Computer-Aided Technology and its Application in Creative Art Teaching

An Li[1], Meiling Mao[2] and Zhuo Li[3*]

[1]Digital Creativity College of Luzhou Vocational and Technical College, Luzhou, Sichuan 646000, China, vivimouse@163.com
[2]Digital Creativity College of Luzhou Vocational and Technical College, Luzhou, Sichuan 646000, China, maomeiling021@163.com
[3]School of art and design, Henan Institute of technology, Xinxiang 453000, China, zuollee@hait.edu.cn

Corresponding author: Zhuo Li, zuollee@hait.edu.cn

Abstract. Aiming With the development of virtual reality technology and popularization, the present teaching method and learning style is changed accordingly. The present various teaching activities are exploring the integration of virtual technology, however, specific effect is difficult to textual research The author through design of virtual reality technology application art teaching practice, teaching and traditional teaching in VR environments As a control, experiments and studies were carried out to answer the three core research questions of whether virtual reality technology can promote the stimulation of creativity and whether virtual reality technology is beneficial to learning effect. With the development and popularization of virtual reality technology, the teaching methods and learning methods are also changing. Through the design of virtual reality technology application of art teaching practice, VR environment teaching and traditional teaching as a comparison, research. Three core research questions were answered, namely, the degree of learners' acceptance of virtual reality technology applied to teaching, whether virtual reality technology can promote the stimulation of creativity, and whether virtual reality technology can benefit the learning effect.

Keywords: Computer aided technology; application in creative art; teaching
DOI: https://doi.org/10.14733/cadaps.2022.S7.23-33

1 INTRODUCTION

Art education is a kind of creative education, fine arts and other disciplines most reason is that it is the difference between the openness and diversity, aesthetic art is not a constant, is to pursue may eventually orientation and creativity, the main goal is to exercise the student's mental thinking, work creation, hands-on practice, aesthetic and other basic ability, Finally, in the specific teaching process, teachers should pay attention to cultivating students' independent and distinct

personality and characteristics, cultivating students' imagination and developing art creation, so that students can form their own personality quality in the process of creation and promote the formation of students' creative thinking.

With the rapid development of modern science and technology, people's work and life are deeply affected by technological change, and earth-shaking changes are also taking place in the field of education. Virtual reality technology, as a new technology in the digital era, uses computers to simulate real scenes, virtual objects are blurred by special head display or glasses, and new scenes are constructed with the characteristics of immersive human-computer interaction, sexual imagination and multi-sensory perception. In addition, through the use of sound positioning, model building, eye movement tracking and other technologies, compared with the traditional teaching mode, through technology intervention to create a virtual learning environment, students can be fully engaged in the virtual environment, through audio-visual, interactive and other perceptual images can enhance learning interest and imagination, enhance the real experience of the virtual world, and bring learners an immersive and interactive learning environment. After the preheating of the earlier years, virtual reality technology has shown explosive growth in recent years, and its application in various fields is endless and the scenes in education and teaching are more and more extensive. However, the results of VR technology application and teaching are not quite the same.

By surrounding the computer digital network learning platform technology research, summary of computer-assisted art teaching theory and teaching method, digital network learning platform, the basic function of the fine arts education and teaching methods, based on computer digital network learning platform of modern fine arts education form, including art foundation and art ideas, art of composition, Art color and art cases and other functions of the curriculum scheme. Through carrying out practical research on digital network learning platform, taking modern art curriculum plan as the clue, analyzing the cause of information transformation of art teaching activities, grasping the theoretical basis of digital network extending to art education, and carrying out beneficial attempts in theory and practice of computer-aided art teaching. Art education is an important art category in colleges and universities. The essence of art teaching advocates creation and innovation and belongs to open teaching. In this paper, the perspective of the development of modern information technology to information to the art education research as the important content in the practice, which concludes that the new model has fine arts resources sharing Three aspects, such as the advantages the digital software technology and network platform support, also the application of computer network greatly enhanced supporting, the resource of fine arts, Digital software and digital network learning platform highly integrated together, greatly improve the learning effect of learners.

