

On the cultivation of students' thinking ability in the teaching of clothing structure design

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Abstract: Based on the analysis of the current teaching situation of the course of clothing structure design, combined with the learning characteristics of higher vocational students and the working needs of enterprises, this paper explores the integration of three-dimensional cutting and drawing principle knowledge into the course content of clothing structure design, and carries out the teaching method of “teaching by doing”, so as to cultivate the students' thinking ability from plane to three-dimensional transformation, the flexible application ability of drawing principle. The problem-based reasoning ability can provide reference for the education and teaching of the course of clothing structure design in higher vocational colleges.

Key words: three dimensional thinking; Application ability; Reverse thinking

1. At present, clothing enterprises have high requirements for students' thinking ability

1.1 enterprises require students to have certain thinking ability

According to the basic ability demand model of Chinese enterprise college graduates established by Mycos based on the scans standard, the 35 basic work abilities are finally divided into five ability groups, namely, understanding and communication ability, scientific thinking ability, management ability, application and analysis ability, and practical ability. According to the report of Mycos on the demand of Chinese enterprises and institutions for college graduates' vocational skills, the following four points can be drawn: (1) the requirements of enterprises for college students' vocational skills are not “high”. (2) This year's College Students' vocational skill level is low, and the turnover rate is high due to their maladjustment in the market. (3) College Students' employment elite consciousness must be changed, and the consciousness of workers is generally insufficient. (4) Enterprises have high skills in understanding and communication, and their ability to think independently is expected. Whether from the perspective of the basic ability needs of college graduates, or from the perspective of enterprises' demand for college students' vocational skills, the cultivation of students' thinking ability is very important.

1.2 garment enterprises require talents with corresponding thinking ability

The course of clothing structure design is the core course of clothing major, and the corresponding position is the clothing plate maker, which is also the core position of clothing enterprises. According to the recruitment needs of clothing enterprises, it can be concluded that the current talent requirements of clothing enterprises for this position can be summarized as follows: (1) be able to complete the pattern production according to the design drawings or the sample clothes provided by the business department; (2) Be able to guide the pattern maker to complete the blank pattern according to the pattern, assist the pattern maker and designer to review the embryo pattern, and adjust the pattern in time in case of any modification comments or other problems during the process; (3) Be able to formulate standard sizes suitable for the enterprise according to national standards and seasonal trends; (4) Be responsible for making paper patterns with different details for fabrics of different textures, having a strong sense of cost in combination with the characteristics of various fabrics, and arranging the styles of the printed version (sample clothing purchase materials, sample clothing quotation materials).

From the recruitment needs of enterprises, it can be seen that clothing plate makers not only need to have relevant professional theoretical knowledge, but also need to be able to conduct specific analysis on specific problems of design drawings or sample clothes, guide sample clothes makers to produce sample clothes that meet the requirements, and be able to transform the design drawings from plane to three-dimensional. In this process, There are also certain requirements for the plate maker's own practical ability. In the late stage of product development, the plate maker should cooperate with the designer and the sample clothes maker to analyze and solve the problems after the sample clothes are made and give the adjustment plan. The plate maker needs to have certain reverse thinking ability and be able to find solutions to the problems. Different clothing brands have different customer groups, Therefore, it is necessary to form the size standards suitable for their own brands according to the national standards, and the garment plate makers are required to be able to flexibly use their professional knowledge, which is exactly what is difficult to achieve in the current course teaching.

2. At present, the teaching of clothing structure design is not enough to cultivate students' thinking ability

“Clothing structure design” is the core course of clothing design major, which undertakes the important task of realizing the effect of clothing design and process production. The effect of structural design will directly affect the effect of finished clothing, which is the focus of clothing major teaching. At present, the proportion of plane structure drawing course in the teaching of “clothing structure design” in

our school is relatively high, The traditional teaching method is mainly used for teaching. Students can master the drawing method through PPT and teacher demonstration. However, plane structure drawing is more abstract, and students need to have certain thinking ability in the learning process. First of all, they should be able to have a deep understanding of the drawing principles, and then master the drawing methods and be able to use them flexibly. Otherwise, the learning process will become rote learning of drawing formulas and steps, and they do not know how to carry out flexible cramming learning, so the learning effect is poor, Students lack the following thinking abilities.

