Research of Computer Aided Costume Design Application with Image Processing and Drawing Software

Fei Jing*, Yu Gui
College of Fine Arts and Art Design, Kunming university Yunnan, China

*Corresponding author: feijing666@kmu.edu.cn

Abstract. Computer aided design (CAD) is a practical course in the major of costume design. In the future, computer information technology will be more mature, the use of computers is more popular. The computer technology assisted in costume design specialty can better promote the development of this specialty to follow the trend. The use of computer-aided technology in costume design can enrich the content and make the skill training more real. However, to break through the existing problems, it is necessary to make the teaching of professional courses keep pace with the development of the industry. The use of computer aided technology in primary school teaching will also bring impact from the traditional clothing teaching. We will further promote teaching reform and improve teaching quality.

Keywords: The major of costume design; Computer aided design; Clothing plate making; Computer software.

1. Introduction
With the development of science and technology, computer technology has been widely used in all aspects of people's lives, and clothing, as a technical art, finally presents real objects and turns into productivity, so the use of computer-aided design in costume design has become an essential part of the professional. Costume design major in design, plate making, and the late production is closely related to the use of computer technology, the development of computer aided design and use of improve the level of the design cycle, make costume design major into a digital stage, better able to make better on the development of costume design major role.

With the rapid development of computer information technology, it has been widely used in various links in the field of clothing: computer image design software (PS, Illustrator and other related software), clothing computer-aided production (CAD) and clothing cutting bed technology system (CAM). It is applied in the production of students' design work and works to improve the efficiency of students and improve the level of students' computer technology and the combination of art and technology between computer-aided design and the major. At present, the most commonly used majors in apparel and apparel design in domestic colleges and universities are divided into two categories: one is image processing and drawing software, represented by PS, Illustrator and AI, mainly for drawing apparel effect drawings and apparel style drawings. Second, the garment CAD is mainly the most important part of the production process, which is used for the relevant drawing and pushing plate of the garment layout.
2. Computer image aided design used in costume design specialty
Along with the computer aided design of image design in the clothing and apparel design, will be in the computer aided software and digital interactive information, for clothing renderings of the display, design drawing, fabric and colour design of intuitive related clothing involves the content of effective innovation, makes the students after the learning of this course and inspired, Skilled use of computer-aided design software and network information, design practical and artistic clothing (See table 1 for course distribution).

Table 1. Course distribution

| Number | Course Name               | Total Class hours | Practice Class hours |
|--------|---------------------------|-------------------|----------------------|
| 1      | Computer aided design    | 40                | 24                   |
| 2      | Application of apparel CAD| 36                | 18                   |

2.1. Computer aided design main software introduction
The full name of Ai is Adobe Illustrator, and the full name of Ps is Adobe Photoshop. Both of them are developed by Adobe Company, which results in their close functional layout. If you are familiar with Ps, you can use Ai quickly.

PS mainly deals with digital images composed of pixels. With its many editing and drawing tools, it can effectively edit pictures. From the perspective of function, the software can be divided into image editing, image synthesis, color correction and special effects and so on. Image editing is the basis of image processing, the image can do a variety of transformations such as zoom in, zoom out, rotation, tilt, mirror, perspective and so on. Image synthesis is to several images through layer operation, tool application synthesis complete, convey a clear meaning of the image, color is to quickly adjust and correct the color of the image of light and shade, color bias.

Ai is an industry standard vector illustration software applied to publishing, multimedia and online images. It is widely used in printing and publishing, poster book typesetting, professional illustration, multimedia image processing and Internet page production, etc., providing high precision and control for line manuscript.

The role of both seems to be used for image processing, but the main purpose is different: first, Ps mainly processing bitmap, Ai mainly processing vector. Whether the biggest difference between bitmap and vector map is affected by the resolution, vector graph is composed of path and anchor point, the main factors affecting the size of the image is the path and anchor point, its characteristic is that no matter how many times the image is magnified, the image edges are still clear, smooth and not fuzzy. The bitmap is composed of each pixel, and its characteristic is that the more magnified, the more clearly can see the pixel composition, and the consequence is that the image is more and more blurred; Second, the same size of the image, Ps save more, Ai is less, can reduce the memory. 3. Different artboard Settings. Ai can create multiple canvases at the same time, while Ps can only create one canvas; Different from clipping mask, Ai clipping mask is above the object and Ps is below the object. Ai uses the select tool to select a specific object, and Ps selects a region. 5. Layers are different. A single layer of Ai can contain multiple objects. 6. The undo Settings are different. Ai can undo for several consecutive times, and Ps can only undo for one time.

