Exploration and Practice Based on Undergraduate Training Mode of Packaging Engineering

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Abstract. The training mode of undergraduate for packaging engineering is explored and practiced usefully in Beijing Institute of Graphic Communication (BIGC). Packaging engineering has developed practical training program and teaching mode for packaging engineering has been developed, and the training mode of "double training plan" and innovative business has been practiced and achieved. Undergraduate has grasped the theoretical knowledge firmly, owns the professional and practical skills of analytical problems and resolution problems, and enhance comprehensive quality of working in printing and packaging industry.

Training Program

Training Objective and Characteristic

The training aim of packaging engineering in BIGC is application-oriented advanced talents with comprehensive ability of packaging engineering and innovative spirit. Based on internet plus background and the orientation of capital function of Beijing city, the major characteristics of "the combination of packaging technology and intelligent technology" and "the combination of packaging system design and art design" have been formed.

Curriculum Setting

Theory Courses. Professional courses are divided into the two parts of compulsory course and elective course. The elective course is set up for packaging technology and design and intelligent packaging, which adapting to different training direction and meeting different requirements from undergraduates.

Compulsory courses include packaging materials, packaging structure design, graphic information processing and replication, packaging and printing technology, transport packaging, packaging technology, packaging design, packaging information detection and processing technology.

The elective course for packaging technology and design include packaging testing technology, packaging CAD, packaging machinery introduction, packaging standards and regulations, packaging management, graphic design.

The elective course for intelligent packaging include introduction of packaging things internet, anti-counterfeit packaging technology, logistics technology and management, function structure intelligent packaging technology, intelligent material packaging technology, and packaging radio frequency identification technology.

Practical Courses. Course design includes packaging materials course design, packaging structure course design, graphic information processing and reproduction course design, packaging and printing technology course design, packaging and decoration course design, packaging information detection and processing technology course design.

Professional skills training includes sketch and color basic training, packaging design basic
training, packaging innovation training, packaging design comprehensive training.

Practice includes the training of packaging printing skills in the training center of BIGC. Comprehensive practice is the one of packaging printing production practice, packaging design competition, scientific research and experiment.

Teaching Mode

Teaching

Experts, scholars, business leaders, managers, and technical experts are invited to teach a part of content in classroom education, which reflects not only theoretical and basic knowledge, but also forefront of knowledge, demand of market and production. For example, the editor Dr. David of packaging technology and science is invited to teach transportation packaging. Through the teaching from foreign experts, undergraduate know the overseas’ teaching style and obtain information of foreign goods stacking packaging and transport packaging, which greatly improve the enthusiasm and initiative of undergraduate.

The returnees of of-campus staff is invited to hold lectures irregularly, so undergraduate further understand one aspect of the knowledge and know the outside world of campus, which effectively complete the classroom teaching, expand the horizons of students and enrich undergraduates’ information.

Practice

The practice includes course experiment, comprehensive practice and production practice and so on. Course experiment is arranged in the main course, so undergraduate are not only familiar with the use of relevant equipment and can promote the understanding of the theoretical knowledge, but also train the undergraduate’s operation ability. Comprehensive practice is conducted in the way of course design, which can improve undergraduate to analyze more systematically problem, put forward solution with knowledge and train undergraduate comprehensive ability initially. The undergraduate are arranged in production practice, which help undergraduate to approach to production reality and obtain the actual production skills. In addition, production practice can train undergraduate skills of combination theory with practice, use theoretical knowledge to guide production practice, and train the professional skills and quality of printing and packaging industry.

Graduation Thesis

The graduation thesis includes topic selecting, propose a thesis and expound its feasibility, interim inspection, graduation reply. The innovative training mode of the packaging engineering graduation thesis in our university will be embodied in the different aspects as follows.

