

Research on the Talent Cultivation Model of Product Design Major in Private Colleges and Universities Driven by Mass Entrepreneurship and Innovation

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ABSTRACT

Objective: Taking the talent cultivation of product design majors in private colleges and universities as the research object, this paper analyzes the problems existing in the current talent cultivation mode of product design majors in private universities, and constructs a talent cultivation mode for product design majors in private colleges and universities that adapts to the background of mass entrepreneurship and innovation education. **Methods:** This article adopts a combination of qualitative and quantitative research methods to deeply explore the teaching system, practical teaching, and school enterprise cooperation of product design majors in private universities. It comprehensively examines the current situation, existing problems, and causes of the cultivation of entrepreneurial talents in product design majors in private colleges and universities. **Results:** The study found that the construction of an innovative curriculum system, the strengthening of practical teaching, and the deepening of school enterprise cooperation are key factors in improving the quality of talent cultivation. This article proposes a series of targeted improvement strategies and suggestions from the aspects of curriculum system innovation, teaching method reform, practical teaching strengthening, deepening of school enterprise cooperation, innovation of evaluation mechanism, and integration of entrepreneurship education, aiming to build a more scientific and systematic talent cultivation model to meet the new demands of social and economic development for product design professionals. **Conclusion:** By optimizing the talent cultivation mode, students' innovative spirit and entrepreneurial ability can be effectively enhanced, providing new ideas and practical guidance for the development of product design majors in private colleges and universities.

Keywords: *Mass entrepreneurship and innovation education, Private colleges and universities, Product design major, Personnel training.*

1. INTRODUCTION

The report of the 20th National Congress of the Communist Party of China emphasized the need to "deeply implement the strategies of rejuvenating the country through science and education, strengthening the country through talent, and promoting innovation driven development", "cultivate an innovative culture, promote the spirit of scientists, nurture a good academic atmosphere, and create an innovative atmosphere". Deepening the promotion of mass entrepreneurship and innovation is an important support for the implementation of the innovation driven

development strategy. [1] The "Guiding Opinions on Further Supporting College Students' Mass Entrepreneurship and Innovation" issued by the State Council in 2021 proposed to fully implement the Party's education policy, fulfil the fundamental task of cultivating morality and talent, adhere to innovation leading entrepreneurship and entrepreneurship driving employment, and support college students in enhancing their entrepreneurship and innovation capabilities. [2]

With the vigorous development of the knowledge economy and the continuous strengthening of globalization trends, mass

entrepreneurship and innovation have become key drivers of social progress and economic development. [3] In this context, entrepreneurship education has emerged, with the core of cultivating students' innovative thinking and entrepreneurial abilities to adapt to rapidly changing market demands. [4] For private universities, the innovation of talent cultivation mode in product design major is particularly important as it serves as a bridge connecting art, technology, and business. This study aims to explore in depth the current situation of talent cultivation in product design majors in private universities under the drive of mass entrepreneurship and innovation, analyze the existing problems, and explore the construction of a talent cultivation model that conforms to the spirit of mass entrepreneurship and innovation. This article will focus on how to integrate educational resources, innovate teaching methods, strengthen practical teaching, and promote school enterprise cooperation, to propose specific improvement strategies and implementation paths.

2. THE CONNOTATION OF MASS ENTREPRENEURSHIP AND INNOVATION EDUCATION AND THE NEW REQUIREMENTS FOR TALENT CULTIVATION OF PRODUCT DESIGN MAJOR

