Research on the Innovative Training Teaching of Design College Students Based on the Concept of Crossover Innovation

Xiaocong Hu

Xiamen University of Technology, Xiamen, Fujian, 361024, China
Corresponding author. Email:Xiaocong56@sohu.com

ABSTRACT

The innovative training of design majors needs to broaden their professional vision and explore more systematic and comprehensive innovative teaching methods. By introducing the concept of crossover innovation, this paper puts forward some teaching strategies, such as focusing on the overall situation, carrying out project selection in detail, seeking common ground while reserving differences, establishing innovation team step by step, learning from other mountains, using innovation methods in different fields, and dynamic tracking and interactive display of innovation achievements. Crossover innovation is conducive to cultivating students' ability to integrate multiple knowledge and resources, enhancing the sense of teamwork, and improving the quality of innovation training and teaching.

Keywords: Crossover innovation, design studies major, innovative training projects, teaching reform

1. INTRODUCTION

The practice of College Students' innovative training is an important measure for the reform of talent training mode in Colleges and universities. This project-based innovative practice mode enables students to go through systematic and comprehensive innovative training and training, so as to cultivate innovative thinking, exercise innovative ability and improve innovative quality. [1] In the era of diversified development of social innovation, the innovation practice of design major is facing unprecedented challenges. On the one hand, the boundary of design science is constantly expanding, and it will be difficult to deal with the increasingly complex design problems only relying on the knowledge of a single professional field. Innovation training needs to broaden the professional vision and explore more dynamic and comprehensive innovation methods; on the other hand, design college is facing more challenges How to attract teachers and students to focus on innovative training projects and stimulate participation enthusiasm is the key problem to be solved in current teaching practice. Therefore, the innovative training of design major should try to introduce the practical strategy oriented by the concept of crossover innovation, and think about the specific practical methods from the aspects of project selection, team building, innovative methods, and achievement management, so as to cultivate students' ability of cross-border integration of knowledge and resources, enhance the sense of team cooperation, and improve the quality of innovative training teaching.

2. THE CONNOTATION OF CROSSOVER INNOVATION

Cross border innovation is to integrate and enlighten each other by introducing innovative thinking and methods in different fields, so as to realize the transformation of design innovation from single from nothing to diversified from existing to existing. Such thinking mode can produce huge explosive power of thinking innovation in a short time, and get economic benefits and public recognition. [2] "Span" is the premise of innovation and a kind of breakthrough courage. The larger the span, the more resources available for innovation, and the more likely it is to produce unexpected results. From the successful use of cross-border innovation cases, we can find that the "boundary" in cross-border innovation shows different dimensions of connotation, which can point to cross industry, cross specialty, cross method, cross culture, cross time and space. In other words, cross-border innovation is a design way to find and solve problems from multiple perspectives, which is not limited to a certain fixed operation paradigm, but based on the actual situation In order to derive new logic and value from the connotation of design results, the actual innovation requires the integration of advantageous resources from different aspects.

3. PROBLEMS IN THE PRACTICE OF INNOVATIVE TRAINING OF DESIGN MAJORS

3.1. Insufficient Attention to Ideological Understanding

For a long time, applied technology education has been emphasized in the undergraduate teaching stage of design major. Teachers and students generally believe that scientific research training should be the task of graduate students, and participating in professional competitions is the best way to test the level of Applied Technology and reflect innovation ability. Therefore, they are unwilling to invest too much energy in extracurricular research projects such as innovation training, and the project results often fail to meet the expectations In addition, most students of design major come from art candidates, who lack systematic training of scientific research methods, while innovative training projects need to complete a series of text materials from application to conclusion, such as project application, mid-term inspection report, and conclusion report, which is similar to teachers' vertical courses It is easy for design students who are used to paying more attention to technology than theory;

3.2. Lack of Breakthrough Consciousness in Project Implementation

The key to innovation lies in Teachers' guidance and students' knowledge vision. As we all know, the innovation of design major must be closely linked with production practice to adapt to the development trend of the industry. However, some teachers lack of enterprise practice experience, do not grasp the development trend of Design Frontier in time, and there are no rigid requirements for the work responsibilities of enterprise tutors in the process of guidance. It is often difficult to really implement the school enterprise joint guidance, and it is also difficult for students to make a breakthrough in their innovative practice. In addition, although the design specialty itself should reflect the characteristics of interdisciplinary, but in recent years For example, the topics of visual communication design are mainly product packaging and book design, the environmental design is mainly interior design or landscape design, and the product design is mainly living appliances. Therefore, there are few crossover topics involving the integration and development of innovation resources, and there are few bright innovative achievements, which inevitably leads to the misunderstanding that students' participation in innovation training projects is almost the same as the completion of course assignments.

