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Research on Teaching Interaction Design and Practice Innovation of Digital Media Technology

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Abstract: Based on the current teaching status and teaching content of the digital media technology major, this paper explores the methods and purposes of theoretical teaching, technical teaching, and practical teaching of digital media technology. Based on the research on teaching interaction design and practical innovation of digital media technology, the instructional interaction design of digital media technology is carried out with orientation, interaction, practicality, and comprehensiveness as the starting point. Finally, the future teaching trends and the prospect of digital media technology majors are summarized.

1. Main Contents and Teaching Status of Digital Media Technology Major

Digital media technology is an interdisciplinary field, involving many fields such as computer science, design, art, and media. The Digital Media Technology major aims to train students to have basic theoretical and practical skills in the field of digital media technology and communication, to be proficient in digital media technology and tools, and to use innovative thinking and creative and authoritative design principles to design and implement digital media products and services in information, communication, entertainment and other fields. In the Digital Media Technology program, students will learn how to use computer programming skills to design technologies and applications for interactive media content, animation, special effects, game manipulation, and user experience, as well as enhance their production and management skills for digital media products [1].

At present, the teaching content of the digital media technology major is not comprehensive enough, and the content of the digital media technology major is very wide, but the teaching content of many schools is relatively simple, lacking the core content of in-depth exploration, resulting in students can not really master the professional skills and skills. The curriculum is scattered, and the curriculum of digital media technology in some schools is too scattered, lacking integrity and systematical, which makes it difficult for students to establish the connection and system of professional knowledge. The lack of practical teaching links, digital media technology is a strong practical professional, but many schools lack practical teaching links in teaching, resulting in

students having no chance to really hands-on practice, which will directly affect students' practical ability and employment-oriented transformation and improvement [2].

The personnel training model is outdated, and the educational personnel training model is outdated and cannot meet the market demand. For example, some schools lack the participation and guidance of industry resources and cannot promote students to have greater room for growth outside the classroom. The demand for digital media technology teachers is increasing, but there is a lack of sufficient digital media technology education background or work experience among industry practitioners or college graduates, resulting in a shortage of teachers. In addition, the textbooks are outdated, digital media technology is developing rapidly, and the content of the textbooks often cannot keep up with the pace of The Times, so it becomes obsolete and cannot meet the learning needs of students [3].

Digital media technology majors lack a professional evaluation system, resulting in opaque teaching results, and can not objectively assess the learning effect and knowledge level of students. Digital media technology is a major with a strong international perspective, and the education method without an international perspective is difficult for students to be competitive in the international market and compete effectively with professionals from other countries. Digital media technology majors in many schools are not closely connected with the industry, and they cannot timely understand the market demand and industrial changes, resulting in more difficult employment after graduation. The educational content does not match the market demand. In some schools, the educational content of digital media technology majors does not match the market demand, which means that the actual skills of graduates do not match the market demand, and they face the dilemma of lack of competitiveness in the job market [4].

2. Content and Purpose of Theoretical Teaching, Technical Teaching and Practical Teaching of Digital Media Technology Course

The theoretical teaching of the digital media technology course allows students to deeply understand the development and application of digital media technology, master the basic knowledge and processing technology of digital media, and provide basic support for practical operations. Through the above theoretical teaching of digital media technology courses, students can have a comprehensive understanding of the basic knowledge of digital media, as well as digital media processing and editing technology, to provide a more solid theoretical foundation for practical operation. The theoretical teaching content of the digital media Technology course is shown in Table 1.

The technical teaching of digital media technology course can enable students to better understand and apply the theoretical knowledge of digital media, realize digital media technology more efficiently, quickly solve practical digital media problems, and have higher competitiveness in schools and society. The technical instruction in digital media technology courses should include the specific tools and software development skills that students need to learn digital media technology. Through the technical teaching methods shown in Table 2, students can not only master the development of digital media software and the use of hardware facilities, but also better understand the overall architecture of the digital media application systems, and master the knowledge and skills of data processing through digital media technology, to realize more efficient digital media processing and application [5].

