The Exploration and Practice of Computer Aided Design in the Construction of Art Education Courses

Xingyu Feng¹*, Ping Wang¹
¹Academy of Art, Hexi University, Zhangye, Gansu, China, 734000

*Corresponding author e-mail: fengxinyu@hxu.edu.cn

Abstract. Computer-aided design specifically refers to the use of computers and graphics equipment to help designers complete design work. Computer-aided design can be regarded as a tool and designers can quickly complete calculations, drawings, etc. through the use of this tool. At present, the most commonly used computer-aided design software are the following: Auto CAD, 3D MAX and Photoshop. The following separately analyzes the application of these kinds of software in art design education, so as to be able to explore its application in art education courses more comprehensively.

Keywords: Computer-aided Design, Art Courses, Exploration

1. Introduction
Comprehensive art originated in the West and has gradually matured through the continuous exploration of artists. With the development of modern technology, the material medium has gradually prospered and art exchanges between the East and the West have become more frequent. Many art educators have begun to pay attention to art language. Exploration, exploring the role of comprehensive materials in cultivating students' art education. Today, as integrated art education is becoming more and more popular, we can see that integrated art is becoming more and more important in basic art teaching. In teaching, teachers should use computer-assisted technology correctly, guide students correctly and grasp the core concepts of art education. Train students to understand art, improve students' creative thinking and artistic imagination and cultivate their correct art.

2. Computer-aided design technology

2.1. AutoCAD technology
This is a very popular drawing software. In addition to 2D drawing, it can also complete some basic 3D design. The reason why Auto CAD has become a mainstream drawing tool is closely related to its many application advantages. (1) Good user interface. Auto CAD is a drawing tool. Its simple and intuitive user interface is one of its most prominent features. The interface includes menus, toolbars, command windows and so on. Designers can complete related operations only through interactive menus. In continuous use, designers can more skillfully apply various functions in the interface,
which helps to improve design efficiency\cite{1}. (2) The drawing is accurate. When designers carry out related design tasks, whether the drawing is accurate is directly related to work efficiency and design quality. If the drawing is inaccurate, rework is required, which will waste time. The most prominent feature of Auto CAD is its powerful drawing function, which provides guarantee for the accurate drawing of drawings.

2.2. 3DMax technology
This is a very powerful 3D animation production software. The software is based on a PC system, so there is no high requirement for the configuration. Through plug-in installation, the software can be given more functions; the software itself has character animation. The production ability can stack the modeling steps, thereby making the production flexibility of the model improved. At present, 3D MAX is widely used in many fields, such as online games, film and television production, architectural design and so on. In art design education, 3D MAX is often used in the construction of indoor and outdoor renderings and environmental animation\cite{2}. The application of 3D MAX in various fields is closely related to the powerful modeling function possessed by itself. Specifically embodied in the following aspects: (1) modeling tools. Including basic and advanced, the basic modeling tools are mainly of various shapes, such as cylinders, cones, cubes, spheres, polygons, etc.; and the advanced modeling tools are mainly of various irregular shapes, such as human bodies, plants, landscapes, waves, etc. (2) Modify the tool. When using 3D MAX to build related models, modification is an indispensable part. In this part, you need to use various modification tools, such as rotation, extrusion, lofting and so on. Through the use of modeling and modification tools, designers can quickly complete the construction of models on 3D MAX, ranging from various artistic shapes to large architectural structures. The painting art works are shown below.

![Figure 1. Painting art works.](image.png)

3. Analysis of art education courses
Art education is an education that improves people's feelings and understanding of beauty and cultivates expressiveness and creativity in art. It is an emerging education that improves personal quality and cultivation. Its fundamental purpose is to train people with all-round development. In contemporary society, people have found that emotion, will and quality often play a more important role than human intelligence and human health and emotion are closely related to long-term artistic nurturing\cite{3}. Therefore, to cultivate all-round development talents, we must pay attention to art education. Throughout the ages, most of the people who have been very productive in their careers have higher artistic accomplishments. Today, life and art are more or less connected, such as reading novels, watching movies, listening to music and enjoying paintings. Through the appreciation and evaluation of excellent works of art, to improve people's aesthetic cultivation and art appreciation, cultivate people's sound aesthetic mental structure. The artwork is shown below.
Figure 2. Artwork.