Firstly, according to the directions of postgraduate entrance examination, enterprises and institutions of employment and entrepreneurship, undergraduate will be arranged to complete the different kinds of graduation thesis. The undergraduates who will take postgraduate entrance examination need to take part in the scientific research. The undergraduates who will be employee need to practice in the enterprise for 2 months to be familiar with the enterprise production. For the students with the goal of starting a business, they need to practice in the enterprise for 2 months and participate in related training. After the classification of the whereabouts of undergraduates, the undergraduates can choose a specific set of topics.

Secondly, in the stage of graduation thesis defense, not only the teachers were actively involved, but also the relevant enterprises were invited to participate in the reply of undergraduates. Teachers will ask some theoretical knowledge and professional knowledge. Business leaders ask the perspective of the market and business issues.

Thirdly, school-enterprise cooperation mode was introduced in packaging graduation design exhibition, which include packaging professional who are responsible for graduation design exhibition, and enterprise is responsible for packaging design competition. The packaging design from undergraduate should pay attention to the actual, and the design works must be achievable and
productive. In the process, undergraduates are trained to change the role and have the courage to do and preparation of thought and skills to work. For example, in 2016, Yinchuan Fubon Company set up contest about packaging design, which deepened the undergraduates’ understanding of packaging of liquid dairy products.

**Training Mode of “Double Training Plan”**

The training mode for undergraduates from packaging engineering is “double training mode”, which is the combination of training plan in overseas university and other university in China or training plan in Chinese Academy of Sciences. Some outstanding undergraduates are selected to learn in foreign universities with printing and packaging major and design art major for a period of one year. These training improve the undergraduates’ major knowledge and skills and cultivate their international perspective. At present, some of the outstanding undergraduates have successfully completed their courses in Taiwan University of Arts, Hangzhou University of Electronic Science and Technology, Tianjin University of Science and Technology.

Some outstanding undergraduates are selected to do their thesis in Chinese Academy of sciences every year. Some outstanding undergraduates from packaging engineering are selected to do research project issued by China academy of sciences, which can improve undergraduates’ ability of scientific research and promote their innovative scientific spirit. In practical training plan, the undergraduates obtain the passion of pursuing scientific exploration, interest of engaging in scientific research and enthusiasm and initiative. Therefore the number of students to apply for graduate and post-graduate studies and go aboard in postgraduate school increased significantly.

**Innovation and Entrepreneurship Training Mode**

**Provide Packaging System Design Scheme for Enterprise**

The undergraduates apply the knowledge learned in school to do the innovative design for enterprise products packaging. So the purpose of learning achieves, and undergraduates can combine the market and actual production of enterprises. For example, some undergraduates provide the packaging design for Beijing time-honored "Neiliansheng Shoes", "Eight Pieces of Beijing" and other products. These packaging system designs embody Chinese characteristics and the characteristics of the product in the selection of packaging material, the creation of design elements, the cultural heritage, the innovation structure of packaging box, and the graphic and color of packaging, which obtain the recognition and adoption by the relative enterprise.

**Developing Creative Spirit of Entrepreneurship in Contest**

Undergraduates are encouraged and guided to take part in a variety of business competition in order to cultivate their entrepreneurial awareness. In the course of competition, Undergraduates will organically integrate their knowledge with business mode, market demand and national industrial policy, which improve the overall quality, firm and indomitable character, and market ability.

For example, Yang Yuyi from packaging engineering joined in the first national Entrepreneurship Challenge in 2016. She meets the graduates and undergraduates from different universities and Major in China while she knows some companies with mature projects.

Through the challenge contest, she deeply understands that entrepreneurship is not only a business plan, the most importance is to need more firm and indomitable will, team spirit and ability, the unknown fear, the courage of challenge, and the vitality of quality of never-give-up.

**Summary**

The practical training program and teaching mode for packaging engineering are developed, and the "double training plan" training mode and innovative business mode are conducted. The better teaching results are achieved. Undergraduates grasp the theoretical knowledge firmly, own the professional and practical skills of analysis of problem and problem-solving and practical ability, obtain comprehensive quality of working in printing and packaging industry.
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