2.1 The Connotation of Mass Entrepreneurship and Innovation Education

In the context of globalization and the information age, mass entrepreneurship and innovation education, as an important direction of higher education reform, has received widespread attention from the education community both in China and foreign countries. [5] Mass entrepreneurship and innovation education is not only a reform of educational models, but also an update of educational concepts.[6] This educational model focuses on cultivating students' innovative spirit and entrepreneurial ability, aiming to build an open, interactive, and shared learning environment, allowing students to improve themselves through diversified learning and practice. In addition, mass entrepreneurship and innovation education emphasizes the integration and application of knowledge, encourages students to cross disciplinary boundaries, integrate knowledge from different fields for innovation, and form unique perspectives and solutions. It attaches great

importance to the cultivation of practical abilities, allowing students to exercise skills and accumulate experience in practical operations through project, laboratory research, social practice and other methods. At the same time, mass entrepreneurship and innovation education focuses on stimulating innovative thinking, encouraging students to question conventions, explore the unknown, and cultivate their creative and critical thinking. This educational model not only focuses on students' technical abilities, but also emphasizes their ability to discover and solve problems. In the rapidly changing social environment, this ability is crucial for students to adapt to future challenges and seize development opportunities.

2.2 The Connotation of Mass Entrepreneurship and Innovation Education and the New Requirements for Talent Cultivation of Product Design Major

In April 2019, 13 units including the Ministry of Education and the Ministry of Science and Technology jointly launched the "Six Excellence and One Top" Plan 2.0, which has comprehensively promoted the construction of new engineering, new medical science, new agricultural education, and new liberal arts, aiming to enhance the ability of universities to serve economic and social development. [7] With the introduction of new engineering concepts, the talent cultivation of product design major is facing new challenges and demands. New engineering emphasizes interdisciplinary integration, the combination of technology and art, and the ability to solve complex engineering problems. In this context, students majoring in product design not only need to master solid design foundation knowledge and skills, but also possess interdisciplinary perspectives, innovative design thinking, and the ability to use modern technological means for design. The construction of new engineering should explore new paradigms for engineering development, update the knowledge system of engineering talents, innovate engineering education methods and means, create a new ecology of open and integrated engineering education, and cultivate a large number of diverse and innovative outstanding engineering and technological talents. Compared with traditional product design professionals, the new engineering needs to cultivate high-quality composite talents with strong practical ability,

innovative ability, and international competitiveness. [8]

2.3 The Necessity of Conducting Mass Entrepreneurship and Innovation Education for Product Design Major in Private Colleges and Universities

As an important component of the higher education system, it is of great significance and necessity for private colleges and universities to carry out mass entrepreneurship and innovation education in the product design major. Firstly, mass entrepreneurship and innovation education can help improve the quality of education in private universities and enhance students' comprehensive abilities, thereby strengthening their attractiveness and competitiveness in fierce competition. Secondly, mass entrepreneurship and innovation education can stimulate students' innovative spirit and entrepreneurial awareness, cultivate their ability to solve practical problems, which plays an important role in students' personal development and social adaptation. Thirdly, through mass entrepreneurship and innovation education, private colleges and universities can establish closer connections with industry enterprises, promote the integration and optimization of educational resources, and enhance the practicality and pertinence of education. Finally, mass entrepreneurship and innovation education can also help promote educational and teaching reforms in private colleges and universities, explore talent cultivation models that are in line with their own characteristics, and cultivate more high-quality design talents for society.

3. ANALYSIS OF THE CURRENT SITUATION OF TALENT CULTIVATION FOR PRODUCT DESIGN MAJOR IN PRIVATE COLLEGES AND UNIVERSITIES

3.1 Talent Cultivation for Product Design Major in Private Colleges and Universities

As an important component of the higher education system, the product design major in private colleges and universities has received widespread attention from the education sector and society regarding its talent cultivation. Currently, many private colleges and universities have recognized the important role of product design

major in cultivating innovative talents, and have taken a series of measures to improve the quality of education and students' practical abilities, mainly including integrating international advanced educational concepts, adding practical teaching links, strengthening the construction of teaching staff, and expanding channels for school-enterprise cooperation. The talent cultivation model for product design major in private colleges and universities is shown in "Figure 1" on the next page. Although some progress has been made, there are still some limitations. Some courses focus too much on theoretical teaching and lack close integration with the actual needs of the industry. In addition, although practical teaching has been strengthened, limitations in resource allocation and teaching staff still affect students' practical opportunities and learning quality.

