

## The Design and Facture of the Multimedia Courseware to the Garment CAD

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**Abstract.** in order to raising the teaching efficiency of the garment CAD course. We develop the Multimedia courseware according to the characteristic of course. With the software of the Authorware, PS, SnagIt, we adopt the tree branch structure, and the interactional function of hot area and button, bringing in multimedia such as pictures, words and videos to finish the multimedia courseware. The interface is amity and the operation is simpleness which livens up the teaching process and improves the efficiency of the teaching. With the use of the courseware, both the students' learning initiative and autonomy are improved.

### Analyzing the Necessary of the Design And Facture of the Multimedia Courseware to the Garment CAD

The garment CAD is short for the garment Computer Aided Design. It combines with the technology in computer field such as computer graphics, database and network communication and the other knowledge in the other areas. It is a kind of modern high-tech to mainly help the pattern cutter to finish the patterns on the computer screen and keep the connected information in the computer's memory. As the pattern cutters' ideals can be aligned with the computer technology, it is becoming the indispensable tool to the clothing professional staffs. Nowadays, in the areas where the garment industry is flourished as Europe and America, more than 70% of the clothing companies adopt the garment CAD [1]. Whereas, the China National Garment Association also points out that the main reason of the low popularity rate in the informatization is the lack of personnel in the clothing area with the computer ability. Therefore, we should improve the cultivation for the stuff with computer skills [2]. We can come to the conclusion that learning and mastering how to operate the garment CAD is a very important learning task and to study the method to improve the teaching efficiency is valuable for the education.

Garment CAD is a practical, operational major course, a large number of practice is indispensable in the teaching process. In the classes nowadays, it takes lots of time for the teacher to demonstrate how to operate the garment CAD and it make the students have little time to operate by themselves, which reduces the teaching efficiency in the class. The problem is that there are always many students (at least 30students) in the class and only one teacher, when the teacher is directing one student face to face, the other students with the questions just can't get the help in time. Another problem is that the teacher sometimes finds that the different students ask the same questions and she have to answer them repeatedly, which may make the teacher tired. The third problem is that the students need to practice after class, if they meet with difficulties they can't get the help from the help file in the garment CAD system for the information is not Chinese and is always not easily to understand. Because the connected information which can help the students is not enough in the internet, the students can't get help form the network, either. This will reduce the student's learning efficiency. Therefore, we need to find a new method to change the present situation.

With the computer technology, we can develop a multimedia courseware to help the teacher

demonstrate the operating process repeatedly for the students. Because the multimedia courseware will not be tired as the teachers, the students can make it to repeat the teaching content time and time again until they understand and remember them completely and hope that learning hub changes from the teacher to the students can really come true [3].

## **The Design and Facture of the Multimedia Courseware to the Garment CAD**

### **A. Choosing the proper software to finish the courseware**

As the American Gerber garment CAD is widely used in the clothing factories, we choose the operation of it as our teaching contents and all the teaching activities revolve around it. When we finish the multimedia software for the Gerber CAD, the finished software also can help to develop the other software for the other kind of CAD.

Authorware is chosen as one of the main soft wares to finish the courseware. Authorware is a kind of famous software in the area of multimedia courseware development. It is the tool based on the visual flow chart which connected with all the kinds of multimedia elements such as words, pictures, videos and so on. With the various kinds of interaction such as button, hot-area, flame, it can develop lots of courseware with sundry functions [4]. It has the advantages of simple operation, strong compatibility and clear instruction which can be run in many operation systems as windows 2000 and windows XP.

In the process of preparing the multimedia materials, we use the Photoshop to finish the photo editor and SnagIt to record the screen operation. In order to finish the software, we need to prepare lots of materials, mainly are pictures which are used as the buttons, interfaces, hot-areas and so on. We use the Photoshop to make the images can be used in the software. In order to record the operation process in the screen, SnagIt is a kind of useful software which can easily record the operation process in the screen and keep them the avi. Format. The most important point is the software not only can record the operation process but also can record the voice meanwhile which makes it easy to record the teacher's explanation for the operation. This make we can develop software which can provide the students the learning environment which is familiar with normal classrooms.

### **B. The design of the courseware**

1) The general instruct design of the courseware: We adopt the tree branch structure, which show the key objects in the main interface while the other objects show in the division surface. The advantage is that the instruction of the program is very clear and the creators can design and modify the program more easily. We use hyperlinks to connect with the two interfaces which can make the teaching process more easily to control by the students and can make the teaching content systematic. When we run the software, we can easily transit among the different interfaces.

2) The teaching content design: The teaching content is very important to the teaching courseware. We choose the process of making pattern for the skirt as the teaching content. Through the real example, we can teach the students to master the basic use of the tool in the Gerber CAD. Because the teaching content is contained in the real example, the knowledge is more systematic, and the students can know how to use every tool to finish the pattern cut. Compared with the normal teaching process that we always teach the students how to use the tool dividedly, this kind of teaching method has more effective teaching effect.

3) The courseware script design: The interaction is the characteristic of the multimedia courseware [5]. When we develop the courseware, we choose the button, hot area and the flame structure to realize the interaction. When we press the button in the center of the main interface, it can enter the division surface. When we click the start button, the courseware begins to show the processes of making pattern for the skirt step by step. There are all steps in the right column of the interface in the form of the words which connected with the hot-area. There are sentences which explain every step with the hyperlink in the bottom of the interface. When we click the sentences, it can be link to another interface which explains the process in detail. This design can make the students to have the complete the initiative in the learning process. In the normal teaching, the

teacher will explain every key point for the students, but in fact, it is not needed for the students. Many students reflect that some teaching content which are easy and some content which is difficult for them are both explained by the teacher only once. So they have to ask the teacher after class. This is the main reason that make the efficiency is not ideal. But with the help of the interaction characteristic of the multimedia software, the learning process can be controlled by the students and they can use it as needed. It means that every study process is design for each student used it and this makes the learning process more efficiency.