3.3. Lack of Tracking Mechanism in Practice Management

At present, the development cycle of College Students' innovation training project is usually one year. In addition to the mid-term examination, the rest of the time is mainly arranged by the students themselves. After the project defense is passed, the research will be terminated immediately. If there is no necessary process tracking mechanism, the temporary student team is easily distracted by other things, so that there is no real progress after the project is established, and it is not completed in a hurry until the eve of the defense. This research process is certainly not solid, and the value of innovative achievements will be unsatisfactory. For those innovative achievements with application value, we should pay attention to the promotion, transformation and continuous research and tracking work after the conclusion, because only through different channels to show the innovative achievements to the society, and constantly improve the innovative achievements according to the feedback information, can we get the opportunity of industrial transformation, and students can really get the sense of innovation achievement, and encourage the team to continue to work on the project The results of the research are more in-depth.

4. INNOVATION TRAINING STRATEGY FOR DESIGN MAJORS BASED ON CROSSOVER INNOVATION

4.1. Start the Project Selection with a Big Scope and Accurate Detail

Topic selection is the starting point of College Students' innovation training and determines the development direction of innovation research. Einstein once said: "it is often more important to ask a problem than to solve it." Because asking questions requires rich knowledge, keen insight and creative imagination, in the stage of topic selection of College Students' innovation training, teachers should consciously cultivate students' ability to find and put forward problems independently, but at the same time, they should also consider the feasibility of topic selection and the application value of innovative achievements. Therefore, the practice should follow the strategy of topic selection of focusing on the big and starting from the small. In this stage, teachers should guide students to use databases to retrieve innovative achievements in relevant design fields at home and abroad, find interested directions by crossing different professional fields or life phenomena, analyze existing achievements and sort out the reasons behind them Innovative thinking and methods, put forward the initial intention of innovation; detail is to guide students to further lock in specific problems from the macro perspective, to avoid giving up halfway because the

topic is too broad, beyond the students' actual innovation ability and technical conditions. The author found that many students in the process of brainstorming can indeed produce many topics with good research value, but due to lack of experience, it is unable to fully predict the difficulties in the implementation process. At this time, teachers should focus on discussing the feasibility of the project with students from the innovative technology route, schedule and other implementation links, so as to help students establish a department to solve problems Thinking in a unified way, writing project application carefully, and making clear the implementation plan of each stage of the project step by step. For example, in the provincial innovation training project "campus paper souvenir design" directed by the author, the teacher and the students only decided to take the campus cultural and creative products as the general direction of topic selection. Then, according to the market research and analysis of creative products, combined with the professional background of team visual communication, as well as considering the production process, product cost and other factors, the students finally chose the more familiar ones Paper souvenirs as a specific topic, and through the combination of students' campus landscape hand-painted with different types of paper, a series of characteristic campus souvenirs, such as postcards, paper fans, paper cups, pen holders, paper ornaments, have been successfully derived.

4.2. Seek Common Ground While Reserving Differences, Build Innovation Team Step by Step

Innovation team is the core engine of innovation training. Team building includes two aspects: teacher team and student team. A reasonable innovation team should integrate people with different knowledge, skills and experience to form an innovation community of seeking common ground while reserving differences. In terms of teaching staff, industry experts from design enterprises and professional teachers in the school are invited to jointly guide innovation training, and a normalized interactive mechanism is established. Because design innovation is the whole process of innovation, not only to be able to put forward innovative ideas, but also need to be able to use appropriate methods to achieve innovation, and control the costs in the innovation process, improve the transformation rate of innovative achievements. Professional teachers on campus have rich teaching experience and are familiar with the thinking characteristics of students. They should focus on the progress management of the student team and cultivate their systematic and innovative thinking. Industry experts should form complementary advantages with professional teachers on campus, and use their rich practical experience and cutting-edge technology to provide practical guidance for the implementation of innovative projects and the implementation of achievements, so as to ensure the

