The Construction of Interdisciplinary in Animation Teaching

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Abstract: The rapid development of society has driven people's different aesthetic expectations and needs of types and styles. It is difficult for a single and closed subject research to solve some existing comprehensive problems and the development of new art forms. For the animation major, the traditional teaching around film animation and game design is obviously not keeping up with the development trend. Integrating interdisciplinary curriculum design into animation is the only way to make animation teaching construction radiate new vitality.

1. Introduction

The positioning and distribution of disciplines are gradually formed during the development of modern civilization. Today, with the development of human civilization, a single discipline positioning can no longer satisfy the highly integrated modern society. This phenomenon is not only reflected in the early achievements of various civilizations, but also found in many individual characters. For example, Da Vinci, who is famous for painting, is also proficient in human anatomy, physics, etc. This requires us to constantly emerge new cross-arts in the rapidly developing technological civilization.

In 1986, Qian Xuesen published "Interdisciplinary" refers to a series of new sciences that intersect and grow out of natural science and social science [1]. Animation is undoubtedly a perfect combination of modern technology and humanities. It belongs to the intersection of digital technology and cultural creativity, and has distinctive characteristics of the times.

2. Intersection of Animation Disciplines

With the continuous improvement of social needs, people's professionalism in exploring disciplines is also continuously strengthened. The direction of independent disciplines has long been changed, and it is developing towards intersectionality and diversity. As a highly comprehensive professional, animation is not only a product of humanities and art, but also constantly strengthened in the changing times. For the teaching of animation majors, the interdisciplinary nature is particularly important. As a product of the combination of art and science and technology, the interdisciplinary characteristic is that humans impose their will on the natural world, which is an activity used to create human civilization [2]. The creation of animation requires the support of science and technology, and at the same time. The expression of humanistic emotions is needed, which provides a more characteristic curriculum foundation for the teaching construction of universities.

The intersection of animation is manifested in the intersection of structural and interdisciplinary. For example, the combination of visual communication discipline and animation has produced a new type of dynamic advertising video; or the combination of product design and animation produces a more outstanding and intuitive fusion work; and the combination of environmental design and animation has produced the form of a digital pavilion, etc. These various intersecting forms have opened the closure of a single discipline to a certain extent, and set off towards a newer

artistic style. In addition, the intersection of animation will also be reflected in medicine, film studies, fine arts, and even engineering, forming a trend of modern disciplines moving towards a high degree of integration on the basis of high differentiation. As far as school educators are concerned, how to open up the diversity of animation courses requires comprehensive consideration of many factors, breaking through traditional independent teaching activities, and allowing students to change their learning from passive acceptance to active critical thinking. The intersection of animation disciplines is closely related to the actual needs of social development. It is particularly important to update the knowledge structure and education system based on the development of the times.

3. Interdisciplinary Construction of Animation Discipline

3.1. Interdisciplinary Team Building

The key is to promote the interdisciplinary team. The core members of the team should have the knowledge reserve ability of two or more subjects. The leaders and members of the interdisciplinary team need to be carefully selected. The overall quality of the team members determines the overall teaching and research ability. In addition to being proficient in their own professional subject knowledge, team members also need to always pay attention to the development of the times and know the knowledge of neighboring subjects, master a certain methodology, and have unique views on the mutual exchanges between different subjects and people.

Take 3D animation as an example. The traditional teaching mode is based on the basics of painting, introduction to animation, audio-visual language, 3D modeling and other animation professional courses. Therefore, the teaching scope of teachers will also be limited to a single subject of animation and cannot be expanded, and cannot give students malleable thinking. On this basis, it is possible to cross disciplines with computer majors, journalism majors, film studies majors, etc., in the selection of personnel, animation experts are the leaders, and secondly, assisting professionals in computer human-computer interaction technology, coding programs and other related extensions This requires members to get rid of the research perspective of independent disciplines, solve the problem of viewing the plane caused by the incident, and face the system problems of complex systems, so that they will not appear to be powerless.

3.2. Curriculum Construction of Interdisciplinary

The cross-cutting courses of animation should be designed around cultivating compound talents. Cultivate talents who are not bound by subject boundaries, with this as the goal, let students know the relationship and development possibilities of various subjects. Curriculum integration is the only way to cross-curriculum construction. Curriculum integration is not a rigid combination of courses between different disciplines, but a multiple complementation and interweaving of disciplines [3]. This is not an increase in quantity, but a quality. The promotion based on this cognition, several teaching programs will be born:

3.2.1. Studio Mode

The studio model is "a modern art design education model that integrates teaching, research, and practice [4]. It emphasizes the self-reliance, independent teaching spirit and the process of independent education. In animation teaching, there are roughly three categories of studios: 3D animation, 2D animation, and stop motion animation. Many universities also divide students according to this teaching model. This division makes the teaching classification easier, and manages and arranges according to their characteristics. But a good studio platform is more based on the spirit of innovation as its practical purpose, and is well integrated with teaching content. Teachers and students participate in research and development and operation together, highlighting originality and research exploration.

