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Sculpture in the Digital Age

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Abstract: With the unprecedented development of computer technology, digital technology has penetrated into every field of social life, and sculpture art has also been deeply branded with the brand of digitalization. Digital sculpture, as a new form of sculpture, gradually affects the sculptor's creative methods and ideas. This paper aims to explore the application value and multiple meanings of digital technology in sculpture art by studying the development status of sculpture art in the digital era. In this experiment, the basic characteristics and application performance of digital technology applied to sculpture art are analyzed by using the methods of big data analysis and the techniques of investigation, interview and statistics; the application methods of digital technology in sculpture art creation are explored and analyzed, and the experiment is collected by combining the experience of traditional sculpture and the general environment of today's sculpture industry Data, from all aspects of digital technology analysis of broad application and development prospects. Experimental data show that the penetration of digital technology in sculpture art teaching not only needs a certain cultural basis as the background, but also shows the differences of knowledge understanding in teaching due to the different background of the times. After in-depth understanding of digital technology, the teaching efficiency in sculpture art teaching has increased by 20%, and students' satisfaction with art class has increased by about 35%. In general, although digital technology has brought new modeling methods, creative means and modeling language to sculpture art, and expanded the creative thinking of sculptors, it has also brought some negative effects, and cannot completely replace the traditional technology.

1. Introduction

With the development of modern production and science and technology, the design methods and molding techniques of sculpture art have become more and more complex, and people's aesthetic concepts have become more diverse. So digital technology is very important for sculpture art. At present, most of them still use traditional creation methods. The disadvantages of materials,

molding, and time limit the wide production of sculpture art [1]. In order to solve the problems brought about by traditional methods, digital sculpture came into being. Digital design and digital molding technology can reduce errors caused by manual operation, and also bring new opportunities and challenges to sculpture art.

At present, research and exploration on the integration of digital technology and sculpture art are not enough, and they still lack a complete and independent theoretical system [2].However, in the past ten years, digital technology has played a significant role in promoting the development of China's sculpture art, and many successful practical results have been born. The largest portrait sculpture of Mao Zedong in China, the "Mao Zedong Statue of the Orange Continent", completed in 2009, uses the accuracy of the computer to quickly measure and calculate the angle, space and size of the model. Basis of size. These accurate data calculations provided a strong scientific basis for the final enlargement of the sculpture, which also promoted the perfect conclusion of the project. Domestic sculpture artists have used digital technology to create sculptures in large numbers and actively. Although digital sculpture has just begun in China, it has broad development space [3].People are no longer confined to the art form and thinking mode of traditional sculpture, and people are using the powerful power of digital technology to make continuous attempts and explore broader sculpture forms, concepts and thinking. Today, in the context of the digital age, the combination of sculpture art and digital technology will produce new art concepts and new art forms [4].

Hooper R. Portents and Catalysts research found that Benjamin was the first to theoretically affirm the production and existence of modern art with mechanical reproduction. He affirmed that the product of mechanical replication technology is also artistic: "It not only replicates all the works of art handed down, and thus begins to experience the most profound changes with its influence, but also gains a place for itself in the way of artistic processing." The artistic basis of mechanical reproduction products is that art is inherently reproducible: in principle, artistic works are always reproducible, and what people make can always be imitated. He believes that the authoritative status of the original works of art can only be obtained when they appear with hand-made counterfeits. If the technical copy is compared with the original, there is no value difference between the original and the copy. The two are equal. Benjamin acknowledges the technical components of art, but in Benjamin's mind, he does not think that these components are different in value from those non-technical factors. Furthermore, the copying technology in Benjamin's eyes caused the loss of "spiritual charm" and brought new meaning to the works of art. In addition, the new technology can also enable people to obtain images that cannot be obtained with the naked eye through zooming, slow-motion and other methods. Lindsay Waters said that Benjamin's research path is similar to Aristotle, the pioneer of classical art theory, because he "explains art from the most basic point like a mechanic" from a technical point of view, but is different from the proposal of Aristotle's classical parody Path, Benjamin explained the change in the way of modern mass art acceptance caused by mechanical reproduction technology on the basis of optimistic discussion of the disappearance of artwork "spirit" caused by mechanical reproduction technology [5].

