

Discussion on the Teaching Mode Reform of "Product Sketch"

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Abstract—Fluent and fast sketch is one of the most direct, important and economical means for designers to express their design ideas. This kind of unarmed expressive ability is based on broad design accomplishment and solid modeling ability, and sketch is the most effective means to cultivate this kind of unarmed expressive ability. There are still some problems in the current sketch course from the aspects of students' cognition and teaching systematicness and pertinence. Based on the practical teaching experience, this paper systematically collates some teaching methods followed by putting forward some suggestions for product sketch-based teaching mode.

Keywords—product sketch; product design; teaching method

I. INTRODUCTION

"Product sketch" course is an important professional basic course for product design specialty, playing a key role in the transition from basic modeling course to basic design course, especially for the follow-up course of hand-drawn effect graph expression. It can be said that "product sketch" course has laid an important foundation for it. In the existing undergraduate education, product sketch course lacks some systematic and targeted specialized teaching materials, most of which take product sketch as a small part of the performance of hand-drawn effect. For this course, it is necessary to analyze its essential characteristics and try to use a variety of teaching methods according to the specific situation of students, so that it can really play a solid foundation role.

II. THE IMPORTANCE OF PRODUCT SKETCH COURSE

In the design course teaching of product or industrial specialty, there is usually such a phenomenon: after the teacher arranges the design topic, the first training that teachers need students to do is to provide their own design ideas, that is, some sketch manuscripts. However, the "scheme" put forward by the students is tend to be vague in shape, inaccurate in structure, and cannot well show their own design thinking. It can be seen that not only can the teachers fail to give good guidance according to the first draft, but also the students are not confident, which greatly affects the whole progress of the course.

There is a consensus that design performance is the basic skill that designers should master. The design process is not

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only a thinking process, but also a process of form creation. In this process, records play a very important role. Fluent and fast sketch is one of the most direct, important and economical means for designers to express their design ideas. This kind of unarmed expressive ability is based on broad design accomplishment and solid modeling ability, and sketch is the most effective means to cultivate this kind of expressive ability.

III. CURRENT SITUATION OF PRODUCT SKETCH COURSE

A. The Students' Foundation and Their Understanding of the Course

One of the first problems encountered in product sketch teaching is students' foundation. Because as for how does the existing art and design entrance examination require the students' sketch abilities, most of them are still some phenotypic character sketches and students are just likely to do some training for character sketches before the examination. However, after entering the university, the determination of professional direction makes them enter the stage of rapid modeling and performance of their major as soon as possible, which makes many students initially unable to find the feeling. There is also a problem of students' understanding of sketch. Because sketch course is not usually arranged for a long time, students always think that this course is just the basic training of sculpture, so that no enough attention is paid. In the aspect of homework training, it is considered that the purpose is to finish homework. Little do they know that this course plays a very important role in the whole process of professional design.

B. The Curriculum Time Setting and the Content of the Existing Teaching Materials

For the product sketch course, colleges and universities often set two or three weeks of relatively short class hours, and even many schools just put it in hand-painted performance course simply. It is hardly realized that for students with weak foundation, the negligence of sketch course will have a great impact on future design performance. In terms of textbooks, there are fewer targeted, systematic and product-related sketch textbooks. Therefore, in the process of learning, students still lack systematic practice methods and scientific guidance. Many teaching materials still need to be collected everywhere. In addition, there is a lack of detailed analysis of various styles and manifestations, which makes students relatively blind in learning.

C. *The Current Teaching Methods in Common Use*

At present, most of the teaching methods used by colleges and universities are copying and sketching. These basic teaching methods are necessary. However, in this era of information, the rapid development of education requires keeping up with the pace, and the traditional learning methods are in urgent need of adjustment and supplement. Against the context, a relatively scientific and systematic teaching mode that enables students to quickly and comprehensively understand the importance of the course and the various methods of learning within a certain period of time is needed.

IV. SUGGESTIONS ON TEACHING METHOD OF "PRODUCT SKETCH"

Based on the practical teaching experience, some teaching methods are systematically sorted out to offer some suggestions for product sketch teaching mode:

A. *Guidance*

Learning can't be separated from interest, not to mention the initiative of students. The professional level of students is uneven before they enter school. Some of them have good basic ability of modeling, but some are relatively weak in this aspect; some students have a simple understanding of the major before choosing it, but most of them are relatively unfamiliar with the major. Accordingly, the understanding of the study and development of this major is also insufficient. In this way, in the process of learning, there will be a lack of initiative. In this case, how to guide them and how to cultivate their interest in the curriculum are very important. Especially for the students in the lower grades, cramming teaching can only make them feel pressure and resistance. Only by fully mobilizing their enthusiasm and making them study in a relaxed and happy situation, can they have a positive progress and become willing to start, be diligent and willing to think and learn, which requires teachers to do their guiding work well before class. In addition to the presentation of teaching courseware, they can insert some interesting life stories of design masters and some excellent teaching videos, so that students can feel the fast, accurate and beautiful features of sketch performance, inspiring them to tell their own feelings about design, fully mobilizing their enthusiasm and creating a good learning atmosphere.

B. *Collection*

After the course guidance, students should be encouraged to take the initiative to collect excellent works, including books, pictures and text. In addition, it is wise for them to make full use of the existing network and library resources to establish their own professional database. Teachers also need some guidance in collecting methods by recommending some excellent websites, books and designers of good sketches. During this period, students should be reminded that while collecting works, it will be better to make some preliminary classifications according to the style and form of expression of the works.

C. *Exchange*

After each student has collected, extensive exchanges should be carried out. All students are encouraged to show his

or her results and analyze the collected data. In this way, a class of students is equal to sharing the resources brought by everyone. Although there are differences in the basic level of the students in the class, it is the same starting point in the activities of collecting and communicating and everyone has the opportunity to fully demonstrate their achievements.