2.2. The use of computer-aided image design in costume design major
In the costume design major for rendering design, mainly on clothing renderings and clothing styles figure, clothing renderings with clear target performance clothing to painting, is the designer according to their own understanding of the clothing and envision their performance on the paper's art, the emphasis is on display after the clothes in the dressing style, characteristics such as modelling. In addition, certain background is used to highlight the atmosphere and occasion of wearing clothes, so that people can understand the designer's idea and the overall structure of the clothes in the first time. Clothing styles figure called clothing plan again, in the absence of models, fabric, color, just according
to the clothing style and structure and the modelling of structure to display their clothes, the proportion of global and local, clothing sleeves, collar and fold or provincial roads, the pocket position and the expression of structure line, making format to lay the foundation for the next step is.

In the design of clothing and apparel design, mainly divided into three forms: the first is a pure manual map rendering and design, which can show the designer personal ability of good painting skills and match colors, and to use the fabric of proficiency, technology skillfully, and so on, but it takes more time and energy the relatively; The second combination of manual and computer, we will first or rendering characters such as manually after the draw, scanned into the computer, using PS or AI software for toning, etc., can very good to perfect the pure manual drawings, remove spots, repair, modifications in the PS images of the damage, such as a stain or defective problem, Ensure the cleanliness of the picture and the perfect presentation of the light, which for the hand-painted renderings later color and effect drawing adjustment directly beautify processing, can achieve unexpected results. And the third is the use of pure computer aided design in PS or AI directly draw clothing renderings, using computer aided design software can be directly to the fabric directly onto the drawings more intuitive to see the overall design effect, but it also exist some problems, such as not too formal, for their own design concept expression, etc.

The first advantage of computer-aided design drawing is drawing fast, whether it is paste auxiliary or modify and fill color can be high speed to complete the work. In the rendering of the renderings and styles, students need to choose according to their own habits or the advantages of the software. Due to the advantages and disadvantages of Ai and Ps, both of the source files and support mutual guidance, in the design is often both software used at the same time: with Ai processing line outline, for the drawing of style drawings, with Ps processing image content is the design drawing of effect drawings. Ai is a vector drawing software, based on the object to edit because its vector capacity diagram can be infinitely enlarged without distortion, in the costume design professional can be used to draw patterns or logos. Ps is bitmap processing software, based on pixels to edit. It will be blurred and distorted when magnified. But its color is rich, editing ability is strong, mainly used in the drawing of clothing effect map and later adjustment and clothing design of the whole document arrangement.

In the process of computer aided design image, its main advantage is that you can use the layers, channels, equal parts for costume design image saving and modification, also can use cascading sewing, montage and image color filters, decorative pattern filter is a comprehensive art processing means to complete the garment is creative or be able to more clearly inspired the design of the designer, Can provide limited design technology for costume design, become an essential design tool.

3. Application of computer aided design in Clothing plate making

After the end of the design process, the most important part for the major of clothing and costume design is the production process. In the production or called this professional design type is different from other design types, according to the effect diagram or style diagram can make products. In the process of making clothes, the most important step is plate making. Plate making mainly includes plane plate making and three-dimensional cutting, both of which require smooth lines in the process of plate making, in line with the human body curve, clear numerical labeling and clear identification of the process requirements, so as to better complete the later sewing process and present the best clothing effect. In plate - making link, the most used is clothing CAD.

The Chinese name of clothing CAD is Computer Aided Design, which is the abbreviation of Computer Aided Design. Garment CAD mainly started to develop in the 1970s. With the daily progress of computer technology and network technology, garment CAD technology develops rapidly. In clothing CAD, the best combination of technology and art is realized. Although the design of clothing is abstract at the beginning, the practical function of "wearing" should be realized as long as the reappearance of the real object is carried out, which means that the specialty of costume design is the combination of art and technology. In relying on the continuous development of science and technology and art integration on the basis of the important link closely modern garment design system and industry, more traditional garment industry from fashion design to mass production, long
stay on the basis of experience, students will waste a lot of energy on the manual skills, and students in the school is only four years of study time, To a certain extent, students will be restricted to the divergence and display of creative thinking. While the clothing cad system can use computer image technology, lets the student in the computer storage in large quantities of colors and designs to select and modify, can greatly shorten the design process, what is more important in the plate making process, through the computer as a medium, can draw good output format drawing, Or will draw good layout repeatedly to correct until you want the layout, but also can be saved, recycling will greatly save the energy and time of the basic drawing clothing layout.