Table 1: Content and purpose of theoretical teaching of digital media technology course

Theoretical teaching knowledge point	Teaching content	Teaching purpose
Basic knowledge of digital media technology	Introduces the concept, development and application of digital media technology	To give students an understanding of the basics of digital media technology
Media file format	This section describes the basic formats of audio, video, and image media files	Let students understand the characteristics and use scenarios of media files in different formats
Digital media processing technology	Introduces the basic technology of digital media processing, such as image processing, speech processing and video processing	To enable students to understand the principles and methods of digital media processing
Digital media coding technology	Introduces the principles and algorithms of digital media coding, such as the common algorithms of audio and video coding	To enable students to understand the basic principles of digital media coding techniques
Digital media network transmission	Introduces the common problems and solutions of digital media in the process of network transmission, such as network bandwidth and transmission delay	To enable students to understand the importance of digital media in network transmission
Digital audio and video acquisition and editing technology	Introduces the basic theory of audio and video in digital media and the basic principles and methods of media editing	To equip students with basic skills in digital media acquisition, mastering editing techniques and creative design
Data compression technology for digital media	Introduces the principles and methods of digital media data compression, such as the factors affecting the quality of digital media and how to compress digital media	To enable students to master digital media data compression techniques

Table 2: Content and purpose of technical teaching of digital media technology course

Technical teaching knowledge point	Technical teaching knowledge point	Technical teaching knowledge point
Image software	Teach students to use major image editing software such as Adobe Photoshop and GIMP	Master image editing methods, familiar with the use of some plug-ins and filters
Video software	Teach students to use major video editing and compositing software such as Adobe Premiere and After Effects	Familiar with video post-processing technology, rendering technology
Audio software	Teach students to use major audio editing and compositing software such as Adobe Audition and Ableton Live	Familiar with audio effects and processing technology, mixing technology, etc
Game development tools	Teach students to create using game development tools such as Unity, Unreal Engine, Cocos Creator, etc	Learn how to build a game engine, create a scene, set up physical or real-time light and shadow
Programming languages and algorithms	Teach students to learn Python, MATLAB and other programming languages, such as Fourier transform, convolution, filtering and so on	Familiar with some programming languages and mathematical algorithms
Hardware use	Instructors introduce students to the use and familiarity of hardware, such as glasses, gloves and other equipment needed to build digital virtual reality and augmented reality environments	Master the construction and interaction process of VR virtual environment
Database management	For the digital media field, students need to learn about digital media data and metadata management techniques, such as SQL language, NoSQL database, etc	Master digital media data and metadata management technology and use methods
Net tower technology	Students need to understand network technologies such as network protocols such as TCP/IP or HTTP, coding and decoding, network infrastructure, etc	Understand and master the architecture of digital media application system
Algorithms and data analysis	Teaches algorithms and data analysis techniques for acquiring and extracting data, and applies these techniques to specific digital media projects, such as facial recognition, image segmentation, etc	Master data acquisition and extraction algorithms and data analysis techniques
Cloud computing and big Data	Learn big data storage and analytics techniques, and the use and deployment of cloud computing	Learn about developing live video, audio streaming, products and applications

The practical teaching of the digital media technology course enables students to further consolidate and apply the theoretical knowledge of digital media, explore innovative thinking, cultivate teamwork spirit, and understand the application of digital media technology in real life and industry, laying a solid foundation for students' future careers. The practical teaching of digital media technology course is mainly reflected in the following aspects [6].

This study, digital media files such as audio, image and video are collected by cameras, recorders, microphones and other devices. This study works by using digital media editing software such as Photoshop, Premiere, or iMovie to edit captured media files, such as trimming, morphing, and compositing photos, editing and adding video effects, or editing and mixing sounds.

This study focuses on the development and creation of digital media applications, and rewards students for developing digital media applications in teams, including games and application software. This study divided students into different groups and asked each group to develop an application based on some digital media technology or application, such as audio editing software, video editing software, etc. Students are encouraged to be creative and imaginative, master digital media editing skills, and independently design and produce digital media works, such as designing posters, analyzing sound effects of clips, designing game levels, etc. This way, students will feel the magic and beauty of digital media in practice, and better understand the theoretical knowledge of digital media and apply it in practice, to achieve better learning results [7].

Digital media file display and sharing, students can display their digital media work in the class or school to show their work and introduce their creativity and design ideas to the audience. Using digital media coding software, the edited media files are encoded and compressed to optimize the size and quality of the media files. The encoded digital media works can also be shared through the network, to provide learning reference and communication opportunities for other students in the class or school.

Digital Media Lab Visits and Industry Tours, students can visit the digital Media Lab, communicate with professional technicians, and learn about the latest trends and application fields of digital media technology. Visit digital media related enterprises, including film production companies, music production companies, etc., to understand the current situation and business applications of the digital media industry. In addition, students can write papers or research reports related to digital media, in order to summarize and analyze the knowledge learned, and deeply explore the application scenarios and development trends of digital media technology [8].

3. Research on Teaching Interaction Design and Practical Innovation of Digital Media Technology

Teaching interaction, design and practice innovation research of digital media technology is an important part of the digital media technology curriculum. Designing a complete digital media course content combined with practical and innovative research can help students’ better master digital media technical knowledge and skills, and develop more creative and innovative digital media products. In terms of instructional interaction design, digital media technology courses should reflect the following characteristics:

Orientation: Teaching should be conducted around the project, designing the course for the actual digital media project, and guiding students to find and solve the specific problems faced in the digital media project.

Interactive: Through classroom interactive teaching, students can increase the exchange of materials and content, promote students' learning interest, and stimulate their enthusiasm for digital media technology.

Practicability: The instructional interaction design of digital media technology should focus on

practice, so that students can understand and master specific technical knowledge and skills in the process of hands-on practice.

Comprehensiveness: Digital media technology teaching should focus on integration and comprehensive knowledge points, so that students can learn to integrate a variety of technologies to complete the development of a normal project [9].

In terms of practical innovation research, digital media technology courses should combine industry development and innovation needs to plan more realistic projects, so that students can deepen their understanding and thinking in practice. In addition, emphasis should be placed on scientific evaluation and experimental validation to ensure that research can effectively improve the application and development of digital media technologies. The teaching of digital media technology should focus on case teaching. Through case analysis and discussion, students can understand the actual scenarios of digital media applications, master the skills and methods to solve practical problems, and have a practical understanding of digital media technology. The teaching of digital media technology courses should pay attention to the multimedia interaction design of digital media, including user interface design, interaction design, visual design, etc., to provide students with a more complete experience of digital media courses. Digital media technology teaching focuses on cooperative interaction design, encouraging students to cooperate in the design of digital media courses, in the design of knowledge and experience exchange and share, to achieve better innovation result. The teaching of digital media technology should pay attention to the training of independent project management, so that students can manage projects by themselves, improve their organizational and collaborative abilities, and solve problems independently [10].

Through the above aspects of digital media technology teaching, interaction design and practical innovation research, students can better understand and apply the combination of digital media basic knowledge and technology, interaction design and practical innovation, so that students can better understand the actual scenarios of digital media application, and cultivate innovation awareness and practical ability.

4. Future Teaching Trends and Prospects of Digital Media Technology Major

The future teaching of digital media technology major should constantly update teaching materials, teaching methods and teachers, strengthen cooperation with the industry, strengthen the integration of enterprise resources, rely on innovative platforms to cultivate innovative talents, make them meet the market demand, and provide better services for practical applications and industrial development.

With the rapid development of digital media technology, the updating speed of digital media technology textbooks should also be improved. At the same time, exploring new teaching methods, such as the teaching of digital media technology courses based on online education, will help to better meet students' learning needs and enhance practical operation ability. Digital media technology majors should strengthen practical teaching and strengthen cooperation with industry in order to more closely integrate teaching content with industry needs. Students majoring in digital media technology need to have closer contact and cooperation with enterprises and schools, need to strengthen the integration of resources with enterprises, and explore new teaching methods and working practice models. The teaching of digital media technology requires teachers with rich practical experience and professional knowledge to guide teaching. Therefore, schools need to strengthen the construction of teachers and attract more excellent teachers with industry experience and educational background to join [11].

The major of digital media technology needs to cultivate innovative talents. To this end, schools can rely on innovative platforms, such as Digital Media Technology Laboratory and Digital Media

Technology Innovation Center, to carry out innovative education using digital media technology and improve students' innovative ability and comprehensive quality. Digital media technology involves many fields and industries, and interdisciplinary professional integration should be increased to strengthen the teaching content design of digital media technology integration with other disciplines. Project-based teaching can promote the cultivation of students' abilities and arouse their learning interest, so it should be popularized and applied in the teaching of digital media technology.

Artificial intelligence is widely used in the application of digital media technology, and the teaching and application of artificial intelligence technology should be strengthened in teaching. Digital media technology requires students to have innovative thinking and practical ability, so it is necessary to strengthen the cultivation of this aspect in teaching. In the future, the teaching of digital media technology should actively adapt to the needs of The Times and the development of the industry, constantly update educational concepts and teaching methods, and strengthen the deep integration of theory and practice, to cultivate high-quality professionals who meet the market demand and social development [12].

The major of digital media technology needs to constantly develop new education models in teaching design and teaching innovation, improve teaching and learning effects, and better cultivate outstanding talents with innovative spirit and practical ability. In terms of teaching innovation and teaching design, the major of digital media technology can be explored and applied in practice from the following aspects:

Project teaching mode is adopted to explore teaching resources. Digital media technology majors can adopt a project-based teaching model, combining theoretical knowledge with practical operations, so that students can deeply master skills in specific projects and exercise their innovation abilities and problem-solving abilities. This study explores and utilizes various excellent digital media technology teaching resources, such as related technical literature, pictures, videos, etc., to continuously accumulate and update digital media technology education resources [13].

This study improves the construction of teaching laboratory and cultivates the practical ability of industry talents. The digital media technology major can use the digital media lab to realize the auxiliary teaching of digital media means, so that students can constantly understand and master the advanced technologies and applications in related fields through practical operations. Aiming at the practical ability and accomplishment of students majoring in digital media technology, it guides students to deepen their understanding and application of technology in practical operation and explore a suitable career development directions and routes.

This study establishes a digital media technology practice center to strengthen the combination of theoretical teaching and practical teaching. The major of digital media technology can combine theoretical knowledge with practical operation, strengthen the deep integration of scientific and technological theory and technological innovation in educational practice, and cultivate students' critical thinking and innovative practice ability. The digital media technology major can establish a digital media technology practice center, provide perfect practical training equipment and project resources, so that students can have a deeper understanding and grasp of the needs of the industry, and actively develop innovative technologies and applications of digital media [14].

Rational use of digital technology tools, the introduction of advanced technology, and education models. Digital media technology majors can learn from the education models of other industries, introduce advanced digital media technology education models and application cases, constantly update educational concepts and teaching methods, and improve the education level of this major.

Context analysis method was used in this study. Strengthen public awareness and education. The digital media technology major can use the situational teaching method to simulate real and complex situations, guide students to consciously carry out effective learning and innovative

practice, and cultivate students' professional sensitivity and practical operation ability. Digital media technology majors should also actively strengthen the awareness and education of mass media, cultivate students' attention to social public affairs, critical thinking ability, and independent thinking ability.

In short, the major of digital media technology should constantly explore new education models and methods in teaching, strengthen the cultivation of innovation ability and practical ability in the field of digital media technology, effectively improve the quality and competitiveness of digital media technology professionals, and make contributions to the progress of industry, society and human civilization [15].

5. Conclusion

The innovative design of digital media teaching practice is a method based on digital media technology, combined with teaching theory and practical experience, to innovate the design and application of teaching modes and teaching resources. By skillfully utilizing digital media, teaching effectiveness and learning interest can be improved. The key points for summarizing the innovative design of digital media teaching practice are as follows:

Clear teaching objectives: When designing digital media teaching practices, the first step is to clarify the teaching objectives, including the knowledge, skills, and abilities that students need to master through digital media.

Choose appropriate digital media tools: According to the teaching objectives and students' needs, this study selects appropriate digital media tools, such as image processing software, video editing software, interactive learning platform, etc.

Innovative teaching mode: In the practice of digital media teaching, innovative teaching modes can be attempted, such as inverted classrooms, multimedia demonstrations, virtual experiments, etc., allowing students to fully participate and interact.

Enrich teaching resources: Through the use of digital media, teaching resources can be enriched, including various forms of teaching materials such as images, audio, videos, animations, etc., enabling students to better understand and master knowledge.

Stimulating students' initiative: Through innovative design of digital media, students' interest and initiative in learning can be stimulated, and their learning enthusiasm and active participation can be improved.

Regular evaluation and feedback: In the practice of digital media teaching, this study evaluates students' learning effect regularly, provides feedback in time, and makes improvement and adjustment according to students' feedback.

Emphasis on diverse learning experiences: Digital media teaching practices should focus on providing diverse learning experiences. Students can be organized to participate in interactive games, virtual experiments, and simulated case studies to enrich the learning process, increase their participation and motivation.

Emphasizing students' cooperation and creativity: Through digital media teaching practice, students can be encouraged to engage in collaborative learning and creative thinking. You can design some group project tasks that allow students to collaborate in teams to solve problems and improve the effectiveness of problem-solving through brainstorming.

Provide personalized learning support: Digital media teaching practices can provide personalized learning support based on students' different needs and levels. Teaching resources with different difficulty levels and methods can be designed, and individual tutoring and guidance can be provided based on the actual situation of students.

Promoting teaching innovation and research: Digital media teaching practice is a continuous

process of innovation and improvement. Teachers should actively participate in teaching innovation and research activities, continuously learn and understand the latest digital media technologies and teaching methods, and improve their professional literacy and teaching level.

In summary, the innovative design of digital media teaching practice needs to focus on students' learning experience, initiative, and creativity, provide diverse learning support and resources, and promote teaching innovation and research. Through continuous optimization and improvement, teaching effectiveness can be improved, and students' comprehensive qualities and innovative abilities can be cultivated. The innovative design of digital media teaching practice is a method of utilizing digital media technology to improve teaching methods and improve teaching effectiveness. By fully utilizing digital media tools and resources, teaching can be made more vivid and interesting, stimulating students' learning motivation and initiative, and achieving better teaching results.

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