3.1.1 Practical Teaching

Private colleges and universities have taken various measures to enhance students' practical operational abilities. Project driven teaching has become a common teaching model, where students participate in the entire design process from conceptual conception to product implementation under the guidance of teachers. Workshops and design competitions provide students with a platform to showcase their creativity and skills, while also honing their teamwork and project management abilities.

3.1.2 Integration of Production and Education

The integration of production and education is an educational model that cultivates talents through the joint cooperation of universities and industry enterprises. [8] Through the combination of industry, academia, and research, colleges and universities are able to align their students with the needs of enterprises in advance, combining the actual needs of the industry with educational resources. Schools can provide students with education that better meets market demands, effectively shortening the training cycle for practical talents. This integration can be achieved through various means, such as inviting industry experts to participate in course teaching, collaborating with local industries to develop course content, and encouraging students to participate in industry projects. Through this approach, students can directly access the latest developments and technologies in the industry

during the learning process, enhancing their vocational skills and employment competitiveness.

3.1.3 School-Enterprise Cooperation

Private colleges and universities have also established internship bases both on and off campus, and established cooperative relationships with

enterprises, providing valuable internship opportunities for students. These internship bases not only provide students with the opportunity to experience real work environments, but also enable them to directly understand industry trends and market demands. Through these practical activities, students' innovative consciousness and practical ability have been significantly improved.



Figure 1 Talent cultivation system for product design major in private colleges and universities.

3.2 Current Situation of Product Design Professionals in Private Colleges and Universities

As a highly applied and innovative discipline, the talent cultivation model for product design major is crucial for students' future development. However, with the rapid iteration of industry technology and the continuous changes in market demand, the talent cultivation of product design major in private colleges and universities is facing a series of challenges. This section will analyze in depth the current practical difficulties in talent cultivation for product design major in private colleges and universities, explore the disconnection between course content and industry needs,

insufficient practical teaching resources, limitations of school-enterprise cooperation, singularity of evaluation mechanisms, and insufficient innovation and entrepreneurial abilities of students, in order to provide reference and inspiration for optimizing talent cultivation models.

3.2.1 Course Content Being Disconnected from Industry Demands

Currently, product design courses in some private colleges and universities have not been updated in a timely manner to meet the rapidly changing market demands. This lag leads to a mismatch between the knowledge and skills learned by students and the actual needs of the industry,

thereby affecting their employment competitiveness. Students often find it difficult to quickly adapt to the workplace environment after graduation and face employment challenges.

3.2.2 Insufficient Practical Teaching Resources

Practice is an indispensable part of product design education. However, due to limitations in funding and resources, private colleges and universities have not kept up with the times in terms of laboratory equipment and tools, and are unable to provide sufficient opportunities for modern design practice. The scarcity of such resources limits the cultivation of students' practical abilities and innovative thinking.

3.2.3 Limitations of School-Enterprise Cooperation

Although school-enterprise cooperation provides students with opportunities to engage with industries, many current collaborative projects lack depth and sustainability, and are mostly short-term or one-time activities. This loose cooperative relationship has failed to establish an effective long-term guidance and support mechanism, and students lack stable practical platforms and career development paths during internships and employment.

3.2.4 Singularity of Evaluation Mechanism

The current evaluation system often focuses too much on results and neglects the evaluation of students' innovation process and personalized development. This simple evaluation method may inhibit students' innovative spirit and personality development, limiting their full potential.

3.2.5 Insufficient Student Innovation Awareness and Entrepreneurial Ability

In the context of mass entrepreneurship and innovation education, students' innovative consciousness and entrepreneurial ability are particularly important. However, some students' training in this area is not sufficient and requires more guidance and support to stimulate their innovative potential and entrepreneurial spirit.

