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Research and Reflection on the Cultivation Model of Animation Teaching in Digital Media Technology—Taking the Digital Media Technology Major of Foshan University as an Example

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Abstract

As an interdisciplinary major, the digital media technology major requires multi-disciplinary integration in teaching practice, in which animation teaching is a typical integrated art, and painting and film are the most important elements that constitute animation. Animators are often come from excellent painters or plastic artists, which shows the role and influence of plastic arts on animation. However, the major just recruits science students who have no art background, which is the biggest dilemma on animation teaching. Besides, the complex curriculum of digital media technology requires students to learn animation, games, network media platform design and development and other related courses. And then the proportion of animation teaching in digital media design majors shrinks by more than half compared with that of the specially opened undergraduate animation majors. Facing the double dilemma of how to respect the characteristics of students and give full play to the advantages of them, how to customize the teaching methods of animation courses for science and technology students has become an urgent problem in the construction of digital media technology majors.

Keywords

Digital media technology, animation, teaching, 3D animation, laws of motion

In recent years, with the deep integration of computer technology, network technology, digital communication technology and culture, art, business and other fields, and the continuous development of technology, digital media profession is developing into a sunrise industry. The concept of "digital media" is defined in the *White Paper on the Development of Digital Media Technology in 2005 in China* (hereinafter referred to as "White Paper") led by the Ministry of Science and Technology, which states that “Digital media is the whole process of digital works, with modern network as the main distribution carrier, distributed to terminals and users for consumption through a perfect service system.” The guideline published by the Ministry of Education states that the training goal is "to cultivate professionals who are fully developed morally, intellectually, physically and aesthetically, and who are engaged in digital media development and digital communication for the present information age. Graduates will master information communication theory, digital media technology and design management, and can be engaged in digital media development, audio and video digitization, web design and website maintenance, multimedia design and production, information service and digital media management in party and government agencies, news media, publishing, commerce, education, information con-

sulting and IT-related fields."

Digital media technology is an interdisciplinary academic field, which requires multidisciplinary integration and exploration in modes and methods of theoretical teaching and practical teaching (Liu Qingtang, Wang Zhonghua, & Chen Di, 2019). Taking the digital media technology major of the author's unit, Foshan University, as an example, this paper aims to cultivate high-quality applied innovative design talents who are oriented to the digital era with both information communication theory, digital media technology and design management ability. Graduates are required to master the technologies related to film and television animation production, digital game development and production, and network media platform design and development, and have the ability to integrate cross-platform and cross-media integrated digital signal processing, so that they can engage in innovative design and digital media development and design and other related work.

The construction of animation is associated with other disciplines related to animation, such as digital media art, digital film and television production, game design, network multimedia and many other directions (Wang Rui, 2017). In the talent training program, the teaching and practice of animation professional skills is the core of digital media technology. Animation majors established in the context of different disciplines are to a certain extent conducive to its development, and can be developed in many aspects and angles (Xiao Yongliang, 2005). Animation is a typical comprehensive art, and painting and film and television are the most important elements of animation. Animators are often come from excellent painters or plastic artists, which shows the role and influence of plastic arts on animation. However, the major just recruits science students who have no art background, which is the biggest dilemma on animation teaching. Besides, the complex curriculum of digital media technology requires students to learn animation, games, network media platform design and development and other related courses. And then the proportion of animation teaching in digital media design majors shrinks by more than half compared with that of the specially opened undergraduate animation majors. In the double dilemma of how to respect the characteristics of students and give full play to the advantages of them, how to customize the teaching methods of animation courses for science and technology students has become an urgent problem in the construction of digital media technology majors (Li Meng & Li Xueming, 2021).

1. The dilemma faced by digital media technology s tudents studying animation

1.1 Lack of basic art skills

Our digital media technology students are science students, without art foundation, so they aren’t able to finish 2D animation and 3D animation art pre-production work. Animation requires art skills, from split-screening, character design, scene design, original drawing design to 2D animation production. Although the school will offer basic art courses such as sketching, sketching and color in the freshman year, it is not enough to meet the high requirements and demands of art in animation design. In this curriculum, it is difficult for teachers to design a suitable lecture program, and students are discouraged by the unproductive learning, which leads to unsatisfactory homework.