2 RELATED STUDIES

Kok [1] NASA has been researching VR headsets since 1985, and has established a VR education system available for use across the country, which makes it possible for VR technology to be widely used in basic education. At the same time, Kerimbayev et al. [2] pointed out that virtual campus roaming system is an important measure of campus development and renewal, and also an indispensable platform for colleges and universities to publicize themselves under the current situation. Agarwal et al. [3] believe that virtual reality system can not only show rich campus environment, but also support smooth user interactive roaming to meet the requirements of virtual campus construction. Liu et al. [4] concluded that virtual laboratories in China currently mainly include three categories: the new technology of virtual experiment platform based on 3D visual effect and fully immersive interactive virtual experiment platform provides a new idea for virtual laboratory, which has high simulation openness, expansibility, sharing, repeatability and high practical significance of security. The design goal of the intelligent stroke generation system is to make the intelligent body depict the natural scenes in the real world with rich strokes. In order to show the artistic details in the painting, the artificial intelligence researchers design different stroke effects and continuous stroke parameter space, adjust the tiny stroke position, color and

transparency changes. The result is a successful painting [5]. According to the general trend of information campus construction and teaching resources digital construction, in order to solve the specific problems, the unique targeted solutions are proposed [6].

Zaranis [7] tend to explore integrated education resources platform, constructing the information technology and knowledge structure model framework, creatively puts forward education resource construction theory. Dong et al. [8] use the network learning strategy model to guide the design and development of network courses from micro and macro perspectives, aiming at solving common problems such as information loss, high consumption and low efficiency. The University of Leeds and other universities share the resources of online education platform together, and the education courses are oriented to the audience in the form of classroom teaching units through modules such as minimization of distributed concept model [9]. This kind of network education platform abroad has promoted the reform of computer-aided art education and the development of computer-aided art teaching, which has very important practical significance [10].

2.1 Computer-Aided Art Teaching Platform

The teaching platform of computer-aided art design is based on B/S mode, using Windows 2005 Server as the Server, C# as the development language and SQL Server2005 as the database. The specific scheme is shown in Figure 1.

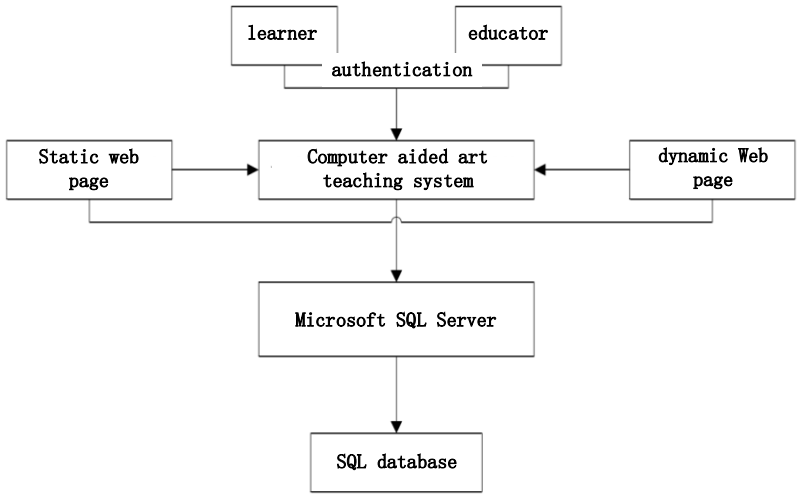

Figure 1: The realization scheme of computer aided art teaching platform.

It is a unified Web development platform designed to provide developers with the services needed to quickly generate enterprise-class Web applications. ASP.NET syntax is largely compatible with ASP, while it also provides a new programming model and structure for generating more secure scalable and stable applications can be gradually added in the existing ASP applications, compared with the previous Web development model, ASP.NET has the following advantages.