The introduction of students in the studio is not limited to the same subject, it serves for practice and is an open environment. You can hire some enterprise-type workers, and their rich practical

experience is indispensable in teaching. The real demand of the market sometimes spurs the reform of the school's teaching model, and these experienced workers will be particularly important. Their participation is to accelerate the flow of innovative blood, and at the same time promote the construction of cross-cutting courses, such as animation and computer, animation and product design and other practical innovations. Guide students to integrate their roles and tasks into a larger cultural background and social needs. But on this basis, we need to pay extra attention to the fact that market demand will play a role in promoting to a certain extent, and it will also bring negative side effects. We can't blindly cater to the market's pressure to suppress students' innovation sources. Teachers also need to always seek. The balance between the school and the market should be guided and integrated on the ideological level, and students should be properly organized to explore on their own. Actively constructing its own knowledge and ability structure, able to independently select teaching content, and self-adjust the learning process, greatly changing the passivity and dependency in traditional teaching [5, 6]. The development of interdisciplinary subjects has made the boundaries between subjects more and more blurred. This precisely provides infinite possibilities for the studio mode of teaching. The learning goals are no longer solely locked in textbook content or technical aspects. It makes teachers' teaching structure. There is a major breakthrough in the way of learning with students.

3.2.2. Project Case Introduction

Project-driven case teaching is to mobilize students' learning initiative and practical innovation ability as the core goal. When students are really exposed to the real project production of the enterprise, they will master the knowledge points in the books, exercise their practical skills, and learn the spirit of teamwork. The introduction of project cases can make up for the shortcomings of traditional animation production, especially in 3D animation. School classrooms are mostly focused on theory and basic technology, which is far from the truly seamless talents that enterprises need. Project-driven case teaching is of great significance for stimulating students' interest in animation production, enhancing students' ability to analyze and solve practical problems, and cultivating teamwork awareness [7].

Taking 3D animation as an example, the project of the course needs to run through the entire teaching process. According to the production process, the teaching modules are divided into script creation, model production, animation production, lighting rendering, post-composition and other modules. Each module forms a unit. Students select and form teams according to their own interests and hobbies, and select team leaders according to their comprehensive ability. Teachers then carry out corresponding teaching tasks according to each module, allowing students to summarize and summarize the knowledge points in practice, and form purposeful and standard learning. In this process, different questions will be raised in each unit, and the teacher is responsible for answering doubts at this stage and pointing out the correct design ideas for the students. In the project submission stage, students should summarize the completed tasks, and summarize the design process and production experience. At this stage, the teacher should gather students from different modules for research and discussion, and make the students clearly aware of the final work To their own deficiencies (see Table 1). On this basis, the teacher should expand the analysis module by module to maximize the enthusiasm of the students, and select and analyze the current hot spots to form cross-training for different hobby development trends.

Table 1. Project introduction process

	The first stage	The second stage	The third stage
teacher	Project introduction Build module	Issue module corresponding tasks Answer the question accordingly	Research discussion Module cross expansion analysis
student	According to hobbies select unit module	Team up to complete unit tasks Record the production process	In conclusion Thinking extension

3.2.3. Interdisciplinary Research Group

The interdisciplinary research group is no longer simple talent training, but a collection of more

students from different disciplines, and learning based on interdisciplinary thinking as the core is also an important means for the research group to attract more high-end research talents. Promote the cross advantages of animation disciplines, encourage students to take the initiative to establish close connections with different disciplines, cross complement each other, and cultivate together. Animation is a huge production process that cannot be completed by one person alone. The members required to successfully run an animation project are complex and diverse [8]. A good team is the foundation of success. Adjusting and optimizing talents from different disciplines, cooperating with each other, forming a benign whole, will allow the entire team to gain more benefits. Interdisciplinary research groups are not only conducive to the diffusion of thinking in the team, but also improve the different levels of knowledge of the members. The form of the research group provides students with plenty of opportunities for exercise. It is a direct way to transform theory into practical application and innovation. An efficient and creative research group will inevitably combine talents from many different levels. Teachers should also discuss practical solutions with students in teaching practice.

3.3. Cross-Disciplinary Resource Construction

Resource integration is an indispensable tool in the teaching process. Especially for cross-disciplines, huge theoretical knowledge and practical skills are the basis for smooth teaching. Animation involves more diverse theories and skills. For example, theories include: introduction to art, introduction to animation, script creation, movement rules, audio-visual language, etc.; while software skills include more: MAYA, 3D MAX, PS, AE, ZBrush, etc. These software learning courses rarely offer separate unit learning courses in schools, which requires students to learn and master software skills after class.

However, interdisciplinary production will be more complicated for resource integration. In the construction of animation professional courses, it is necessary to plan and classify existing resources, and optimize and integrate the cross-over and repetitive course content in similar majors. The limit is convenient for students to access materials and learn, and expand the depth and breadth of teaching content. It should be noted that the integration of resources requires a certain period of time to be updated and replaced, especially for different software skills. The rapid development of technology and the continuous improvement of requirements make software development more intelligent. The advantage of this is that the production is easier and the effect is more prominent, but it also requires students to more firmly grasp the basic theoretical part of the subject and combine theory with practice, so that the optimization of teaching resources will have a significant effect.

4. Animation Development and Application under Interdisciplinary

The development of animation in the traditional sense assumes the role of a media, but under the structure of continuous integration of various disciplines, many unexpected applications have emerged. The animation profession in the new era is itself an interdisciplinary subject. The intervention of computer technology has allowed its development to cover many different fields, and it also provides more possibilities for his development.

In medicine, the combination of three-dimensional animation technology, virtual reality technology and mechanical design technology can be used in surgical training and rehabilitation training [9]. In the field of education, you can also use the advantages of 3D dimensional space to conduct more immersive skills training, such as driving tests; in the military field, you can also use 3D dimensional animation technology to build a training platform to allow soldiers to practice virtual reality according to different climates and complex terrain. Similar to such applications, there have also been many "serious games" development for educational purposes. It also has an indispensable position in the field of architecture. The development of 3D animation technology has enhanced the intuitiveness of online viewing. In addition to the sale of commercial real estate, architectural animation will also appear in the development of tourist attractions and regional publicity, which also promotes the emergence of a network interactive museum. In a sense,

wherever visual performance is needed, animation can be used [10].

5. Conclusion

Interdisciplinary participation is the inevitability of animation professional education construction and discipline development. The multiple module courses of animation are intersected and merged with different majors, resulting in a diversified and complementary course development that is contrary to the traditional static teaching mode. This gives many majors more flexibility and tension, enables students' ideological cognition and aesthetic appreciation ability to be extended and developed across disciplines, and injects more vitality into the construction of animation teaching.

References

[1].Qian Xuesen: Welcome to the era of cross-discipline. Beijing: Guangming Daily Publishing House, 1986. 3. (in Chinese).

[2].Zhou Tian: Thought on Education of Digital Animation Art in the Context of Establishing Interdisciplinary Study of Science and Art. Journal of Tianjin Academy of Fine Arts, 2015(06):76-78. (in Chinese).

[3].Peng Changrong, Wang Jing, Zhang Xiaodong: Research on the Construction of Interdisciplinary Disciplines——Taking Film and Television Animation as an Example. Modernization of education, 2018, 5(17):119-121. (in Chinese).

[4].Wang Jun: Research on Training Approaches of Interdisciplinary Animation Talents in Hebei Comprehensive University. Art appraisal. 2019(20):143-144. (in Chinese).

[5].Liu Jingxin: Research on practical teaching of art design based on innovative studio platform——Taking Guangxi University of Arts as an example. Fine Arts Education Research, 2020(10):128-129. (in Chinese).

[6].Huang Jiangming, Xu Xiaoli: Discussion on the Teaching Practice of the Project Teaching Mode of the Studio System. Hundreds of artists, 2012, 28(S1):414-415. (in Chinese).

[7].Li Jingxin: The Application of Project-driven Case Teaching Method in 3D Animation Course Teaching. Computer education, 2013(17):83-86. (in Chinese).

[8].Xu Yuzhong, Fan Liming.: Study of the Multi-Discipline and Cross-discipline Pedagogies Applied to the Education of anime Postgraducates. Decoration, 2012(03):133-134. (in Chinese).

[9].Xu Shuo, Wang Shuyi, Wang Xingbin: Research on Animation Specialty Construction and Disciplinary Development Trend from the Perspective of Interdisciplinary. business culture, 2020(07):87-89. (in Chinese).

[10].Gong Xianjin: Application of Animation in Related Interdisciplinary Subjects. Journal of Changchun University of Science and Technology, 2012, 7(10):213-214. (in Chinese).