4. The advantages and problems of computer aided design in costume design

4.1. The advantages of computer aided design in costume design
First of all, the use of computer-aided design can make in the design process, can be more intuitive to present the design effect, but also can be anytime and anywhere as long as there is a computer can modify the design manuscript. Secondly, computer-aided design has powerful image processing technology and powerful functions. Make the work of costume design more artistic, personality is more prominent.

4.2. Existing problems
The primary problem is the lack of targeted professionalism. At present, most of the teaching materials used in the teaching process of computer-aided design software in colleges and universities are compiled by teachers with strong computer expertise, or in the past five years, there are few teaching materials about computer-aided design software in the course of clothing and clothing design. As a result, the teaching materials for clothing and clothing design majors are lack of professionalism, which leads to vague teaching by teachers and difficult learning by students. Second, computer information technology is originally required to use new technology and the use of the current new technology, but due to the relative lag of the teaching materials, students are not interested in the old assised-design technology courses.

Secondly, the lack of curriculum practice, design and production out of line. In college courses, teachers mainly teach according to the syllabus of their own courses. Often teachers assign homework is to ask students to complete the homework according to their own preferences or choose a unified theme for students to design renderings and draw style drawings. Students blindly pursue to meet the aesthetic requirements or visual effects of the teacher for this course, and rarely consider the problems in the later stage of plate making and process, which results in the lack of practical training in the course practice and the failure to connect with each other in the subsequent courses.

Finally, there is a problem: excessive reliance on computer-aided technology. As the current computer aided technology in the clothing and apparel accounted for in the design of component is more and more heavy, in the most relevant domestic clothing are the basic requirement is the electronic manuscript or direct the use of computer aided design software to map rendering and style, etc., also caused the student sometimes overly dependent on the material on the net. In the design works show fine and gorgeous, but lack of their own design ideas and ideas; At the same time, the more serious consequence is serious plagiarism, and it is difficult to form their own works and styles.

4.3. Improvement measures
Throughout the whole process, the introduction of case teaching. Computer-aided software design, as a part of clothing and clothing design, can be introduced into the course in actual competition. After design, plate making is carried out, and then production is carried out in comprehensive clothing design or related follow-up courses. Seeing the results in the actual competition can better inspire students' creativity. Make the computer aided design in the clothing and clothing design to get the intuitive application.
Computer-aided design (CAD) is a digital intelligence technology that can integrate manual technology and art. It involves artistic creation, scientific and technological level and all-round professional quality. In general, the future long-term application and development of computer-aided design in clothing and apparel design should pay more attention and improve in the field of traditional clothing and apparel design.

5. Conclusions
To sum up, although there are some practical problems in the modern clothing and clothing design, the advantages and development space of computer-aided design can not be ignored. The computer aided technology in clothing apparel professional tools, as a kind of effective application in the in the clothing and dress design major should carry on the analysis and research, can be better for the use of deep development and innovation, to improve and expand the better for the clothing and apparel design professional play a positive role in promoting.

The study of computer-aided design in the major of clothing and clothing design aims to better connect the courses and majors, better cultivate practical talents, and better combine the technology and art in clothing and clothing design, so as to cultivate real art and design talents with ideas and practical ability. Computer aided design (CAD) is a practical course in the major of clothing and costume design. In the future, computer information technology will be more mature, the use of computers is more popular. The computer technology assisted in clothing and clothing design specialty can better promote the development of this specialty to follow the trend. The use of computer-aided technology in clothing and clothing design can enrich the content and make the skill training more real. However, to break through the existing problems, it is necessary to make the teaching of professional courses keep pace with the development of the industry. The use of computer aided technology in primary school teaching will also bring impact from the traditional clothing teaching. We will further promote teaching reform and improve teaching quality.

References
[1] Li Mengxiao, On the Problems and Solutions of Computer-aided Design Courses in Design Majors, J, Popular Arts, 2015 (19)
[2] Chen Changhui, TWO-DIMENSIONAL computer-aided design M. Shanghai Jiao Tong University Press, 2001