2.1 lack of cultivation of thinking ability from plane to three-dimensional transformation

In the professional teaching of the course of clothing structure design, students in the early stage need to remember a large number of professional knowledge, such as human body structure, the relationship between clothing and human body, professional terms of various clothing parts, and the calculation formula of clothing structure drawing, which is dry and boring. Before the formation of three-dimensional thinking, it is easy for students to only remember and not understand in the process of drawing, and follow the teacher to carry out structural drawing, instead of one-to-one correspondence between the structural lines in the plane structural drawing and the human body parts and clothing parts, so as to establish the thinking ability of transforming the plane structural drawing into three-dimensional clothing. In the long run, It is not conducive to students' sustainable learning.

2.2 lack of cultivation of flexible application ability of drawing principles

In the process of plane structure drawing, a large number of formulas and data will be used, which need to be understood, memorized and flexibly used in order to truly master the drawing method. In the teaching process, it is found that because the learning process of plane structure drawing is long and boring, students' attention is difficult to last for a long time, and they are easy to be distracted. Finally, they often use the simplest way of memorizing by rote to memorize the drawing formula and data taught by the teacher in the classroom. However, the clothing styles are ever-changing. When encountering other similar styles, Students are unable to use the learned knowledge flexibly and solve problems.

2.3 lack of cultivation of problem-based reasoning ability

In the actual work of the enterprise, the plate making process of a garment is as follows: analysis of style drawing - structural design drawing - process flow setting - Product proofing - try on feedback - correction of template - production; In the process of garment product development, the structure drawing of a garment often needs to be adjusted many times according to the actual sample before it can be put into production. The structure design drawing often needs to be adjusted according to various problems in proofing, which requires a certain ability of reverse thinking and control of the whole process.

At present, in the curriculum of students, the course of "clothing structure design" and the course of "clothing technology production" are taught separately. After the course of "clothing structure design", students study the course of clothing technology production. In actual production, these two links complement each other and restrain each other. After the completion of structural design, It needs to be able to see the effect of the finished clothes, analyze the problems existing in the finished clothes, and then correct and adjust the structural drawing to achieve the final satisfactory effect, which can be regarded as a complete process. Separate and independent teaching makes students unable to understand the whole production process, and also unable to analyze and reflect on the results of their own plate making.

3. Cultivation of students' thinking ability in the course of clothing structure design

Through the classroom performance and teaching effect of vocational education students, we can analyze the current cognitive characteristics of clothing majors in our school as follows:

- (1) is not adapted to the learning of subject knowledge with strong logic;
- (2) the initiative and enthusiasm of subject theory learning is not high enough;
- (3) has the characteristics of adapting to image thinking; relatively speaking, suitable for "learning by doing", which can be summarized into two aspects: one is unwilling to learn in attitude; the other is unable to learn school.

In the production process of garment enterprises, structural drawing is a very important link, which is directly related to whether the products can be transformed from drawings to the products required by enterprises. In the process of drawing, it will be affected by many factors, such as fabric, season, wearing object, wearing occasion, and will be limited by many conditions, such as order requirements, brand style, customer preferences, etc. Therefore, combined with the cognitive characteristics of higher vocational students, it is necessary to transform the logical disciplinary knowledge into an image of the actual case, so that students can learn by doing, So as to cultivate students' three-dimensional thinking ability, flexible thinking ability and problem-based reverse thinking ability.