effectiveness of innovative achievements It has the best practical value. In addition to regular face-to-face guidance, the interaction with industry experts can also invite industry experts to participate in the Wechat group of the project team, and communicate the solutions in real time through graphics, voice and other ways, so as to solve the problems in the innovation process in a timely manner. In the aspect of student team, encourage cross department and cross specialty students to form a team. Students with different knowledge background will bring diversified innovative perspectives to the team. At the same time, it can cultivate the sense of team cooperation among students of different majors, and increase the opportunities of mutual learning and skill exchange. However, teachers should determine students with strong sense of responsibility and innovation ability as project leaders according to the comprehensive quality, interests and learning ability of project applicants. [3] In addition, in order to continue to carry out in-depth research, it should be advocated to gradually set up an innovation echelon with division of work and cooperation by students of different grades, so that students of lower grades can participate in the projects of students of higher grades, which can not only play the role of helping and leading students of higher grades, but also may collide with new innovation sparks in the process of participation, forming a series of innovation projects. For example, the author has directed two provincial innovation projects "campus corner space rest landscape design" and "university campus border landscape innovation design". On the basis of the previous project research data and work experience, the junior students derive the innovative ideas of campus border landscape belt from participating in the innovation practice of campus corner space, and integrate the experience of the previous project The results show that the systematic solutions for the overall improvement of the point, line and surface of the campus landscape have been given, which have been highly praised by all departments of the school.

4.3. Learn from Each Other and Use Different Innovative Methods

Innovative methods can be used to help people find new ideas or solve problems. Through innovative methods, individual or group creativity will be supported. [4] Different innovation methods have different innovation principles, rules and problem-solving logic. Innovation methods can inspire innovative thinking to some extent. If innovation only adheres to several methods commonly used in the specialty, then innovative thinking will be limited. At the same time, innovation is not achieved in one move. When students are faced with a large number of uncertain factors, how to find innovation opportunities and reflect a certain cutting-edge value needs to be good at finding the appropriate path from different innovation methods, and even boldly learn from other professional innovation methods, so as to guide thinking towards

innovation goals. Therefore, teachers should first guide students to pay attention to new ideas and methods in the field of cutting-edge design, such as emotional design, narrative design and service design, be familiar with the operation mode of different methods, and master the application related auxiliary tools. For example, in the guidance, the author will ask the students to master a variety of interactive analysis methods commonly used in the field of service design, such as questionnaire survey, user interview, and AHP, and be able to use visual analysis software such as MindManager, SPSS, questionnaire star, and QlikView in the process of analysis, which can not only promote the students to actively learn the analysis methods in the frontier field, gain new professional knowledge, but also promote the students to learn more It is enough to form a combination of quantitative and qualitative preliminary analysis to effectively improve the scientificity and rationality of project innovation. Secondly, encourage students to use innovative methods for reference, break through their own professional limitations, and strive to seek new ideal solutions for design innovation from different perspectives. For example, the provincial innovation project "university campus bulletin board design" directed by the author, the object of design innovation was originally the most common campus environment facilities. At the beginning of the topic selection, students thought that they could only make some changes in the shape, and the value of innovation was not high. But by introducing the "TRIZ innovation method" of the former Soviet Union in the field of mechanical design, using the contradiction matrix analysis chart of TRIZ and the principles of division, merger, nesting and other inventions, it helps students clearly define the main problems in the design innovation of bulletin board, establishes a coherent logic of innovative thinking, and finally realizes a new campus bulletin board with rotatable layout and multi-function integration.