4. CONSTRUCTION IDEAS FOR TALENT CULTIVATION MODEL OF PRODUCT DESIGN MAJOR IN PRIVATE COLLEGES AND UNIVERSITIES DRIVEN BY MASS ENTREPRENEURSHIP AND INNOVATION

In today's rapidly developing socio-economic environment, the talent cultivation of product design major in private colleges and universities is facing unprecedented challenges and opportunities. With the continuous deepening of globalization and informatization, the demand for product design professionals in the market is also increasing. The professionals are not only required to possess solid professional knowledge and skills, but also to have innovative thinking and entrepreneurial abilities. In this context, mass entrepreneurship and innovation education has become an important way to promote higher education reform and improve the quality of talent cultivation. This article constructs a talent cultivation model for product design major in private colleges and universities driven by mass entrepreneurship and innovation from the aspects of curriculum system innovation, teaching method reform, strengthening practical teaching, deepening of school-enterprise cooperation, innovation of evaluation mechanism, and integration of mass entrepreneurship and innovation education. The aim is to provide reference and guidance for cultivating high-quality product design professionals who can adapt to future market demands. ("Figure 2")

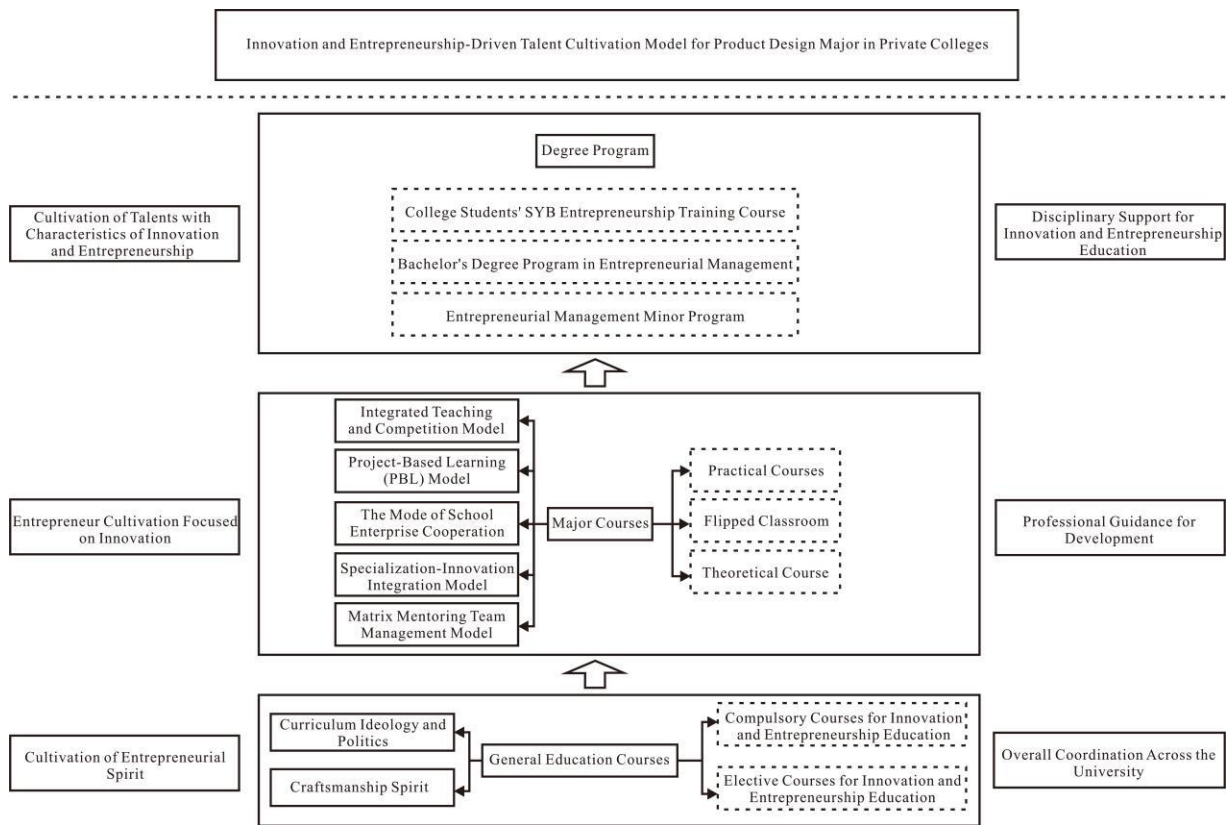


Figure 2 Talent cultivation model for product design major in private colleges and universities driven by mass entrepreneurship and innovation.