4) The material design: The pictures and the videos are the most important multimedia forms and also is the most easily to understand. When we develop the courseware, we should make the pictures clear. The shade of the background image should be simple and elegant which can stress the main object. When we design the courseware, we make the program run in the full-screen form. Therefore, we pick up the pictures whose size is between the 100 to 300kb. It can guarantee the pictures clear and also the finished courseware is not very big. We finish the material of the interfaces and the buttons with the Photoshop and record the process of the pattern making in the Gerber CAD with the SnagIt. In order to make it more convenient to study, we record every step of pattern, and make it to a divided File, and then we import the Files into the program to finish the software. We design the interface and the running screen shot is as the fig.1



Fig 1: The interface design and the running screen shot

5) The courseware making: As the courseware contains the main interface and several division interfaces, we divide the different departments and write programs for every part of the courseware. Then we put the several parts together and finish the whole clothing CAD courseware.

This is the main process of making courseware: firstly, we create a new file, and add the Display Icon to main process line. We can import a picture to the Display Icon. Then it can be shown in the courseware. We can use this method to set the pictures for all the interfaces in the courseware. Secondly, we should finish the interaction in the process. We add the Interaction Icon to the main process line and a Button Icon to the right side of it. Then we can add the connected content to it. All the interaction of the button and hot-area can use that method. The difference is we should choose the Hot-Area Icon instead. Thirdly, we need to add the videos to the courseware and make them show. It needs to add the Flame Icon. The Flame Icon can make the videos show in order and with the help of the Button Icon and Hot-area Icon, we can make it easy to transit between different steps. At last, we add a program statement to make it easily to exit the courseware. That is main process to finish the courseware.

6) The courseware debugging: We run the courseware, find the problems exist in the program and debug it until there is no problem in it and that means the courseware is finished. In fact, when we finished it, we pack it and parcel out to the students. We let the students use it in the class and after class. When the students use the software, they find some problems and give us some suggestions from the users. In the whole debugging progress, we modify some progress sentences, and modify some details in order to make it more convenient for the students to use. In the end, we finish program is as the fig.2. The program is divided into four lays and the main interactions are buttons, the flame and the hot-areas.

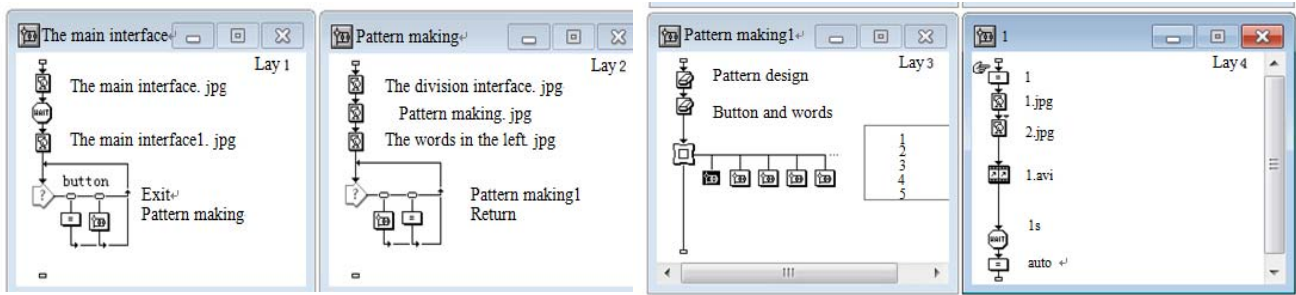


Fig 2: The finished courseware

## The Application of the Clothing CAD Courseware in the Class and the Suggestions

Through three times of teaching practices, we find a good result. We not only play the courseware in the class, but also allow the students to copy it in order to help them after class. Finally, we find that with the help of the courseware, the efficiency of learning is highly improved. According to the students' reflection and we have suggestions as follows:

Firstly, when we design the clothing CAD multimedia courseware, we should take the characteristic of the students into consideration. We should study the teaching content closely, and find out which part is most difficult for the students. We should make this part of teaching process have good interaction and be easily to learn for the students. This is very important. Because the interaction is the very important advantage for clothing CAD multimedia courseware and it should be used when it is needed.

Secondly, we could develop more courseware about the different clothing style even the other clothing CAD. The courseware about the different clothing style could help the students to master the Gerber CAD better, because the different style is referred to the different tools in the Gerber CAD. On the other side, although the Gerber CAD is widely used in the clothing line, there are also many other kinds of CAD used. So the courseware is also needed. But , we should remember that when we develop the connected courseware, we also should take the characteristic of the CAD itself.

Thirdly, when we finish the courseware, we find that if you want to finish a multimedia courseware, it needs lots of knowledge about at least three kinds of software. It is still difficulty for the teacher to develop a courseware. While, we should realize that it is best to let the teachers to develop the courseware themselves, because they know the students best. So if it is possible, we had better to develop a kind of software which can easily help the teacher to finish the courseware easily.

Although, through the teaching practice, we come to the conclusion that this courseware has been greatly improved the teaching efficiency, reducing the burden of the teachers, arouse the learning interests of the students and can get the excellent teaching result.

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