D. *Summarization*

The link of summarization plays a connecting role, so it is very important. Here one can use the method that students make summary first and then teachers do supplement, offering some classified summaries of all collected and exchanged works.

For example, the summary can be made from the following four aspects, so as to summarize the differences of the product sketch from other forms of sketch and its own characteristics:

1) *Product sketch pays attention to the description of product structure:* In product sketch, it is not only to describe the shape characteristics of the product, but also to explain the internal assembly relationship, so as to create more in-depth product performance. At the same time, the scale dimension should be added to each specific part, which is the most obvious distinction between product sketch and the previous student sketch. It is necessary to describe objects more scientifically and rationally. Generally speaking, there will be three views in the picture, and representative parts will be selected to enlarge the details.

2) *Product sketch should be accompanied by functional introduction of the product:* In product sketch, the main function of the product will be the key part of the performance. Combined with the product's split structure, it generally uses the combination of graphics and text to make elaboration. At the same time, in some parts of the product, there will be some unique functions, including some expanded functions generated by the parts, which can be displayed on the appearance.

3) *Product sketches have different formats of picture arrangement:* Product sketch is different from that of character sketch and landscape sketch. In the picture arrangement, it is richer and has a strong sense of rhythm. Common picture arrangement forms are: radiation, surround and parallel division, that is, the nine squares format. Whatever the form of picture arrangement, it is for one purpose: to arrange the picture space rationally, so that the picture is rich, accurate and vivid.

4) *It is wise to pay attention to some techniques of picture presentation:* For example, various arrow symbols that act as "connection" or "indication"; circles commonly used in dividing space; virtual and solid lines that express various directions or weights; cartoons or exaggerated auxiliary images. The use of these little techniques is often to create a sense of "story" in the picture, so that people can not only understand the material and structure of the product from the scientific and rigorous perspective relations and data, but also understand the function and use of the product in the sense of some

storytelling pictures, so that people can get a kind of aesthetic enjoyment.

Generally speaking, for industrial design specialty, painting is a means of expressing design conception. Different from pure painting, it has obvious practicability. Product sketch pursues certain form explanatory, illustrating information about product shape, function, structure, technology, etc., and making virtual or not expressing anything unrelated to the subject of the product at all.

E. Practice

On the basis of the above links, students have a relatively comprehensive understanding of product sketch, and have also come into contact with many excellent works of different styles, so that they can really enter the practice stage. Practice can be divided into several aspects: copying product sketches, copying product photos, fast product sketches, fast product steganography and so on.

Copying excellent sketches is a common learning method. This method is often used when one learns other forms of modeling. This is the most direct and effective way to learn from other people's experience, and to exercise their own ability to observe and summarize. Of course, the purpose of copying is not just for similarity, but in the process of learning to analyze and observe how others grasp and handle the shape; how to selectively depict in deep or simple way in the processing of the picture; how to achieve logical, rhythmic and overall performance in the composition of the picture arrangement; how to make it vivid, rich and readable. Therefore, when choosing copying works, it is vital to choose different representative types, so as to improve rapidly and comprehensively in the process of copying.

For drawing the product picture, it can be said that this way is in line with the characteristics of modern people's learning. The emergence of various digital products makes it very convenient to record images. At the same time, the perspective relationship has been shown clearly in space. Photographs have also replaced the eyes and the brain to solve the problem of converting our vision into images. The ability of students to grasp the whole and control the layout of the pictures, as well as the ability of measuring the scale with the naked eye can be trained and improved by facing pictures.

Fast product sketch is a practical method to test individual's early learning. Only through a large number of sketch practice, can students translate some of the problems they see, hear and analyze into their own experience. Before drawing, the products should be carefully observed and comprehensively analyzed. In the process of drawing, it is necessary to be conscientious and bold, and concentrate on it. Repeated description of a product from different angles and different ways of expression should be carried out so as to exercise the accuracy and speed of the description.

For fast product steganography, after copying and sketching, some steganography training should be properly carried out. In this way, it can enhance personal understanding of the physical structure of the object, and can more deeply feel and remember various experiences in order to achieve the consolidation effect.

F. Comment

The commentary link is carried out by teachers according to the students' practical work in the early stage. Timely comment can help students know about the problems in their works, and also see the advantages as well as disadvantages of other students, so as to have a more comprehensive understanding of their own works. In the stage of homework comment, it is suggested that encouragement should be the main method to affirm the progress of students supplemented by pointing out their deficiencies in a euphemistic way. At the same time, arranging more demonstrations of excellent students' homework will be helpful to improve students' enthusiasm for learning from each other.

G. Re-practice

After the commentary, it is needed to make further practice. According to their earlier practical works, the teachers' opinions, the students' opinions and their new understanding, students can then carry out sketching and steganography training, which will improve the speed of progress and make targeted training.

V. CONTINUITY OF "PRODUCT SKETCH" TRAINING

At the end of the course, it is important to clarify another feature: the continuity of the product sketching course. In the few weeks of intensive training, the students have improved in different levels of sketching. This is the first thing should be sure. But the training of the sketching course is not finished with the end of the course. It is necessary for the students to understand that the improvement of the product sketching level is not a one-off event. Only by practicing for enough quantity and persisting for a long time, can they gain some good effect. Therefore, it is necessary to cultivate the training of product sketching into a habit and persevere in it.

VI. CONCLUSION

Product sketch is an important basic course for product design or industrial design specialty. It not only requires students to use various lines to express and record the shape quickly, but also, more importantly, to express the design ideas and concepts quickly and accurately. Its study will pave the way for future professional courses and lay a good foundation for students to become a qualified designer.

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