4.1 Curriculum System Innovation

Under the promotion of mass entrepreneurship and innovation education, curriculum system innovation has become the core of improving the quality of talent cultivation for product design major in private colleges and universities. This innovation requires curriculum design not only to keep up with the development trends of the design industry, but also to be able to predict and adapt to future market changes. The core content of the curriculum system consists of design theory, cutting-edge technology applications, product brand planning and promotion, and innovative thinking methods. The curriculum content must achieve an organic combination of theory and practice to cultivate students' innovative design ability. The addition of interdisciplinary courses is an important aspect of curriculum system innovation. Courses such as "Product Design Psychology", "CMF Design and Application", and "Professional Skills Competition Practice" can help students broaden their knowledge horizons and promote the formation of their comprehensive design abilities.

The course of "Product Design Psychology" can help students understand user needs and behaviors, thereby designing products that better meet user expectations. The course "CMF Design and Application" can help students understand the characteristics of different materials and inspire their innovative applications in design. In the context of mass entrepreneurship and innovation education, the innovation of the curriculum system for product design majors in private colleges and universities not only needs to cover traditional design theories and skills, but also should closely integrate professional course content with innovation and entrepreneurship projects, forming a comprehensive educational model. The core of this integration lies in cultivating students' innovative thinking and entrepreneurial abilities, enabling them to continuously explore, practice, and ultimately transform their ideas into products or services with market potential during the learning process. The practical path of integrating course content with innovation and entrepreneurship projects is shown in "Figure 3".

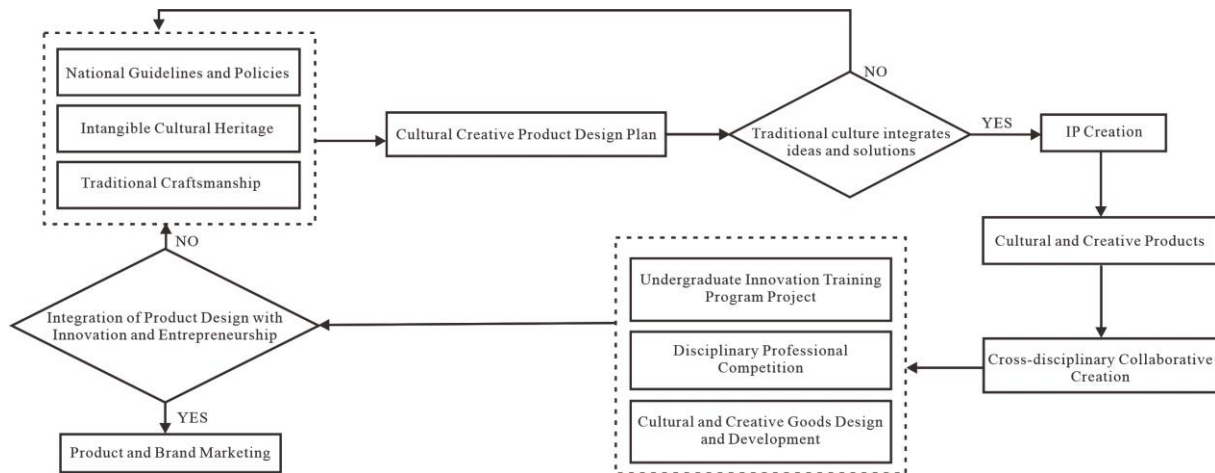


Figure 3 Integration practice path of course content and innovation and entrepreneurship projects.