ASP.NET is compiled common language runtime code running on the server. ASP.NET leverages early binding to compile native optimizations and additional caching services in real time, which equates to a significant performance improvement even before a line of code is written. The ASP.NET framework complements the Visual Studio INTEGRATED Development Environment's extensive toolbox and design WySIwY-G editing drag-and-drop server controls and automatic deployment are just a few of the features this powerful tool provides. SP.NET is based on the general language compilation and operation of the program, so its powerful and adaptability, can make it run in the Web application software developers almost all of the platform on the general

language basic library, message mechanism, data interface processing can be seamlessly integrated into the ASP.NET Web application. ASP.NET is also language-independent, so people can choose the most suitable language to write programs, or write programs in a variety of languages, C# (C++ and Java combination) VB has been supported, Jscript. The ability of multiple programming languages to work together will protect existing COM+ based applications that can fully port ASP.NET.

2.2 The Teaching Function Structure

The 21st century is the age of information, it is the era of knowledge economy, is also a visual, experience of time, will establish the new media art interaction teaching is the only way for basic art education to internationalization in our country in terms of art education field, the involvement of the new media will bring convenient for the interactive teaching in two ways and development. The extension of teaching information network enables students to get more rich art information through the Internet and teaching resource sharing platform anytime and anywhere. At the same time, the new media technology makes the future of education more humanized, the socialization of art learning will become the reality of individuals as the subject of learning, self-service teaching mode will be more popular with learners, teachers can also be freed from mechanical repetitive work, optimize the teaching process, strengthen the creativity of teaching.

New media terminal embedded in intelligent cloud classroom is an effort direction of future education. It includes electronic textbooks, electronic desks, electronic schoolbags, electronic whiteboards and other new media applications, helping students to carry out multi-dimensional personalized interactive learning. Central China normal university in China national engineering research center for digital learning in the integrated, interactive media applications do a lot of research and development work, its own research and development of interactive electronic whiteboard interactive feedback system with One To One digital learning system, interactive media such as video interactive system integration, developed the classroom system in the future.

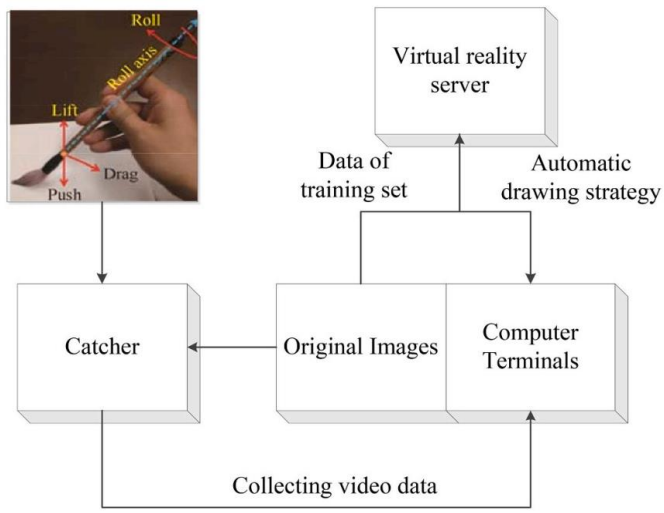

Figure 2: The teaching function structure of future classroom system.

The interactive teaching has the function of instant feedback with diversified ways; Information teaching process design function; Convenient and smooth access to information resources can effectively promote the development of interactive teaching diversification and humanization. Its structure is shown in Figure 2. There will be more and more common interactive application software was introduced as a form of open communication to the art teaching, there will be more

and more art teacher in the future the software as an interactive teaching tool, and with the computer digital camera DV combination of new media devices such as smart phones, applied to the fine arts teaching practice.