The rapid development of science and technology has accelerated the popularization of digital technology, but mastering digital technology is a problem that must be solved. The era of big data is popular in the world today, so we need to understand digital technology. As a sculptor, we should infiltrate digital technology into it so that digital sculpture can thrive in the future development. This article aims to study the current development of sculpture art in the context of the digital age. This article mainly uses the method of big data analysis, and uses survey, interview, and statistics techniques to investigate and analyze the role of digital technology in the art of sculpture in terms of sculpture art. As well as the specific manifestations of the differences of the times, conduct actual investigations, collect experimental data, analyze and statistics experimental data. Experimental

data shows that the research on the penetration of digital technology into sculpture art requires a certain cultural foundation as a background, and at the same time it also shows a new modeling method, creative method and modeling language[6-7].

2. Proposed Method

2.1. Basic Characteristics of Digital Technology in Sculpture Art

2.1.1. Technological

The biggest difference between digital technology and traditional sculpture is its technology. Digital technology in the application of sculpture art reflects one of the strengths lies in the calculation of quantitative and accurate judgment, the computer technology can run several times per second operation, and can be in sculpture art creation in the design of side length, distance, and so on carries on the digital contour, conducive to the creator for data, and analyzing the relationship between the creator accomplish know fairly well [8].

2.1.2. The Virtual Sex

The virtuality of digital technology applied in sculpture art is embodied in the virtuality creation of sculpture art. The creator USES digital technology media to construct the virtual form of sculpture in the computer virtual space. Second, it is embodied in the virtual experience of the viewer. The artistic effect presented by its unique virtual interaction mode has a different charm, which will make the audience and the sculpture maintain an interdependent relationship. The spatial modeling represented by digital technology is quite different from the physical space. Digital sculpture not only needs the appreciation of the viewer, but also needs the participation of the audience, to give the sculpture the actual expression of the content. Although the virtual world reflected by the computer screen is completely different from the real world, this kind of virtual experience provides a more convenient way for the viewer to appreciate the sculpture. The traditional sculpture art conveys the virtual form of human spirit in the form of real existence, while the computer digital technology realizes the transformation from the virtual form to the real aesthetic existence, and the virtual form gains the connection with the real space [9]. It can be seen that virtuality, as a new feature of the application of digital technology in sculpture art, enables the sculpture design relying on computer digital technology to transcend the limitations of time, space and region, provides a new way for the viewer to perceive the charm of sculpture, and brings unprecedented novel experience to the viewer [10-11].

2.1.3. Comprehensive

Sculpture is a carrier of culture, art, technology and other functions. On the one hand, digital technology is involved in the creation of sculpture, which reflects the mutual influence and promotion of technology and art, and the integration of various disciplines. On the other hand, the combination of digital technology and sculpture art makes the materials and methods of sculpture creation more and more extensive. Therefore, both technical, comprehensive intersection and performance make sculpture a more comprehensive art form.

To sum up, today's digital technology is involved in the sculpture art, emphasizing the public participation and real-time scene, and paying attention to the works' on-site infection and atmosphere rendering in the environmental space, providing a new way for the audience to better feel the charm of the sculpture. The interaction of sculpture art with the assistance of digital technology makes sculpture art develop to a new stage. It can be seen that sculpture art created

jointly by the public enliven the atmosphere of mutual echo between people and sculpture and adds spiritual atmosphere to the space.

2.2. Spplication of Digital Technology in Sculpture Art

Information age people's most attention is the entertainment, film, animation, virtual reality, more and more popular in the society, and more and more widely sought after by young people, in fact, film, anime elements such as the emergence of is closely related to the digital sculpture and its popularity, games, entertainment, social networking can be done through the virtual world, digital modelling will create colorful virtual world. In a sense, elements such as movies and virtual reality are also part of sculpture. Future sculpture is no longer just an artistic display of real objects, but also penetrates into the virtual life of human beings [12].

The emergence of 3D movies and CG technology has developed virtual modeling. Virtual modeling is an electronic version of digital sculpture that exists without printing. Sculpture is not only an art student displayed in an art museum, but also exists in virtual modeling, which shines brilliantly in the virtual environment. The application of digital technology in animation and movies reflects the infinite possibilities of sculpture, creating a different virtual world for people's perception and spirit. Digital technology and digital sculpture can continuously contribute to creating a more magical and better world [13-14].

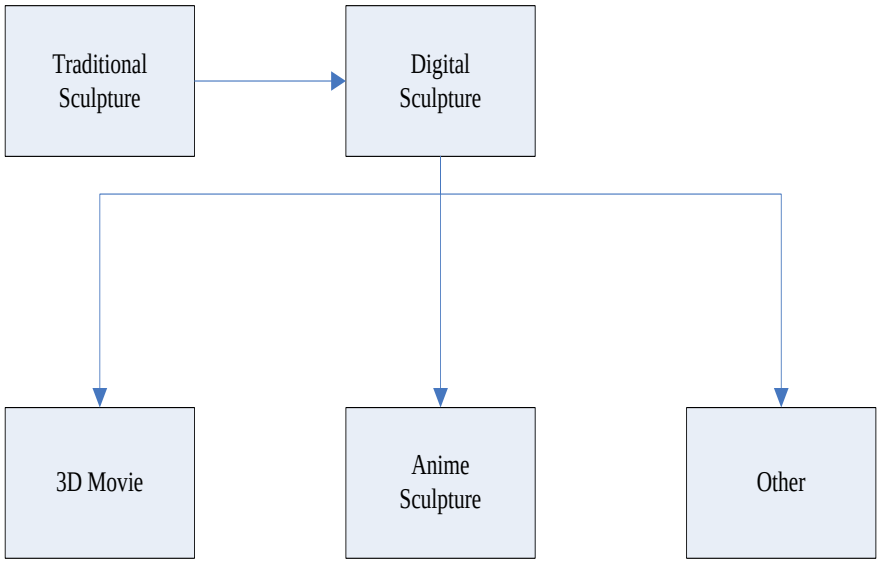

Figure 1. Development path

2.3. Explore the Application of Digital Technology in Sculpture Art

In European countries, sculpture is an important part of the cultural landscape, whether walking in the streets, parks, churches, palaces or museums, a variety of ancient and modern sculpture can be seen everywhere, they witness the history, commemorate the classic, but also express the trend of thought. At present, the commonly used material of digital sculpture is resin. Compared with the high price of more traditional sculpture materials, resin works are more friendly to students, and its cost will be lower and lower in the future. The first professional studio in mainland China to develop and produce original high-end GK models and sculptures. Mr. Morita is a rising star in Japan's 3-d art scene in recent years. He is good at shaping the beautiful body of creatures, combining elements such as water and flowers, so that his works present a holy and noble atmosphere and convey the artist's deep understanding of "love". Two new works, Grace of Serene

and Beloved, jointly released by him and moran, make those elegant and clever works more materialized [15].

2.4. Dilemma of the Use of Digital Media in Sculpture Art

2.4.1. Lack of Spatial Sense

Alleged dimensional feeling, put in sculpture art, it is a kind of person because of time change and produce the feeling to sculpture. Under the influence of the time factor, the expansion of the entity to the surrounding can become a kind of energy in space and be continuously perceived. The relationship between scale, form, form and volume determines the strength of sculpture in spatial sense in spatial force field. In the process of making digital sculpture, the computer screen between the artist and the work affects the artist's perception of the spatial sense of the sculpture. In such a virtual space, although the artist can create unlimited works without constraint, the sense of space compressed by the screen requires the artist to perceive with more space processing experience and imagination of space, and to use cross-sectional thinking when examining the sculpture in shape and space [16].

Whether in writing or in terms of form, appear a lot of different digital and traditional sculpture sculpture, digital sculpture more time are presented in the virtual space, from design to the realization of the sculpture is completed using virtual conditions, digital sculpture, however, can't touch, we use eyes to observe with the mind more hands to create, and because of that, this method show the sculpture with traditional sculpture will have obvious differences in the visual. Visually, virtual space is an imitation of physical space. We feel the volume, material and form of digital sculpture through the screen. This illusion makes us feel that virtual space is so similar to real space. The current virtual reality technology can allow people to enter the virtual world like immersing in the virtual world, making the real and virtual more blurred. Even if it seems real, due to the lack of real touch in the virtual space, we will not have a deep feeling for the depth of the sculpture without touch, and it is easy to make the sculpture flat. We shape the shape by touching the hand, so as to understand the real appearance of the shape, feel the ups and downs of the shape, and leave hand traces during the shaping [17-18].

2.4.2. The Imbalance between Technology and Aesthetics

Digital sculpture art is a product of The Times, an extension of sculpture art, an art form with a strong color of The Times and technical characteristics, and a reflection and exploration of the era of advanced information technology. Looking for a kind of traditional and contemporary link in the changing era reminds us not to be overly dependent on modeling technology or scanning technology and neglect the learning of traditional sculpture language. Proficient in software can be regarded as an excellent designer, who can help realize ideas with technology, rather than a digital sculptor. For digital sculpture, the difference from the traditional sculpture creation methods is mainly reflected in the software and hardware. The software and hardware mainly belong to the technical knowledge, and only with the help of the correct way and continuous efforts, can make a breakthrough progress [19].

2.4.3. Advantages and Disadvantages of the Age of Mechanical Reproduction

In today's industrial conditions, many works of art are reproduced through science and technology, resulting in mass production. This is called mechanical reproduction. Sculptures can be reproduced by means of translation, which is ancient. The emergence of a large number of new technologies in today's rapidly developing industrial environment has led to a historic new stage of

sculpture reproduction, that is, not just a small number of replicas, but a large number of exquisite replicas. Especially now the progress of the 3 d printing and 3 d scanning technology makes the copy or replica of more and more easily, the original and the similarity of replicas consistent, although replicas allows more people to appreciate the art works at the same time, has incomparable effect on the spread, but consume the sculpture "spirit rhyme", namely uniqueness. On the one hand, copying makes traditional art lose some of its original charm, but on the other hand, copying also makes traditional art more free and flexible. In this way, although the spirit and charm have disappeared, it is reborn in another way with a special mission, that is, to make artistic works gain new vitality [20-22].

2.5. Advantages of Digital Media in Sculpture Art

Digital sculpture software provides artists with a more direct, more close to the creation of the clay sculpture, multiple digital sculpture between software can enhance the sculpture shape deficiency of, can make the digital sculpture is more like a clay sculpture, but the software can't instead of manual, because digital sculpture production will never have like handmade bring direct and flexible, in digital sculpture creation, the feeling of the artists need to form through the mouse and keyboard to the virtual space, the indirect grasp the need for artists to form a good art foundation and basic shape. It can be said that digital sculpture and traditional sculpture complement each other. On the one hand, the aesthetic language of digital sculpture and traditional sculpture is integrated with each other; on the other hand, their sculpture techniques are very different, and digital sculpture is more flexible than traditional sculpture. Traditional sculpture is superior to digital sculpture in the sense of touch and the real feeling of body, so we can skillfully use the advantages of both to find our own artistic language in the fusion [23].

With the development of digital sculpture, both digital and traditional sculpture practitioners will become elitist, and most human work will be replaced by machines. With the rapid development of digital sculpture today, compared with traditional sculpture, digital sculpture is good at shaping neat, complex and accurate forms, and is convenient for size enlargement and reduction. From these perspectives, digital sculpture can assist traditional sculpture technically, but cannot completely replace the work of sculptors. Although the manufacturing process can be replaced by machines, the creativity and imagination needed to create sculpture cannot be replaced by machines. Just as photography cannot replace painting, sculpture processed by the hand of a machine is difficult to show the unique aesthetic feeling created by hand. Today, when it can be copied in batches, "unique" uniqueness is the precious value of manual sculpture [24-25].

3. Experiments

3.1. Experimental Settings

3.1.1. Experimental Overview

For the sculpture industry, the digital age, on the one hand, creates new opportunities for its development, and on the other hand, it is also a dilemma for the development of sculpture art. In the digital age, most of the sculptor understanding of digital technology co., LTD., which makes a lot of sculptor much neglected in the process of the development of digital art development brought about by the opportunities and challenges, so as to make the sculpture art is still limited in their traditional academic development, for prospective academic issues involved is not enough, cause the creation of the sculpture art influenced by larger.

3.1.2. Experimental Steps

1) A questionnaire survey was conducted on a number of randomly selected undergraduates majoring in sculpture art in a certain university, and the understanding of digital technology was put forward for them, so as to understand the influence of digital technology in sculpture art; Ask whether these changes have any impact on their study, life and thoughts; Ask the students whether their creative means and conception methods have anything in common. Question the role of digital technology in sculpture art teaching and the degree of penetration of digital technology in sculpture art teaching [26].

2) Collect, make statistics and analyze questionnaires, and analyze the understanding of sculpture art in the digital age; To analyze the influence of digital technology in sculpture teaching; Analyze whether they have an impact on their study, life and thoughts; This paper analyzes the role of digital technology in sculpture art teaching and the penetration degree of digital technology in sculpture art teaching.

3) Strictly discuss and summarize the data analysis, and discuss the authenticity, reliability and rigor of the results; Discuss whether digital technology really plays a role in teaching sculpture art; This paper discusses whether the penetration degree of digital technology in sculpture art teaching is significant. Finally, the paper summarizes the results of the penetration of digital technology in the teaching of sculpture art [27-28]. The specific steps are shown in figure 2.

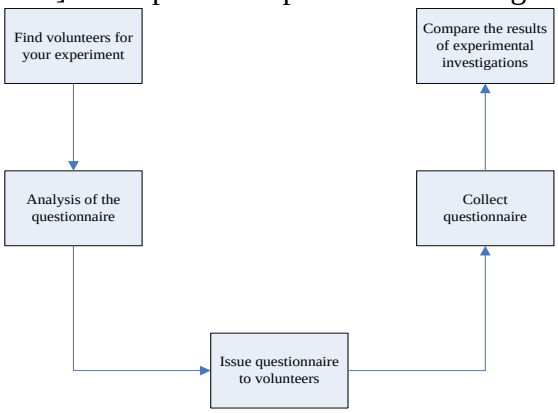

Figure 2. Flow chart of experimental steps

3.2. Matters Needing Attention

1) Prior to the experiment, the communication skills of concise words and fluent questions should be paid to the least educated of the respondents. When you turn from one question to another, pay attention to logical relationships, wording, and tone, such as general to individual, easy to difficult, and so on.

2) Relevant consultation and comparison should be conducted in the traditional and digital ages to prevent errors; analyze and summarize any problems that may exist; review the content, order, and words of the questionnaires; check whether digital technologies are in Questions that are meaningless in the teaching are deleted; the survey subjects must be students of related majors, not students of other majors.

3) Summarize the survey data and the analysis results, use statistical related algorithms to summarize, use data simulation to generate mathematical text.

4) Do a good job of computer data processing software programming and programming test, analyze the obtained data results and require backup to keep files.

5) When using network big data for analysis, it is important to reasonably deduce and analyze on

the basis of real-time data, so as to summarize all the conclusions needed for this experiment.

Digital sculpture is created in accordance with the traditional sculpture modeling laws, and uses the traditional modeling language. Secondly, digital sculpture, like traditional sculpture, is the carrier of the expression of human cultural spirit. The judgement of its artistic value is determined by its own artistry and the evaluator's artwork position. This kind of high-tech creative means can be used to the greatest extent. It reflects the artist's artistic level.

4. Discussion

4.1. Research Analysis of Survey Status

(1) A random survey of 90 undergraduates from different regions A and B colleges and universities, randomly selected 30 students from each grade, a total of 3 grades, asked the randomly selected students about the situation of sculpture art in the digital age To explore the influence of students who understand sculpture art in the teaching of sculpture art. Analyzing the data, it is found that the students of A university understand the sculpture art of the digital age and recognize that digital technology is very important in the teaching of sculpture art. Up to 40% of the students, on the contrary, the students of B university understand the sculpture art of the traditional era and recognize that traditional technology plays an important role in sculpture art. Penetration is very important in the teaching of only 29% of the students, the specific experimental data shown in Table 1 and Figure 3, it can be seen that digital technology has a great impact on the teaching of sculpture art.

Table 1. Number of opinions of undergraduates

	Second year undergraduate	Third year undergraduate	Fourth year undergraduate
A understand sculpture art in the digital age	27	30	29
B understand sculpture art in traditional times	24	26	27

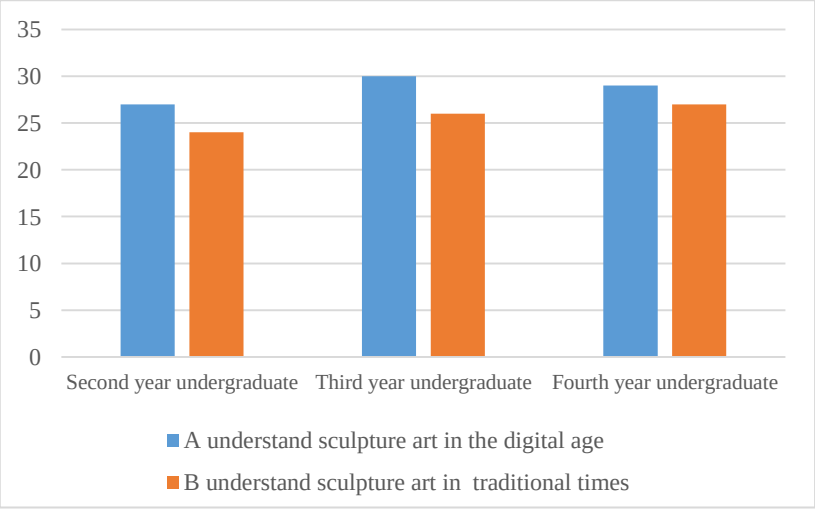

Figure 3. Number of opinions of undergraduates

(2) In art teaching, many experienced art teachers have always regarded appreciation of sculptures as one of the necessary ways to improve students' cultural literacy. This is because local art works can reflect the local customs and culture of the local people. Details. Most people will say that in order to understand this country, they must first understand the social culture and customs of this country, because the development of a nation reveals the inheritance of culture, and the inheritance and development of culture are often recorded and carved into various art works [29]. Students can teach lectures and read books about sculpture history, listen to related lectures, browse art magazines to learn about sculpture art, and use these cultures to communicate. Studies have found that students who really understand sculpture art have significantly improved their class efficiency. Among them, 60 students from two universities were interviewed to ask whether they often browsed sculpture works and art publications. The total number of surveys showed that students who knew sculpture art had higher final exam scores. It can be seen that in the teaching of sculpture art, it is necessary to understand the background of the times. The survey data are shown in Table 2 and Figure 4.

Table 2. Viewing data for art publications

	90-100 points	70-90 points	70 points or less
Good knowledge of sculpture art	35	15	10
General knowledge of sculpture art	28	20	12
Do not understand sculpture art	12	15	33

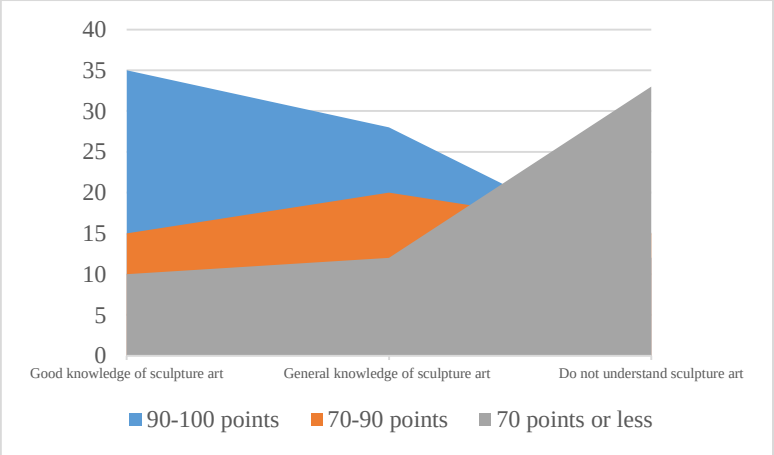

Figure 4. Viewing data for art publications

4.2. Discussion of the Consequences of Technology Penetration

(1) With the rapid development of digitalization, digital technology has also had a profound impact on works of this era in the teaching of sculpture art. It was found in the experiments that most college undergraduates believe that the impact of digital technology is huge. 44% of students believe that traditional technology affects children who study sculpture, and 56% of students believe that digital technology affects children who study sculpture. In China, digital technology will affect the direction of the industry. It can be seen that digital technology has a huge penetrating effect in the teaching of sculpture art. The results of the survey are shown in Figure 5.

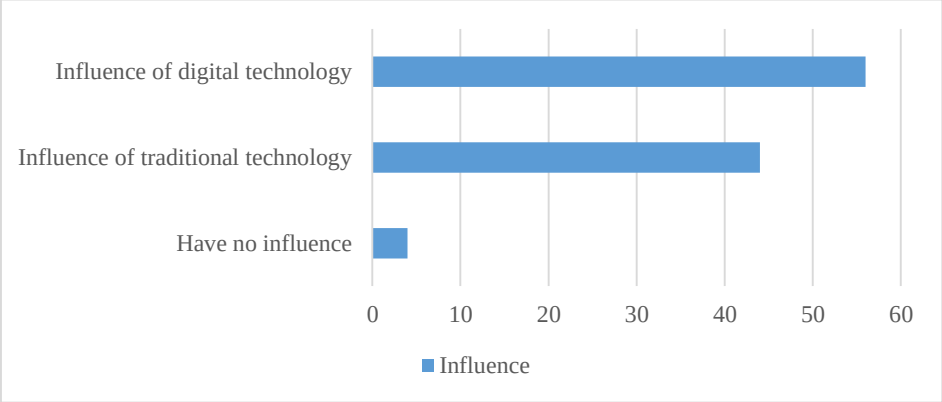

Figure 5. Influence of the times

(2)The penetration of digital technology in the teaching of sculpture has a profound impact, and different groups have different views on these effects. A special survey was conducted on the perception of the influence of digital technology in the teaching of sculpture art among the crowd. Some people did not pay special attention to these and expressed that it was easier to accept, but most people said that they should pay attention to the penetration of digital technology. In art teaching, teachers should tell students the advantages and disadvantages of traditional and digital technologies, let students objectively look at the current status of digital technology as a creative tool, and look at the characteristics of the times in a pluralistic manner. The survey data is shown in Figure 6.

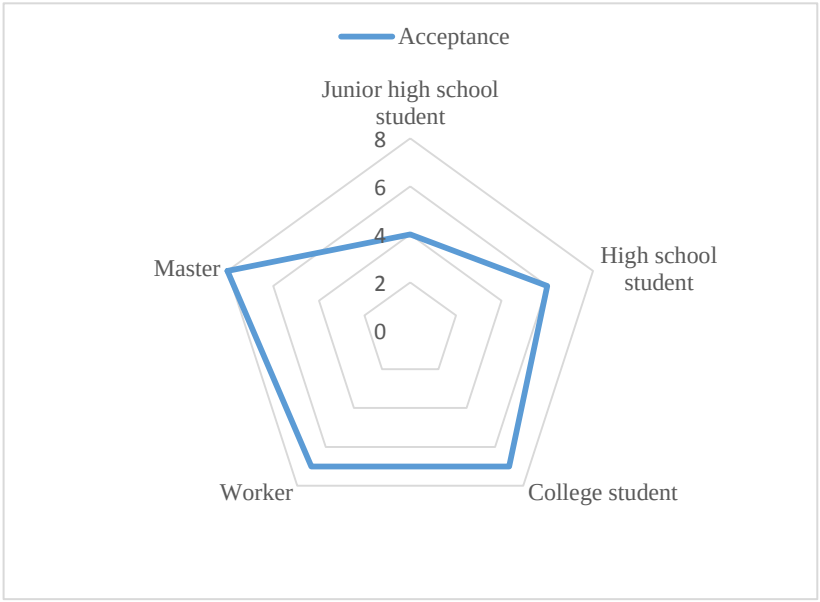

Figure 6. Affect acceptance

5. Conclusion

At present, the digital sculpture in our country is still in its infancy, there were a lot of space in the development of the technology, the development of digital sculpture, the use of digital sculpture needs us to digital sculpture to establish theoretical system of a set of independent digital sculpture,

its advanced technology popularization in professional colleges and universities, training more digital sculpture talent, use of digital technology technical and sculpture art constantly develop more advanced technology, the popularity of digital sculpture.

Digital sculpture is just a kind of efficient production technology, it will not replace the traditional sculpture technology, but just different forms of sculpture technology creation, will continue to develop with the development of The Times. Under the background of digital technology, digital sculpture, as a new thing, is rooted in the soil of modern technology and art, and as a brand new plastic art, it has its unique production software and method. For some traditional sculptors, it is difficult to master. Although creators do not need to master mathematics, programming and other knowledge like computer engineers, but they need to understand some necessary computer operation technology and sculpture software technology. In addition, the creation form of digital sculpture is to face the display screen and use digital pen to carve, which is quite different from the traditional sculpture form and virtually widens the distance between the creator and the sculpture. In this era of constant innovation, technology and art need to promote each other and complement each other. The rationality of digital technology and the sensibility of sculpture art need to be harmonious and unified. The integration of digital technology and sculpture art reflects the integration of scientific spirit and humanistic spirit. Under the background of technological iteration in the digital age, the extensive application of digital technology in sculpture creation is more suitable for the development status and prospect of contemporary sculpture. Digital technology and sculpture art will have a broader combination of space, and for the future development of sculpture art burst out more possibilities.

As a means of sculpture creation and medium of presentation, digital technology is integrated into the language of sculpture creation. Through investigation and interview, it can be found that the penetration of digital technology has a great impact on sculpture art. This paper aims to study sculpture art in the digital era. It mainly adopts the method of big data analysis, and USES the techniques of investigation, interview and statistics to analyze the basic characteristics and application performance of digital technology applied to sculpture art. To explore and analyze the application method of digital technology in sculpture art creation, combine the experience of traditional sculpture and the current sculpture industry environment to carry out a practical investigation, collect experimental data, so as to analyze the existing problems and contradictions, summarize its broad application and development prospects. Experimental data show that the research on the penetration of digital technology in sculpture teaching not only needs a certain cultural foundation as the background, but also shows the differences in the understanding of knowledge in teaching due to the different times. Experimental data show that after in-depth understanding of digital technology, the teaching efficiency in sculpture art teaching has been improved by 20%, and the students' satisfaction with the art class has been improved by about 35%. In general, although digital technology brings new modeling methods, creative means and modeling language to the sculpture art and expands the creative thinking of sculptors, it also brings some negative effects and cannot completely replace the traditional technology. In this era of data, sculpture has been involved in the digital wave, but no matter how digital technology develops, sculpture is the result of human creation after all, is a true portrayal of the diversity and richness of people's inner life.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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