4.2 Teaching Method Reform

The reform of teaching methods is an important way to improve teaching quality and students' learning experience. The application of diversified teaching methods such as case-based teaching, project-based teaching, and flipped classroom can enhance students' participation and learning interest. In case teaching, teachers analyze real or fictional design cases to help students understand the practical application of theoretical knowledge and cultivate their critical thinking and problem-solving abilities. Project driven teaching method stimulates students' creativity and teamwork ability by setting challenging design tasks. In this teaching model, students need to learn and grow throughout the entire design process from conceptual conception to product implementation under the guidance of teachers. This teaching method can not only improve students' practical abilities, but also cultivate their project management and teamwork skills. In flipped classroom, students' active learning ability and participation can be enhanced through pre-class preparation and interactive classroom discussions. In flipped classroom, students need to preview course content through videos, reading materials, and other means before class, and then deeply understand and apply knowledge through discussions, group activities, and other forms in class. In addition, teaching models such as simulation design processes, design thinking workshops, and innovation laboratories can provide students with opportunities for practical operation and experimentation. These teaching models allow students to learn and practice in simulated real design environments, enhancing their practical and innovative application abilities.

4.3 Strengthening Practical Teaching

Practical teaching is the core component of product design education, which can help students apply theoretical knowledge to practical work and enhance their ability to solve complex problems. There is a necessity to establish on campus and off campus practice bases, such as design studios, innovation laboratories, and enterprise internship bases, to provide students with ample practical opportunities. These practice bases not only provide places and equipment for practical operations, but also allow students to be exposed to real work environments and processes.

By participating in design projects, competitions, exhibitions, and other activities, students can exercise their design skills and innovative thinking through practice. These activities provide students with the opportunity to apply their learned knowledge to solve practical problems, while also showcasing their design talents and achievements. In addition, practical teaching should also include design process management, project management, team collaboration, and other content to cultivate students' comprehensive professional abilities. In order to strengthen practical teaching, schools need to establish close cooperative relationships with enterprises, jointly develop courses, provide internship opportunities, and guide students in entrepreneurship. Enterprises participate in the teaching process, providing students with industry perspectives and practical experience. This school-enterprise cooperation model can not only improve students' practical opportunities, but also enhance the practicality and pertinence of teaching content.

4.4 Deepening School-Enterprise Cooperation

Deepening school-enterprise cooperation is a key strategy for aligning educational content with industry demand, and it is of great significance for the talent cultivation of product design major in private colleges and universities. Through close cooperation with enterprises, schools can update course content in a timely manner, ensuring that teaching is synchronized with industry development trends. This collaborative model allows businesses to participate in course design, provide practical cases and projects, and expose students to the latest industry knowledge and technology. Internship opportunities are an important component of school-enterprise cooperation. Through internships in enterprises, students can gain valuable work experience, understand industry operating models, clarify career requirements, and exercise their professional skills in practical work environments. This experience is crucial for students' career development and helps them smoothly enter the workforce after graduation. School-enterprise cooperation should also include guidance and support for students' entrepreneurship. Through entrepreneurial incubators, start-up funds, and other means, schools and enterprises can jointly provide necessary resources and guidance for students who are interested in entrepreneurship. This includes providing entrepreneurship training, business plan guidance, market analysis, etc., to help students transform their ideas into actual products or services. Enterprise participation in the teaching process is another important aspect of school-enterprise cooperation. Enterprises can dispatch industry experts to give lectures or hold seminars, providing students with industry perspectives and practical experience. This direct industry contact is very beneficial for students' education and career development.

4.5 Innovation of Evaluation Mechanism

The innovation of evaluation mechanism is an important means to enhance students' innovative spirit and practical ability under the mass entrepreneurship and innovation education model. British entrepreneurship education expert Zhang Jing emphasizes that in the field of

entrepreneurship education, the learning process itself is equally important as the final outcome, and evaluating students' learning effectiveness should not be limited to the views of the teaching staff, but should adopt diversified evaluation methods. The traditional results-oriented evaluation approach often overlooks students' performance and growth in the learning process, while a diversified and process oriented evaluation system can better reflect students' learning and development, covering multiple dimensions such as innovative thinking, problem-solving ability, teamwork spirit, and project management skills, which evaluates students' participation in practical activities such as innovative projects, design competitions, and internship experiences. This study proposes a "1+1+N" evaluation mechanism, in which each course in the product professional curriculum system is divided into three stages, and two or more teachers evaluate students' learning outcomes. At the same time, student peer evaluation is increased to activate the learning atmosphere of innovation and entrepreneurship. The "1+1+N" evaluation mechanism is shown in "Figure 4". Phase 1: Professional teachers are the main evaluators and their evaluation accounts for 70%; Enterprise teachers participate in the evaluation, accounting for 20%; The proportion of student mutual evaluation is 10%. Phase 2: Professional teachers are the main evaluators and their evaluation accounts for 70%; Innovation and entrepreneurship mentors participate in the evaluation, accounting for 20%; The proportion of student mutual evaluation is 10%. Phase 3: Innovation and entrepreneurship mentors are the main evaluators and their evaluation accounts for 70%; Professional teachers participate in the evaluation, accounting for 20%; The proportion of student mutual evaluation is 10%. Through regular self-evaluation, peer evaluation, and teacher evaluation, a comprehensive feedback mechanism is formed to objectively evaluate students' innovative thinking, professional abilities, communication and collaboration from different dimensions, helping students to timely understand their progress and shortcomings. By observing students' performance in projects, their teamwork ability and leadership potential are evaluated.