1.2 Lack of training in movement rules leads to drawbacks in animation production

The class of 2018 is the first graduating class of this major in our university. In the graduation design guidance and review, I found that whether it is 2D animation or 3D animation, the biggest problem of the students is that they couldn’t make smooth animation, and they couldn’t do well in making the basic walking, running, turning, jumping, and mouthing of characters or even impossible to do it. The 2D animations students designed are like slide show illustrations, with almost no character animation. Students who make 3D animation use the software of free action library, directly adopt the existing action, and do not adjust at all, which looks very awkward. It is because that students have no opportunity to learn the laws of animation motion. The motion law course emphasizes the translation from theory to practice to help students understand the concept of animation. In the traditional teaching, the course should take "improve the drawing and production ability of animation" as the core, emphasizing the hand-drawing ability. This kind of teaching form has high requirements on students' modeling ability and drawing speed, so the old version of the talent training program directly abandoned the course of animation motion law, ignoring the importance of the law of motion, and only required to teach it in the 3D animation course. However, because of the time constraint of the 3D animation course, we have to learn both skeleton binding and the concept of adjusting animation in the software, the learning of motion law is compressed into two lessons, which leads to the students not knowing the motion law deeply and not training properly, which is like an actor who doesn't know what is acting and not training for the performance before going on stage.

1.3 Students' misconception that animation design software technology is the focus

Many introductions of digital media technology majors on the Internet mislead students with the word “technology”. In the digital game design course, students can use the free models and rendering settings on certain software to design games directly, which makes some students mistakenly believe that learn the software that animation needed well is to learn those software that can provide free character model libraries, action libraries and rendering libraries, and that excellent works mean cool stunts rather than originality and stories. At the capstone presentation, every student is showing how much software they are proficient in, and the process of making a graduation animation design becomes a process of showing off their skills. However, students did not mention a word about scripting, split-screening, editing, basic skills of making model movements, or aesthetics of images. Some students even suggest that there is no need to learn the subject of motion laws at all. With the continuous improvement of technology, motion capture will completely replace manual adjustment of animation, and AI can realize autonomous modeling and autonomous rendering. The above phenomenon shows that students do not understand the real animation market, and the knowledge they learn is out of line with the real market. First of all, artificial intelligence is not yet completely replace human beings, and art machines can not replace the ideas and innovations of people. And, most companies in China do not have the economic power to use motion capture instruments, only a small number of well-funded leading companies make it. Most of the company's animation are made by the three-dimensional motion division. Moreover, no matter how much the motion capture instruments is and how excellent actors are, the animation they made also need to be adjusted by animators. This is why the current annual salary of China's outstanding action division can reach more than a million. An excellent animation film and television works must tell a good story, have a solid basic skills and their own creative ideas. Technology should be used for expression and creation, and we should not directly take someone else's existing model and action. A work that only shows off technology without substance must be hollow and boring, not accepted by the audience.

1.4 There are too little animation related courses

Animation related courses are less than half compared with the undergraduate special animation courses. How to arrange the animation related courses reasonably and make the trade-off is the most important thing that teachers think about. In the old version of talent training program, there are only two modules of 3D modeling foundation and 3D animation foundation in 3D animation production, and each module is only last for 48 hours, which is far from enough to carry out the basic courses.

2. The reform program of animation teaching module of digital media technology

This major teaches students according to their abilities, respects their characteristics, and makes the following changes based on the characteristics of science and technology students with strong logical thinking ability and software learning ability.

