

# Research on the Development and Talent Training Mode of Engineering Industrial Design

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**Abstract:** Domestic industrial design majors are divided into engineering direction and art direction. Engineering Industrial Design generally lacks characteristics and advantages, and its developing prospect is worrying. Starting with the analysis of difficulties, this paper finds the main causes of the problems, puts forward the development objectives of Engineering Industrial Design and the talent training mode that can tap the advantages of the students, and tries to explore the path of development for Engineering Industrial Design.

**Keywords:** Engineering Industrial Design; Talent training mode; Cultivation of practical abilities

## 1. Dilemma of development in Engineering Industrial Design

Major of Industrial Design focus on the shape, materials, structure, color, surface treatment and other aspects of mass-produced industrial products<sup>[1]</sup>. As is known to all, domestic industrial design majors are divided into two categories. One is art industrial design, which recruits students with art expertise. In universities, it generally belongs to the school of art or the school of architecture, focusing on the cultivation of aesthetic modeling design abilities. One is engineering industrial design, which recruits ordinary high school science students. Generally, it belongs to the school of mechanical engineering, focusing on the comprehensive design ability of industrial products.

However, due to various historical reasons, there are too many industrial design majors in universities, the number of graduates far exceeds the market demand, and the quality of talent training is also far from meeting the requirements of enterprises. Therefore, on the one hand, a large number of graduates are difficult to obtain employment, on the other hand, a large number of enterprises can not recruit suitable talents. For engineering industrial design, this phenomenon is particularly serious. After graduation, most students change careers or take the postgraduate entrance examination. It is almost an inevitable choice.

## 2. Analysis of problem causes

A closer look at the training programs of engineering industrial design majors in colleges and universities shows that there is a separation in the curriculum. On the one hand, there are a large number of basic courses of mathematics, physics, chemistry and mechanical engineering, on the other hand, there are a large number of professional courses of art design. In the process of training talents of industrial design majors in some colleges and universities, The design is completely in accordance with the model of art colleges, without considering the characteristics of engineering<sup>[2]</sup>. Students generally respond that these two courses do not intersect. If they are engaged in the profession of industrial designer during employment, they will not use mechanical knowledge at all, and their art skills are trail of art industrial design graduates; If they are engaged in mechanical design, they will not use art design skills at all, but their knowledge and skills in mechanical design are not as good as those graduated from mechanical manufacturing and automation. As a result, neither side has an advantage. Without its own competitive advantage, the employment rate naturally can not go up.

In the final analysis, the problem lies in the school training level. Engineering Industrial Design students have their particularity. They generally have no art skills and poor foundation of modeling design, but their advantage lies in good mathematical skills and strong logical thinking ability. Compared with art students, they have stronger ability to find, analyze and solve problems. As teachers, we should strive to give full play to students' potential, develop strengths and avoid weaknesses, pay attention to the cultivation of students' comprehensive quality, innovative thinking and practical ability, explore the advantages of Engineering Industrial Design students, and create the core competitiveness of students' future employment.

## 3. Training objective design of Engineering Industrial Design

Different from the training objectives of art industrial design, engineering industrial design specialty should meet the requirements of national development, cultivate firm political ideals, have a high sense of social responsibility, moral quality, solid theoretical knowledge of industrial design specialty, master professional skills. High quality applied product design talents should have active innovative thinking and rich humanistic heritage, be able to engage in industrial product modeling design, function design, three-

dimensional virtual simulation design, user and market research, user experience design, new product development and testing, cultural and creative product design, interactive interface design or home design in the design department of enterprises and institutions, and have a certain comprehensive and innovative way of thinking. In addition to the above, they also should have team spirit and strong practical ability so that they can meet the needs of regional economic and social development.

Five years after graduation, engineering industrial design graduates are expected to become the technical or management backbone of product design, modeling design, interaction design, user research and other positions in manufacturing enterprises, Internet companies and other design companies.

## **4. Research on the training mode of industrial design talents in Engineering**

### **4.1 Building a multi-dimensional talent training model suitable for engineering industrial design students**

In order to tap the potential and advantages of engineering industrial design students, it is suggested that the talent training model includes four areas: basic design skills, display and performance ability, innovation and entrepreneurship ability, professional quality and ethics. Among them, basic design skills include hand drawing expression ability, computer model ability and graphic design ability; Innovation and entrepreneurship ability includes analysis and planning ability, logical thinking ability, market and user research ability, product operation ability and creating social value; Professional quality and ethics include teamwork ability, coordination and communication ability, attitude and habits, integrity, sense of responsibility and values, and assess students' level from multiple dimensions.

### **4.2 Setting multi-dimensional practice links in training mode**

It is necessary to organically combine science and technology with art, and connect the two parts of curriculum content through the program practice of project-based teaching. For example, adding project practice credits, including credit recognition of discipline competitions, enterprise projects and studio projects; setting up more open classes including project-based teaching, small group teaching, exploratory teaching and heuristic teaching; increasing the credits for practice in the training program, and letting students integrate science, engineering knowledge and art knowledge in the design projects of mechanical products.

### **4.3 Increasing the training of innovation and entrepreneurship practical ability**

It is necessary to set up innovation and entrepreneurship courses, encourage students to conceive innovation and entrepreneurship projects, build an innovation and entrepreneurship incubation base for college students, and give some financial support. With the goal of cultivating students' innovative thinking and design ability, we can carry out bold exploration and practice, and form a characteristic professional talent training mode combining tutor studio and student studio with improving students' innovation and practical ability<sup>[3]</sup>. Teachers and students jointly build a design studio to undertake various three-dimensional design and graphic design projects, so that students can improve their ability while practicing.

### **4.4 Vigorously expanding university-enterprise cooperation**

Universities can establish cooperative relations with surrounding enterprises and carry out a variety of university-enterprise cooperation modes. For example, sign the training base agreement, send students to the enterprise for internship and training every year, arrange students to participate in various design projects of the enterprise, or hire front-line designers as external teachers to teach in the school, so as to bring professional design guidance to students. It can evidently broaden students' horizons. Strive to promote the sharing of school and enterprise resources, and learn from the requirements of enterprises for industrial designers to establish and improve the teaching system of industrial design specialty. Help students improve their comprehensive ability in an all-round way through university-enterprise cooperation.

## **Epilogue**

Engineering Industrial Design integrates two university disciplines of technology and art, which is both a challenge and an opportunity. To help students tap their own advantages, teachers should start with improving their practical ability and comprehensive quality, so that students can have the ability to find, analyze and solve problems, and improve their all-round strength, so as to find a suitable development direction and walk out a new advanced road.

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