In virtual reality man-machine interface and other technologies have gone far beyond the scope of tools, are affecting people's way of thinking, living habits, aesthetic orientation and code of conduct in a new form of experience, but also enrich art resources, broaden the boundaries of art. With the coming 5G network era, students will receive more and more art information, and the interactive channels of art will be more and more broad. Art education is no longer a simple school education, but a socialized interactive education.

3 ANALYSIS OF RESULTS

3.1 Computer-Aided Technology and its Application in Creative Art Teaching

In the past art teaching, it takes a lot of time for teachers to record the creation process of art works in advance, while it takes a lot of classroom teaching time for on-site demonstration. After inputting a given scene photo or target painting, intelligent stroke generation system can output stroke position, shape, color and other information. Students can clearly see the whole drawing procedure, especially in the first few steps, the mass-tone attune of determination and generalization performance of overall image ideas and tonal has played a very important demonstration effect, simple to complex, from the overall to local painting steps more intuitive, teaching emphasis and difficulty also can repeat playback, facilitate teachers targeted in-depth interpretation. This can not only improve the teacher's efficiency of lesson preparation, enhance students' intuitive feeling and understanding of paintings, but also improve the quality of art teaching and break through the limitations of teacher's painting demonstration. Therefore, the use of intelligent stroke generation system can meet the personalized needs of art teaching to a large extent.

In the past art teaching, teachers often need to spend a lot of class hours telling students how to add three-dimensional shadow for their line draft. Artistic shadow in art creation is the creator's three-dimensional understanding of the depicted object and an important reference for subsequent creation. Beginner line art students often require teachers to give the correct demonstration own line art and revisions, but the more the number of students in the classroom or after class time, students are difficult to get professional auxiliary teaching, students often require some preliminary attempt repeatedly change their line, and constantly adjust the different light shadow form of art. If a student wants to depict an imaginary three-dimensional object, it will be more challenging without reference to a concrete model, and this difficulty of adding shadows will increase exponentially as the complexity of lines and structures increases. Figure 3 shows the drawing process and painting effect of intelligent strokes. The first column shows the target image, and intelligent strokes gradually generate images in a manner from rough to fine.

Computer digital technology provides a change in the way of painting in art teaching. The traditional hand-painted form of art teaching has been replaced by the automatic drawing technology of computer (as shown in Figure 4), thus producing new painting techniques and painting types. The first is automatic painting technology, that is, the use of computer automatic painting technology (such as cyclotron technology diffusion technology) to carry out art works drawing, computer many software have automatic image processing function, will automatically generate art paintings, watercolor and oil painting techniques. Computer-aided art teaching provides the change of painting strokes in art teaching. Traditional art teaching hand-painted strokes are single and unchanged. The form of painting strokes is influenced by the physical properties of paper, painting pigments, painting brushes and other conditions.

Figure 3: CAD key technology architecture network diagram.

Figure 4: The left is the original image and on the right is an oil painting style generated using computer automatic painting technology.

Computer automatic generation technology has changed the art painting foundation course development direction, teaching by pay attention to the form expression and mapping techniques to the creation concept and simulation map digital network learning platform database storage abundant software and brushwork painting type, selection for learner autonomy, promote the learners' self-dominate the process of learning; Educators in the evaluation of the development and renewal of brush type, to guide learners more subject creation learning computer automatic painting generation technology to broaden the scope of art teaching basic courses, the formation of diversified teaching personalized training of art teaching ideal situation. Computer-aided basic teaching of art composition is influenced by computer hard stroke drawing technology, which promotes the improvement of art composition teaching. Traditional art composition teaching is limited by the limitations of manual freehand drawing, and perspective composition drawing is tedious. There are often a large number of auxiliary lines involved in art creation, and those who cannot timely and efficiently complete computer-aided teaching have great advantages. According to the needs of art composition creation, the transformation from manual drawing to digital simulation drawing can be completed.