2.1 Professional training focuses on the production process of 3D animation

In the production of 3D animation, except for the early art part, the four modules of 3D modeling, 3D rendering, 3D animation and 3D special effects can be completed by students without art skills. Compared with the strict requirements of two-dimensional animation production for art skills, three-dimensional animation is more suitable for science students. Therefore, the curriculum of two-dimensional animation production is weakened and three-dimensional animation production is strengthened in the curriculum. In the curriculum, core courses such as Introduction to Animation, Character Design, Scene Design, Scene Separation, Motion Rules, Video Editing and Special Effects, and Digital Audio are reserved. Secondly, the three courses of 3D modeling, 3D rendering and 3D animation are set according to the market demand (because the requirements for 3D special effects introduction are high and the teaching time is long, this course is not set, but the rest of the courses will be interspersed with explanations and students are advised to learn after class). In the first semester of the senior year, we set up animation design practice courses to train students' animation production ability. According to the current animation and game market research, in 3D animation production, most companies use Maya, Blender and 3DSMAX, the three mainstream software, of which Maya is the most frequently used. At the same time, these three software have the same concept in the animation production of model production. Therefore, Maya is selected as the main and other software as the auxiliary teaching in the course.

2.2 Replace traditional hand-drawing with graphic production and stop-motion animation

Replacing hand painting with After Effects and Adobe Animate software for character design, scene design and two-dimensional animation. And replacing traditional 2D animation production with stop-motion animation to teach the law of motion course. Although science students have weak art skills, they have good aesthetic quality. Drawing is not the only way to express creativity, animation itself is an art of multiple art synthesis without limiting materials. Taking the course of motion law as an example, in the teaching setup, each lesson is set with a practical session based on the theoretical knowledge of motion law. After Effects, Adobe Animate and other software are used to create graphic images to complete the production of small animation of the laws of motion. Compared to hand-drawn animation, which requires 24 drawings per second, Adobe Animate is faster and only requires to adjust keyframes, and the system will automatically fill in the animation. In the practical session, we introduced the popular dynamic expression pack production. Emoticons have become indispensable in daily communication. Compared with words, they can better express the mood and attitude of the communicator and are more conducive to communication. Students use emojis to express their emotions almost every day. By adding dynamic emoji design to the motor law course, teaching with fun will make half the effort. In the second half of the course, stop-motion animation is added to the design, using hands-on skills to make up for the weak hand-drawing ability.

2.3 Strengthen school-enterprise cooperation and focus on practical ability

Paying attention to cultivating students' innovation quality and creative thinking ability. *China's National Medium and Long-term Education Reform and Development Plan* (2010-2020) on improving the quality of talent cultivation in higher education points out that "support students to participate in scientific research and strengthen practical teaching links. Create a new mechanism of joint cultivation of talents between universities and research institutes, industries and enterprises". By strengthening the cooperation between schools and enterprises in teaching, students are encouraged to gain work experience to enhance their employment competitiveness. The university employs corporate instructors to teach students, while allowing students to participate in real corporate projects, combining curriculum and practice. Encouraging students to participate in various high quality animation competitions can bring their initiative into play, which not only enables students to improve their professional ability and recognize their own shortcomings, but also gives them confidence and a sense of accomplishment, making them work harder in future studies. The combination of school and enterprise talent training mode allows students to improve their creative ability in the actual workplace. Based on the practice and working platform of enterprises, students transform the knowledge and skills learned in school into products with economic and social benefits, realize the transformation from thinking to productivity, and create value for society (Bao Feng & Wang Yining, 2011).

Animation is an emerging industry, and animation students can work as 2D animation designers, original animation designers, animation model designers, animation derivative product designers, 3D animation designers, illustrators, film concept designers and other kinds of careers after graduation. They can work in film and television animation production and TV media industry, commercial production companies such as advertising and communication, Internet interactive entertainment fields such as games, network and animation. Animation industry has broad employment prospects, high salary and broad career development prospects, so the animation teaching is an important part of digital media technology teaching. In teaching, we should fully implement the fundamental task of establishing moral education, combine local characteristics, and adhere to the innovative development direction of combining art and science, and combining traditional culture and digital technology. Cultivating high quality applied innovative design talents who are oriented to the digital era with both theory, digital media technology and animation design ability as well as management ability.

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