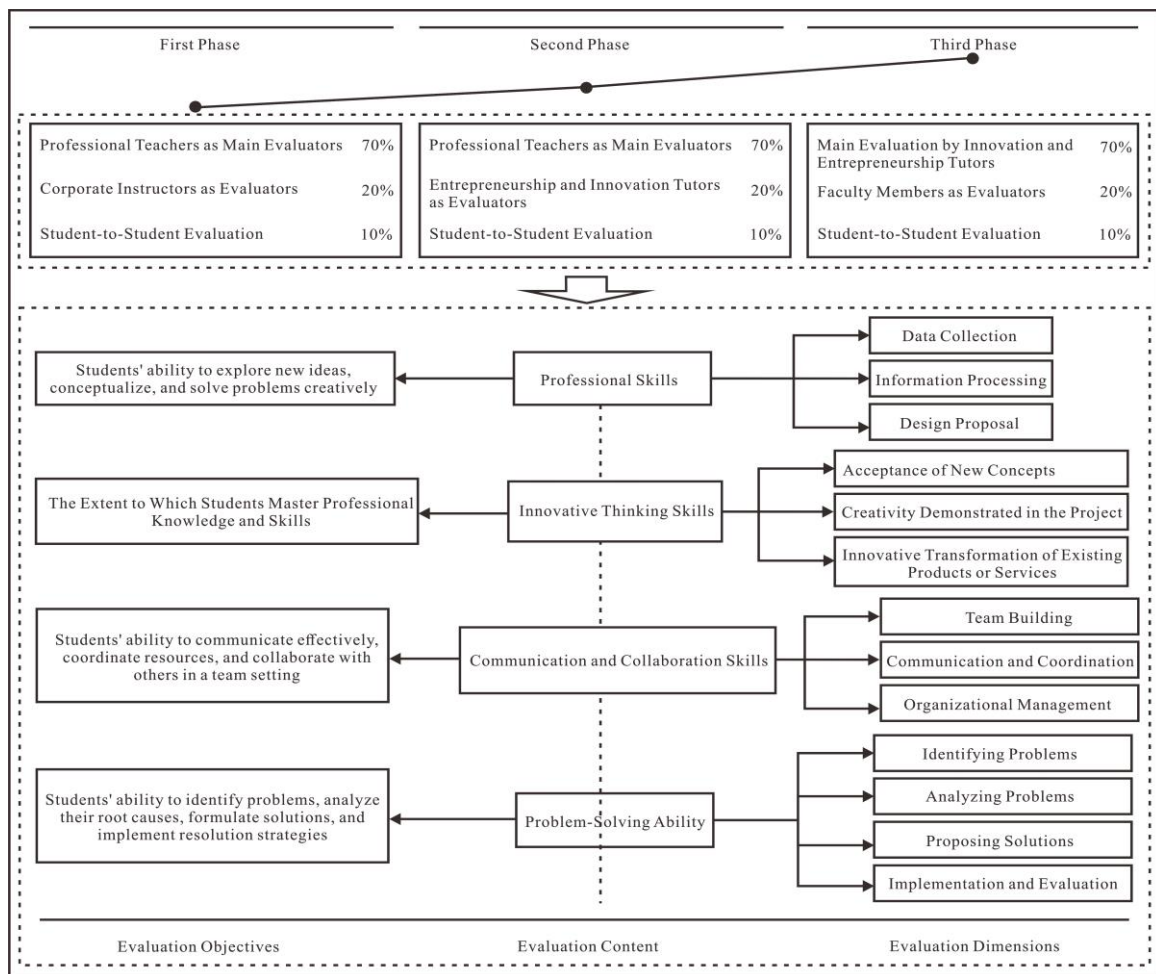


Figure 4 "1+1+N" evaluation mechanism.

4.6 Integration of Entrepreneurship Education

The integration of entrepreneurship education is an important component of the mass entrepreneurship and innovation talent cultivation model, which can effectively cultivate students' entrepreneurial awareness and abilities. Integrating the concept and content of entrepreneurship education into the curriculum system and practical activities can help students understand the process and challenges of entrepreneurship, and stimulate their entrepreneurial enthusiasm. Entrepreneurship lectures and seminars are important forms of entrepreneurship education. By inviting industry experts and successful entrepreneurs to share their experiences, students can gain first-hand industry insights and entrepreneurial guidance. These lectures and seminars can cover various aspects of entrepreneurship, such as market analysis, business plan writing, financial management, and more. Entrepreneurship competitions and projects provide

students with opportunities to practice entrepreneurship. By participating in these competitions and projects, students can experience the entrepreneurial process while solving practical problems, exercise their innovative thinking and practical abilities. These activities can help students apply theoretical knowledge to practice and improve their entrepreneurial success rate.

5. CONCLUSION

This study explores in depth the current situation, challenges, and innovative paths of talent cultivation in product design majors in private colleges and universities driven by mass entrepreneurship and innovation. Research has found that although private colleges and universities have made some progress in talent cultivation for product design major, they still face problems such as a disconnect between course content and market demand, insufficient practical teaching resources, and insufficient depth of

school-enterprise cooperation. In response to these issues, this study proposes a series of innovative strategies, including curriculum system innovation, teaching method reform, strengthening practical teaching, deepening school-enterprise cooperation, innovation in evaluation mechanisms, integration of entrepreneurship education, and support for personalized development. Optimizing the talent cultivation model is urgent for improving the educational quality of product design major in private colleges and universities and enhancing students' employment competitiveness. This model should be student-centered, focusing on cultivating students' innovation ability and entrepreneurial spirit, while providing flexible learning path support. Through these measures, schools and teachers can better stimulate students' potential and help them adapt to the rapidly changing social and economic environment.

The talent training model for product design major in private colleges and universities should continue to develop towards a more open, flexible, and innovative direction. With the advancement of educational technology and the updating of educational concepts, future education models will pay more attention to the personalized needs of students and the cultivation of lifelong learning abilities. At the same time, with the development of the industry and changes in the market, educational content and methods also need to be constantly updated and optimized to ensure that students can master the latest knowledge and skills. Through continuous efforts and innovation, the talent cultivation model of product design major in private colleges and universities will be able to better meet the needs of society and cultivate more high-quality design talents with innovative spirit and practical ability.

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