Graphic creation in computer-aided art teaching involves the expression of creative design techniques, composition setting, artistic aesthetics, cultural tradition and software technology, etc. Compared with traditional art teaching, it pays more attention to the technical expression of

creativity. The use of computer graphics software technology to achieve the subject works, and has the characteristics of a large number of copies of the traditional art of drawing techniques and composition Settings of the understanding of the aesthetic impact of art, cultural tradition is more concerned with the performance of the content of the theme, but has the characteristics of unreplicable. Computer aided art teaching plane creation course is divided into software technology and layout design two parts. Software technology part includes: plane bitmap software Adobe Photoshop; Planar vector software Adobe Illustrator Coreldraw; Adobe In Design Page Maker includes: composition, font Design, illustration, art Design, packaging and decoration Design, printing technology, graphic advertising Design (poster) logo Design and other courses, which is shown in Figure 5.

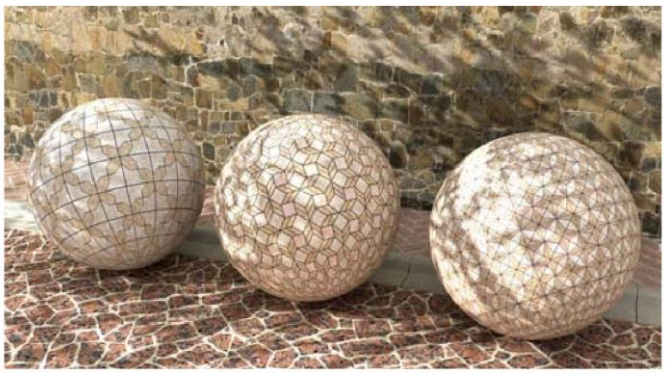

Figure 5: The creation effect of computer 3d ceramic tile texture simulation.

Computer aided art teaching 3 d digital graphics technology involved in creative design class creation art review material texture beauty culture tradition and the software technology knowledge content, such as its creative performance technology is compared to traditional art forms of computer 3 d software technology has the characteristics of virtual simulation imitation of the real world, and can be a large number of replications. Computer-aided art teaching 3d creation courses are mainly based on digital software technology, and hand-painted techniques are supplemented by software technology part including 3DMAX, MAYA, AUTOCAD and other software hand-painted techniques part including sketch illustration, art design, comics and other courses. The achievement evaluation of the computer-aided art teaching model mainly reflects the learner's participation index and the subject project research index. The constituent factors of number can be evaluated by relevant evaluation indexes, which run through the whole process of research learning.

3.2 Analysis Results of Creative Teaching by Computer-Aided Technology

From the perspective of teachers, effective teaching requires teachers to make adequate lesson preparation before class, and to clarify learning tasks and objectives. Pay attention to students' psychological and emotional, design rich variety of teaching activities stimulate students' learning interest, teach in easily understood manner New media technology and the combination of classroom teaching, to break the traditional teaching of the limitation of time and space, enrich the teaching contents, enrich the teaching means and powerful sound light shadow, make students audio-visual effects From passive to active, more interactive help teachers to better grasp the rhythm of classroom, improve teaching efficiency Such as teach teacher speak grain appearance alone Second consecutive four consecutive comprehensive use in the adornment picture, using new media software can be easily copy rotary paste to deformation, operation process is concise

and straightforward, compared with the traditional fine arts teaching The teaching efficiency has been greatly improved.

From the perspective of students, new media can make many concepts and logical relations that are simply expressed in language become intuitive. Interesting, achieve the result of get twice the result with half the effort in learning In addition, students in addition to immediate effective interaction with information from the teacher, also can through new media software works, with their own party type is different from traditional aesthetics and emotion art creation to fit difficult time-consuming, new media art itself. Is in the fast pace of modern society came into being, through new media technology, artistic expression no longer distant and difficult, the students in a short period of time can produce relatively satisfactory work [8] in the process of learning, students can use the save born creative time for thinking about interaction, real-time perfect learning loophole, correct deficiencies. It improves the effectiveness of interactive teaching, which is given in Figure 6.

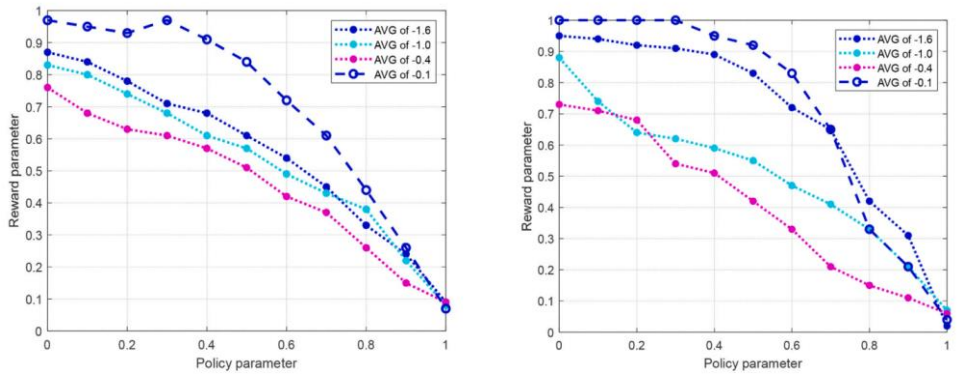

Figure 6: Updating of computer aided technology parameters in creative teaching.

According to the existing cognition, students will discuss with the group representatives through preliminary visual and auditory feelings. The teacher summarizes and introduces the design intention of the new media art in the Humanities Olympics: setting questions in the situation, arousing students' interest in the new media art form and then conducting group discussion is a process of interaction among students and preliminary cognition. Ask the students to talk about their own findings and feelings. Based on the students' findings, the teacher appreciated the application of new media in the opening ceremony of Sochi Winter Olympic Games and analyzed its artistic design techniques and concepts. According to the students' appreciation feedback, the teacher makes supplement and summary; It also extends to the theory and features of new media art, points out the superiority of new media art expression in expressing thoughts and emotions through specific cases and comparison with traditional design forms, and emphasizes the ultimate intention of artistic creation. Design Intention: Let the students deepen their understanding of Olympic art in the process of exchange and discussion. In order to strengthen the Olympic spirit and humanistic feelings of the grasp and under the guidance of teachers to learn to appreciate and comment on the life of new media art creation. Teachers upload materials on the shared platform, which can give proper guidance to students who have no clue. The classification of teaching materials is convenient to use the comparative method to further explore the teaching content. What are the cultural and historical developments that have been expressed in the video? Which parts of the video do you think are the most exciting and impressive? Why?

Figure 7: Visual communication teaching results.

To further explore and enrich the proposed method, the visual communication teaching results are shown in Figure 8.

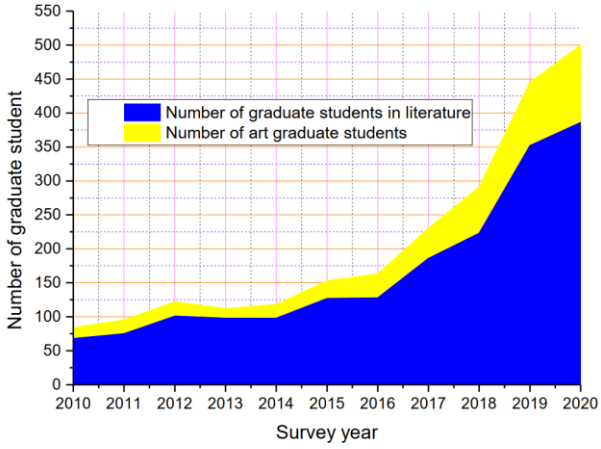

Figure 8: The number of students majoring in arts.

According to Figure 8, with the process development of the subject inquiry learning, learner participation team is continuously strengthened, learners' team actively open exhibition on learners' achievements appraisal, also according to the project progress, in-depth analysis and design workshop, auxiliary learners to form the subject of new ideas New ideas, to promote the depth of the logo design research and the application effect of this system is good. The learner team regularly uploads the research results of the topic design, which promotes the maturity of learners' individual design ideas. The logo design scheme is constantly improved and refined. These stage results will be recorded by learners in a very concise and abstract form, and many solutions to the topic design are formed at the same time. At this stage, educators give a lot of guidance and evaluation to guide learners to form a more mature design form, which is the right direction for the development of their subject.

In the traditional classroom teaching of fine arts, for the convenience of watching students learn, teachers always as a demonstration of the main body, and the way of demonstration with blackboard model for many, due to constraints, occasional physical display, etc. Such as the passive accept way, it is difficult to let students to strengthen the memory, in some cases because the classroom space or display Angle q Taking into account the fact that every child is a link to open the creative source of students, without the participation of students, In the process of students' creation, teachers are accustomed to oral narration or modification on the basis of the

original works, which is not conducive to the development of students' art. There is no room for them to play, and they cannot clearly understand the meaning of teachers' guidance.

In contemporary art appreciation course, due to the limited conditions, it is difficult to visit the feeling of the physical reality, as well the degree of reduction and cost is more or less affected the learner's experience knowledge learning, therefore, instead of the starting point of most appreciation class learning experience is lets the student multiple perspectives appreciation and understanding of the nature, through the work of the material content Some scholars have pointed out that the biggest problem of appreciation art class is that teachers do not set clear curriculum objectives, so they cannot carry out teaching according to the objectives in the teaching process. Or the current teaching means are difficult to meet the expected goals, difficult to achieve the intention, so that the teaching link is separated from the use of information technology to enrich teachers' teaching resources and teaching forms, create immersive classroom atmosphere, is conducive to students to better appreciate and feel the works of art, which is shown is Figure. 9.

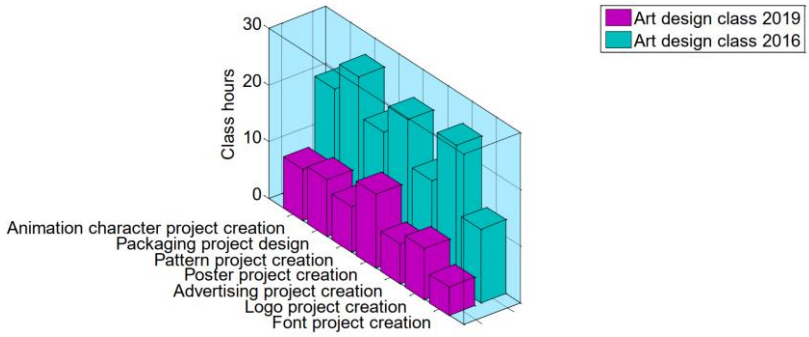

Figure 9: The creation time of art projects.

4 CONCLUSION

Based on the construction and practical application of the digital network learning platform for computer-aided art teaching, this paper discusses the art education and teaching mode based on computer technology. According to the main ideas elaborated in this paper, the research problems in the process of constructing the computer aided art teaching model is not full enough in the content setting of each module, which needs to be further improved. Along with the rapid development of science and technology of digital information technology and Internet, based on the research of computer-assisted art teaching study has gradually become the preferred learning styles of art education in colleges and universities, but also a lifetime powerful learning mode of education under the background of contemporary science and technology rapid development, this paper based on the digital network in the context of inquiry learning to do some preliminary research The research and discussion can give a little enlightenment to modern art education.

5 ACKNOWLEDGEMENT

Comprehensive reform pilot project of characteristic majors of Luzhou Vocational and Technical College "Research on the construction of "integrated" teaching system of art design specialty under the background of local cultural and creative industry"(NO: TSZY-202101)

An Li, https://orcid.org/0000-0002-4311-2032
Meiling Mao, https://orcid.org/0000-0002-4100-6017
Zhuo Li, https://orcid.org/0000-0001-7013-3851

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