Aesthetic comprehension ability is based on the individual's certain cultural accomplishment, an understanding and understanding of the aesthetic object, which is not only dependent on a certain art appreciation activity to improve. The excellent works of art created by artists are not based on imagination and random conjecture, but rely on their accumulation of knowledge and their experience and perception of life[4]. Art is different from philosophy. The inspiration for creation is not just thought, but also real external things. Profound cultural accomplishment and life experience are the core elements to help students understand the thoughts and emotions expressed in the works of art and the spiritual qualities conveyed. Therefore, the majority of art education personnel should encourage college students to learn and understand the knowledge of various subjects, read the group books and improve their cultural accomplishments, so as to experience art works more deeply and enhance their artistic aesthetic ability. Aesthetic creativity is developed on the basis of the above two capabilities and it is a sublimation of the aesthetic process. The process of art appreciation is actually the process of the second creation of beauty. Art education is the most effective way to cultivate human creativity. The artwork created by the artist can be said to be a representation of life and to attract the attention of the public, the artist must constantly improve his aesthetic innovation. Therefore, when conducting art education for college students, we must pay attention to the cultivation of college students' aesthetic creativity and integrate them into their professional subject teaching.

4. Practice of art courses in computer-aided technology

4.1. Application of Auto CAD in art design education

Art design education covers a relatively large amount of content and interior decoration design is a more important branch among them. When performing such design, designers can apply Auto CAD. Architectural interior decoration design is the process of building the internal environment of the building. The design needs to be in accordance with the specific use function and environmental characteristics and refer to the relevant norms and standards to ensure the rationality of the design. Indoor environment belongs to the category of space environment[5]. It not only has all the characteristics of space environment, but also has its own particularity, that is, use value and function value. Before implementing the design plan, the designer can use Auto CAD to draw the construction drawings, so as to ensure the accuracy of the design dimensions. If you use manual methods to draw the construction drawings of the interior decoration design plan, not only the workload is large, but the designer must carefully analyze the space ratio. Once a link is wrong, it will cause serious impact. When using Auto CAD, there will be no similar situation, because when CAD drawing, all the actual
values are input, such as the living room space of 4.5m × 5.5m. When CAD drawing, the input values are also 4.5m and 5.5m, no need Proportional conversion simplifies the steps and improves work efficiency.

4.2. The application of 3DMAX in art design education
For art design education, the rendering of renderings has a very important role and is the visualization of the designer’s design concept. If you want to display various materials and lighting effects, you must use a three-dimensional model and the powerful modeling function of 3D MAX can meet this need. (1) All objects are 3D three-dimensional models, ranging from large walls to small decorative objects[6]. Through the modeling function of 3D MAX, designers only need to perform some simple operations to complete the effect in a short time Making of the graph. Walls are a key part of modeling and the following two methods can be used: One is to create a solid box for each wall in the indoor space with the aid of BOX and then use tools such as movement and capture to make all the boxes Combine them according to a certain arrangement order and use the modification tools to cut the parts on the wall that need to be recessed, such as doors and windows, etc.; another method requires the use of Auto CAD to directly import the prepared CAD plan to In 3D MAX, by squeezing, multiple walls can be generated at once. The second method is much simpler than the first method and more practical. Therefore, the second method is recommended to create walls. For some relatively simple models, it can be completed by 2D extrusion. The complicated small models can be designed by the import method. The specific method is to select the required model from the furniture model library and then directly import it into the renderings. There are many models stored in the model library, which can basically be Meet the design requirements, which can make the rendering of renderings easier.

5. Conclusion
In short, to develop students' artistic aesthetic ability is not achieved overnight, but slowly developed in the process of continuous practice and learning. The cultivation of artistic aesthetic ability covers a lot of content, involving many disciplines such as art and philosophy. In actual teaching, the majority of art educators should recognize the importance of students' artistic aesthetic ability training, analyze the characteristics of current students' artistic aesthetics, pay attention to the construction of campus culture, promote the correct aesthetic values and gradually improve students' aesthetic ability.

References
[1] Kenza Charafeddine, Faissal Ouardi. Novel methodology to determine leakage power in standard cell library design [J]. Heliyon, 2020, 6(6).
[2] Steve Bigalke, Jens Lienig. Avoidance vs. repair: New approaches to increasing electromigration robustness in VLSI routing [J]. Integration, 2020.
[3] Zubowicz Vincent N. Commentary on: Correcting of Calf Atrophy With a Custom-made Silicone Implant: Contribution of Three-dimensional Computer-aided Design Reconstruction: A Pilot Study. [J]. Aesthetic surgery journal, 2020.
[4] K.B.R. Teja, N. Gupta. Surface potential based current model for organic thin film transistor considering double exponential density of states [J]. Superlattices and Microstructures, 2020, 142.
[5] Andries Mihai, Dehban Atabak, Santos-Victor José. Automatic Generation of Object Shapes With Desired Affordances Using Voxelgrid Representation. [J]. Frontiers in neurorobotics, 2020, 14.
[6] Riccardo Zanni, Maria Galvez Llompart, Ramon Garcia Domenech, Jorge Galvez. What place does molecular topology have in today’s drug discovery? [J]. Expert Opinion on Drug Discovery, 2020 (prepublish).