3.1 three dimensional tailoring is integrated into course teaching to cultivate three-dimensional thinking ability

In the teaching process of plane structure design course, due to the direct introduction of plane drawing method, it is more abstract and difficult to understand. Based on the intuitive characteristics of three-dimensional cutting, the content of three-dimensional cutting should

be put before the plane structure design, so that students can have an intuitive understanding. The teaching of part of the three-dimensional cutting course can be carried out first, so that students can understand the relationship between human body and clothing, how to transform plane fabrics into three-dimensional human body, and the basic principle of three-dimensional cutting plate making, so that students can establish the thinking ability of transforming clothing from three-dimensional to plane, and form a concrete concept.

The courses of “three dimensional cutting” and “clothing process design” can promote students’ understanding of the principle of clothing structure. For example, in the prototype drawing of clothing structure drawing, the prototype can be made on the platform in the way of three-dimensional cutting, so that students can understand how the plane fabric forms a three-dimensional state on the platform, and then remove the three-dimensional clothing pieces and convert them into plane clothing pieces and templates, so that students can understand how the three-dimensional clothing shape is transformed into plane templates. It will be easier for students to understand the plane structure drawing of the prototype after the production of the vertical cutting prototype. After completing the prototype structure drawing through the two drawing methods, let the students analyze and compare the prototype structure drawing results obtained by the two methods, get their similarities and differences, and summarize their advantages and disadvantages. Other styles of structural drawing teaching can also use this teaching method to cultivate students’ thinking ability from plane to three-dimensional transformation in this learning process.

3.2 integrating drawing principles into course teaching and cultivating flexible application ability

In view of the fact that students are prone to memorize drawing formulas and methods by rote, teachers should pay more attention to the explanation of drawing principles in the teaching process. When each line is made, students should be informed of the corresponding parts of the human body and clothing, and explain why to carry out structural drawing in this way, which will help students better understand and remember drawing formulas, It can also be used flexibly when encountering different clothing styles.

Taking the clothing prototype structure drawing as an example, there are Japanese cultural prototype, Japanese denglimei prototype, domestic Donghua prototype and so on. Different prototype drawing formulas and data are different, but the drawing results are similar. While explaining the textbook prototype, we can compare various prototypes together, find out their advantages and disadvantages and similarities, and use the questioning method, Let students take the initiative to participate in thinking and discussion, mobilize students’ enthusiasm and cultivate students’ ability to think actively. After working in enterprises in the future, they can also have more flexible ability and problem-solving ability.

3.3 carry out the teaching method of “integration of teaching, doing and learning” and cultivate the ability of reverse thinking

Clothing structure design and clothing process design are two inseparable procedures in the process of clothing production, and there are many mutually restrictive and complementary links. In clothing structure drawing, there are many parts that need to be drawn in combination with clothing production process. Before contacting the clothing process design course, It is difficult for students to establish a specific concept of process details. Therefore, after the completion of the structural drawing of a single garment, a garment process course of that style can be arranged to allow students to make by hand, implement the theory into practice, and form a teaching mode of “teaching, doing and integration”, so as to deepen students’ understanding and application of the knowledge they have learned.

In the teaching mode of “integration of teaching, learning and doing”, students can complete the process of “analyzing style drawing - structural design drawing - process flow setting - Product proofing - fitting feedback - correcting template”, and can convert their structural drawing into clothing pieces and make them into ready-made clothes through actual operation. After the ready-made clothes are made, they can try on and analyze and summarize the problems of ready-made clothes, Thus, the structural drawing can be further modified and adjusted to form a completed closed loop.

Clothing structure drawing is a course integrating theory and practice. It cannot be just a talk on paper. Therefore, in the teaching of clothing structure drawing, a considerable proportion of clothing technology courses should be integrated into the course, so as to form a teaching mode of “integration of teaching, practice and practice”, and better cultivate students’ problem-based reasoning ability.

4epilogue

“Clothing structure design” is the core course of clothing major. By integrating some three-dimensional cutting courses and clothing technology production courses into the clothing structure design course, students can better master the principle of clothing structure drawing and use it flexibly, and cultivate students’ three-dimensional thinking ability, flexible thinking ability and problem-based reverse thinking ability from many aspects, Achieve better teaching effect and help students’ sustainable learning.

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