching Scenarios to Enhance Learning Interest

Multiple studies have shown that the use of interactive instructional videos can stimulate students' interest in learning, which happens to be a major teaching goal for educators to impart knowledge. According to the survey, from the perspective of learners, visual communication of educational

information is much more direct and easier for learners to accept than traditional teaching methods, thereby stimulating learners' excitement. By creating interactive teaching videos, educators introduce learners into corresponding learning contexts and atmospheres, keeping students' attention at a high level, stimulating their desire to explore, and engaging them in learning activities in a positive state, transforming them from traditional learning bystanders to learning participants.

3.2. Organize Teaching Flexibly

With the help of interactive video teaching, university educators can flexibly apply teaching content by combining teaching design with students' thinking habits. For example, using key reminder functions to attract students' learning attention; Utilizing the real-time feedback function system to monitor students' learning progress and make timely adjustments; Utilizing video annotation function to reconstruct knowledge after watching videos; Using personalized learning functions to match different knowledge points based on students' choices. Interactive video mode can also be used to create teaching activities with a stronger sense of participation. Teachers will no longer pre-set the presentation order of detailed teaching content, instead present corresponding content in real-time based on the characteristics of interactive videos, matching different learning needs.

3.3. Innovate Teaching Mode and Learning Atmosphere

The operability and intuitiveness of interactive video teaching have improved the limitations of traditional teaching videos, which only allow for visual observation without moving hands. Visual and auditory assistance have supplemented participation and strengthened the effectiveness of teacher-student interaction, elevating cognitive interaction, information interaction and human-computer interaction to higher level. Learners can independently utilize the functions of interactive videos to enhance their sense of participation, no longer just passive recipients of knowledge, but flexible users who act as masters.

3.4. Change Evaluation Method and Obtain Timely Feedback

Interactive video teaching often uses process evaluation as the main approach. For the exploratory questions presented in the video, sound, smiling faces, fireworks, and even a wonderful short film are used to encourage learners' learning achievements. In an open evaluation, learners can experience the joy of learning progress and internalization of knowledge, while gaining learning effectiveness and timely understanding of their mastery of knowledge, achieving the effect of self-feedback. In addition, educators can adjust teaching strategies in a timely manner through backend data statistics.

3.5. Store Dynamic Resources and Build Knowledge System

The interactive effect of teaching interaction is the process of constructing knowledge through teacher-student interaction, student-student interaction and human-computer interaction. In this process, a lot of generative information will be generated, which is not only a representation of learners' cognitive thinking but also the main process of changes and growth in teaching activities. The recording in interactive videos is manually or intelligently captured and stored, forming trajectories, and providing personalized modes in the future to promote the generation of new knowledge and ideas in learning and thinking, and to improve the construction of a knowledge system.

4. Reflection on Interactive Video Teaching

The application of interactive video teaching in university education has gradually been practiced and improved in classroom teaching, and has also received extensive attention and research in educational theory and teaching practice. However, considering the current education and social reality in China, as an emerging teaching product in the information age, there are still many aspects that need to be improved and reflected upon.

4.1. Curriculum System and Evaluation System

Interactive video teaching serves as a bridge for communication and connection between teachers, students, and learning resources. Teachers and students are users and beneficiaries of learning resources, and the full utilization of learning resources is a common goal of classroom teaching between teachers and students. The full utilization of learning resources requires the teaching of teachers and the learning of students to impart and transfer, which requires a sound curriculum system and evaluation system as support. The imperfect curriculum and evaluation system may affect the improvement and application of interactive video teaching.

4.2. Software and Hardware Equipment Support

The new interactive video teaching based on information technology has high requirements for software and hardware, which inevitably requires universities to upgrade and transform their software and hardware. Due to the lag in software and hardware upgrades, interactive video teaching in the information age is also in the stage of exploration and improvement. Upgrading and developing software and hardware

that meet the requirements of the times has become a major challenge in the development phase.

4.3. Supervision of Education and Teaching

The teaching classroom center based on interactive video teaching in the information age is gradually moving towards student-centered learning. In addition to learning in universities, learners' learning venues are no longer limited to a specific field, and they may even participate in online classroom teaching. During this process, both teachers and students need to accept supervision from their families, schools and society, especially in the context of online learning at home. At present, the education and teaching departments and various sectors of society have not yet proposed a corresponding policy, so it is imperative to match a complete supervision system.

5. Strategies and Inspirations

Based on the research direction of the research, and the problems discovered during the review process, the article will provide some opinions and suggestions from several aspects such as educators, teaching managers, software and hardware equipments.

First, in terms of instructional design, educators can make more use of the characteristics of interactive video teaching, prepare diverse educational and teaching resources and materials, and design diverse interactive teaching activities to meet the learning needs of students with different learning styles.

Second, in terms of teaching process, teachers can use the generative function of interactive video teaching to create a relaxed and enjoyable learning atmosphere, fully stimulate students' interest and passion for learning, and carry out more teaching interactions, giving students a sense of participation and interaction when watching teaching videos.

Third, in terms of teaching strategies, teachers should combine teaching content, fully utilize teaching resource libraries, meet students' personalized development, innovate teaching models to supplement students' learning gaps, optimize teaching methods to increase teacher-student interaction, grasp students' learning situations, formulate corresponding learning goals, and continuously improve educational and teaching strategies.

Fourth, in terms of post-class testing, teachers utilize the storage function of the interactive video resource library to enable learners to review the learned content after class, guide learners to autonomously adjust their learning pace, and conduct evaluation and reflection. At the same time, extracurricular supplementary knowledge can also be uploaded to the resource library, effectively expanding students' different learning needs.

Fifth, Universities will regularly conduct training on the production and use of interactive video teaching to enhance the literacy and ability of teachers and learners in using interactive videos. For educators, universities can provide opportunities for teachers to communicate and learn from each other through open classes, exchange classes, research seminars, and other forms, absorb different educational and teaching methods, summarize the experience of excellent educators, and also organize extracurricular training activities to broaden the knowledge of teaching organization. For learners, skill competitions can be organized to encourage them to record videos and generate interactive videos, in order to exercise their ability to summarize their own experiences.

At last, Universities establish interactive video teaching and research teams, gathering skilled teaching workers and research department to conduct experimental teaching, making the use of interactive videos a norm in teaching and research. Encourage teaching workers to share teaching designs and experiences using interactive videos, promote the sharing and integration of teaching resources, and stimulate and accumulate innovative teaching thinking.

6. Suggestions for Future Research

Universities will establish and improve interactive video resource libraries, matching evaluation, Q&A, lesson preparation, management, and supervision to better serve educational and teaching activities, enabling users to break through time and space limitations and enhance the possibility of lifelong learning. While providing free learning resources, it is also necessary to effectively protect the intellectual property rights of video creators and safeguard their rights. Promote learners' accumulation and transformation of knowledge on the basis of openness and convenience.

Interactive video teaching software and hardware need to simplify the operating interface, enhance real-time, intelligent, and personalized functions, record learners' learning trajectories in a targeted manner, improve the visual operating platform, conduct effective evaluations, output knowledge content in a directional manner, and develop a timely feedback response system to promote learners' self-adjustment and self-paced learning.

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Conflicts of Interest

The authors declare no conflicts of interest.

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