4.4. Dynamic Tracking and Interactive Display of Innovative Achievements

Results tracking and display is an important part of innovative training project management. On the one hand, the purpose of achievement tracking is to inspect the completion of innovation training tasks in real time; on the other hand, it is to give an objective and appropriate evaluation of the project in time, analyze the reasons, and put forward targeted modification suggestions. The so-called dynamic tracking requires teachers to pay real-time attention to the progress of innovation projects, decompose the project process into several stages, and check the phased results in a flexible way. First, teachers and student teams should work together to develop a project schedule, refine the task indicators of different time nodes, and give the corresponding evaluation criteria. Students are required to do a good job in weekly project records or guidance records, so as to urge the student team to carry out innovative projects in strict accordance with the

requirements. Second, project progress reports should be held in stages, with the help of Internet tools, such as QQ group Chat, wechat meeting, etc. The process of reporting is mainly based on students' self-evaluation, because students are the specific executors of the project. They are very clear about the achievements and problems in the process of project implementation. Self-evaluation is conducive to comprehensively reflect on the shortcomings of innovation projects and make timely adjustments. The interactive display is to better promote innovative achievements. In the past, the display of innovative achievements was mainly carried out in the school in static ways such as design model, text, display board and so on. This kind of display mode lacks the communication and interaction with the audience, the scope of information dissemination is very narrow, and the students' sense of innovation achievement is not strong. In the era of mobile Internet, new technologies such as scene roaming, GIF animation and even online VR interactive display should be used for the display of innovative achievements, so as to actively explore the way of display on the Internet platform, so as to expand the publicity effect and strive for more resources for the transformation of innovative achievements. For example, the provincial innovation project "mini home space design" directed by the author has produced GIF animation demonstration of changeable furniture products in the scheme conception stage, which more intuitively illustrates the multi-purpose characteristics of furniture in mini space; in the whole case display stage, 360 ° virtual interactive animation has been produced, so that the audience can click the scene animation on the Internet in real time to visit the indoor space, adding the audience in the interaction The fun of the browsing process.

5. CONCLUSION

British design educator Anjelik Chetpary once said: "the comprehensive use of knowledge of various disciplines will be the inevitable trend of design innovation in the future." Only by constantly breaking through the thinking pattern, transcending the limitations of traditional disciplines, departments and specialties, and actively integrating professionals in different fields to work together, can we absorb professional knowledge in various fields, deepen the thinking and exploration of design innovation, and comprehensively improve the quality of innovation training process and the value of results. As an important platform for colleges and universities to carry out "second classroom" teaching, the key to attract students to actively participate in innovation training project is to be able to learn something. Teachers must constantly sum up the teaching experience of innovation training, make students be clear of their dominant position in the process of guidance, cultivate the ability of independent exploration, independent analysis, independent evaluation and independent discussion, [5] and the ability of integrating knowledge in other fields and

reconstructing their own knowledge system. [6] At the same time, we should constantly explore the promotion methods of innovative training results and publicize the value of innovative training, so as to build a systematic innovative training mode which is obviously different from the daily classroom teaching, and make it an important "incubator" for the innovation of design major.

ACKNOWLEDGMENT

REFERENCES

[1] Xin Chen, Practice and thinking of College Students' innovative training project, Experimental technology and management, 34(06) (2017)29–31. DOI: 10.16791/j.cnki.sjg.2017.06.008.

[2] Hui Li, From "establishing boundary" to "breaking boundary" -- exploring the inner logic of design thinking, Journal of Nanjing art institute (art and design edition) (06) (2011)165–166. DOI:

[3] Rui zhang,Dongmei wang, Research on the whole process management of College Students' innovative training project, Experimental technology and management, 32(07)(2015)9–12. DOI: 10.16791/j.cnki.sjg.2015.07.003.

[4] Aiqin zhang,Hong chen, Research on the application of innovation methods to promote the promotion of independent innovation ability, Scientific research, 34(05)(2016)757–764. DOI: 10.16192/j.cnki.1003-2053.2016.05.016.

[5] Zhi liu, Explore the cultivation mode of independent innovation ability of art design major students, Higher Education in China, 17(2014)60–61. DOI:

[6] Liyin yao, Yong guo, Chunyan li, Lizhen wang, Research on the ability structure of applied talents in local comprehensive universities, Educational theory and practice, 35(24)(2015)8-10. DOI: