

Research on the Application of Popular Science Creation System Based on Debris Flow Animation Reappearance in the Teaching Reform of Design Undergraduate Course

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Abstract: The animation of debris flow objectively reflects the movement trend of debris flow fluid in geological disasters, which is of great research value. At the same time, as a popular science creation system of digital media, its value in education and teaching is immeasurable. Based on the technical principle of debris flow animation, this paper discusses the research role of popular science creation system in digital media teaching, and discusses the development trend of design education, analyze our current teaching problems, analyze the influence of social background and other factors. This paper attempts to take the domestic advanced teaching mode of design as a reference and apply it to the undergraduate teaching of design.

1. Popular Science Creation System of Debris Flow Animation

Debris flow is a kind of geological disaster that occurs in mountainous areas or areas with steep terrain, because of the bad weather or other natural disasters caused by landslides and mixed with rainwater and carrying a large number of stones and other mixtures. Debris flow has the characteristics of sudden, high velocity, large flow, large material capacity and strong destructive force. When debris flow disaster occurs, it will often be accompanied by the destruction of infrastructure, such as roads, railways, villages and towns, and casualties. In recent years, with the rapid development of 3D digital animation, the simulation of fluid will become more realistic and accurate. Up to now, the methods of simulating fluid motion are usually divided into mesh method and particle method. In the mesh method, as a lattice filled with a certain space, several squares are connected together to form a fluid; in the particle method, each particle has its own mass, interacts with other particles (or environment) to reflect the motion track of the fluid. In order to understand and study the formation process of debris flow disaster, digital media is used in debris flow animation to transform geological disaster into video and other sensory media through information technology.

2. The Function and Significance of the Creation System of Popular Science of Debris Flow Animation

Debris flow disasters have special formation conditions, which cause great destructive force, but also cause chain reaction of other disasters. Debris flow can be divided into three types: mud-flow type, water stone type and mud stone type according to different material components. The mud flow type is mainly composed of fine-grained clay and sand mixed evenly; the water stone type is mainly composed of coarse-grained sand stones separated by water and sand and the high concentration viscous and which Debris flow of debris flow type is between the above two types. With the rapid development of computer 3D animation simulation technology, fluid plays an important role in many simulation objects of 3D animation with its unique high degree of freedom and unique aesthetic value. On the one hand, the technology of debris flow animation reappearance is helpful to the study of debris flow geological disasters. On the other hand, the three-dimensional technology used in the creation of popular science can greatly display the powerful application

ability of digital media art and contribute to the development of digital media art teaching.

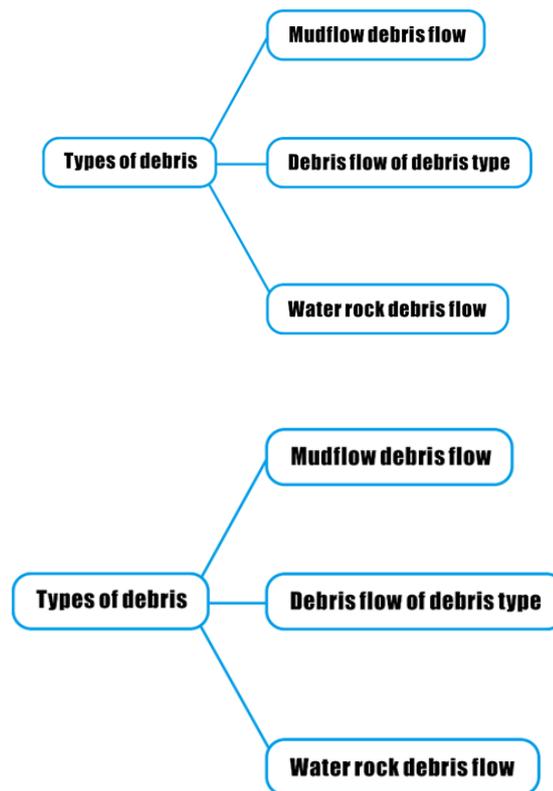


Fig.1 Classification of Debris Flow Types

3. Background and Trend of Undergraduate Teaching Reform in Design

Any reform of education and teaching should not be divorced from the reality of the society. The development and change of the times also have a huge impact on the actual level of education and teaching reform. Therefore, to understand the situation of teaching reform, it is necessary to analyze the problems of teaching reform in China and combine with the characteristics of the times. With the development and deepening of reform and opening up, the pace of teaching reform is constantly adjusted to meet the social needs brought by the development of the times, and to solve the internal contradictions caused by it. In the era of our life at this stage, the performance of informationize, networking and post industrialization is particularly prominent. At the same time, the Mass culture based on network information has sprung up. In the digital life, all kinds of people meet in the invisible network, so in this social environment, it will become more complex and diverse. All in all, the society needs talents, but a single talent training mode can not meet the needs of the times, so the digital media art teaching reform came into being.

4. Digital Media Art Teaching Trend

Digital media art is a cross-border discipline, which embodies the concept of "art, science and humanity". "Digital media art" belongs to the art specialty, which is Different from other "art" Majors, Digital media art is a mixed specialty of media communication and art. Its professional language is richer and more Digitization, so it should reflect the cross-border and integration of art and technology. After nearly 20 years of popularization and education of digital media art, we can see that digital media art plays an increasingly important role in many industries such as film, television, exhibition, advertising, packaging, etc. With the rapid development of computer, artificial intelligence and other related industries, it will be a long time to think about how not to be

replaced by machines. Each profession is more closely connected with each other, and at the same time, it is also integrating with the world's cutting-edge science and technology. In this context, digital media art teaching will also move in a more diversified direction.

5. Teaching Methods of Digital Media Art

5.1 Combination of Art and Technology

From a historical point of view, the second half of the 19th century, originated in the British design improvement movement - Arts and crafts movement. We know that from the beginning of this movement, the birth of every subsequent movement is bound to be accompanied by the rise of a new idea, The theme of "art and technology" has never changed. In fact, it is the same at present. With the continuous development and maturity of the digital media industry, what we are facing is the change of the demand for talents in the next "gateway" society, which brings about the change of teaching mode. However, no matter how it changes, the teaching mode of combining art and technology has not changed. This technology was reinforced concrete yesterday, and may be computer today Tomorrow may be artificial intelligence. Therefore, the results of these two variables are unchanged. What changes are only the way to better adapt to the social environment and social needs. So far, the most important thing is to explore and try these ways.

5.2 Focus on the Cultivation of Thinking Creativity

With the rapid development of computer, it promotes the development of digital media technology, but also affects the way of thinking. And it brings new forms of expression and technical language to the digital media art. With its unique characteristics, computer screen has affected people's use and gradually eliminated the traditional plane media.

However, the emergence of artificial intelligence breaks the barriers between the original disciplines or majors, It strengthens the connection between various disciplines, and also urges students to not only complete the established curriculum tasks, but also dynamically contact other professional knowledge in the learning process. This is a new requirement of the times for students. Computers have changed people's operation mode, while artificial intelligence has changed people's thinking mode, making people more multidimensional and comprehensive when looking at problems. Therefore, in the teaching of popular science creation, it is necessary to strengthen the development of students' art intuition, innovation ability and thinking creativity.

6. Discussion on the Training Mode of Popular Science Creation in the Reform of Digital Media Art Teaching Take "Double First Class" Design Institute in China As an Example

In the discussion of the training mode in the digital media art teaching reform, reference is made to the Design Institute of the Central Academy of fine arts as the "double first-class" in China. After the implementation of educational reform in Central Academy of Fine Arts, the original teaching mode was changed to the way of students' independent selection of courses and customization of training plan as the core. This new teaching method is very time-effective in enlightening students, opening up the understanding of the subject, and emphasizing the establishment of students' independent consciousness, which is the "humanistic care" for students and also to expand students' understanding of the concept of "design". As one of the top art and design colleges in China, the goal of this education reform is to create a set of interdisciplinary design education mode focusing on students and breaking through the professional gap of design. This kind of shopping course system can effectively promote the autonomy of students, and it effectively optimizes the tutor resources. Finally, Finally, during the senior year of the students, the students choose their responsible tutors with the number less than three, which is similar to the traditional way. Its role is to assist students to complete the graduation project and provide cross professional help. This selection mechanism can effectively support the students' needs for the graduation project.

The information art design education of the Academy of fine arts of Tsinghua University emphasizes the integration of art and science, and strives to promote the intersection of different

disciplines and form interdisciplinary projects. This is similar to the purpose of the 22nd undergraduate major "Art + science and technology" set up by the Central Academy of fine arts. Let's take another look at the settings of other art schools in the learning mode. For example, the school College of Design and Innovation, Tongji University integrates the two majors of digital media and visual communication. The school not only considers the students' learning and training, but also considers the personal development of teachers. It integrates and optimizes the related majors, and also gives students and teachers more freedom Space. However, due to the vague professional put up in the college, it also brings a lot of troubles to students and teachers. In such an upgraded and integrated teaching mode, there are higher requirements for teachers' ability. For students, it increases the amount of work and cannot study a subject in depth. I believe that in the process of exploration, this spirit of exploration will continue. Visual art and Design College of Guangzhou Academy of fine arts adopts the teaching mode of "3 + 1" to organically combine the subject and industry, aiming at blurring the professional boundaries. In the third and fourth grade of students, it will be divided into three Studios: new media art studio, cross media art studio and digital image studio. Students do not distinguish directions in the first three years. Undoubtedly, such a teaching system is also to train students in an all-round way. Other art schools in China mostly use similar methods to refer to the Central Academy of fine arts and Tsinghua Academy of fine arts. In terms of popular science creation, when it is used in teaching, we need to think about how to better integrate current science and technology with teaching. To sum up, I put it in the form of charts for reference.

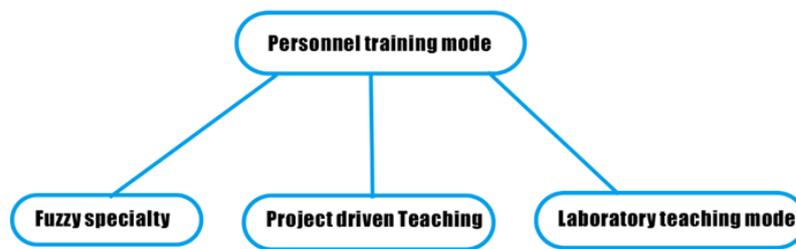


Fig.2 Double First-class Education Mode

7. Research Role and Significance of Popular Science Creation in the Reform of Digital Media Art Teaching

Popular science creation is to spread the scientific and technological knowledge and skills that human beings have mastered, as well as the scientific spirit and culture that should be respected, in various ways and ways. At the same time of popular science and technology knowledge, it is a kind of communication mode combining with digital media specialty and innovative scientific and technological achievements with popular science creation as the core. The popular science creation system itself is gradually updated with the progress of science and technology, which is manifested in the cross-border integration of multiple specialties, while making three-dimensional digital animation, using computer code language, and Finally, through the language communication of digital media, it reflects the concept of the combination of art and technology. Popular science creation is not only a scientific popularization work, but also a social education work, which belongs to the category of education and science. Specifically, in our animation of debris flow, in addition to the animation effect shown to the audience, there are also physical models for fluid simulation and construction. These knowledges and means of communication can help students or readers to understand the relevant concepts clearly, to understand which major categories debris flow can be roughly divided into, to which level can the software simulate the fine particles, and

how digital media can express the concept of art. These are the real significance of the research.

8. Conclusion

Whether the teaching reform can be successful or not, one of the most important points is how to combine and adapt to the development of the times to make changes. The demands of the main body of the teaching reform, the collision of "foreign" and "local" ideas is an important factor to promote the teaching reform, which is different in different times. Information technology promotes information dissemination, but it also inevitably brings some disadvantages. Apart from the disadvantages, the teaching of digital media is diversified and dynamic. The creation system of science popularization can just be used as an excellent carrier, as a boat of science and technology, art and media dissemination, but it can carry us to find the treasure of teaching. Science popularization creation combines science and technology knowledge with digital media specialty at the same time. With the progress of science and technology, the boat will become a big ship, heading for a more distant future.

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