Theory Reconstruction and Practice Model of Project-Based Learning (PBL) from the Perspective of Integration of Professional Education and Innovation and Entrepreneurship Education

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Abstract: With the in-depth advancement of higher education reform, its core goal becomes to cultivate compound talents with innovative thinking, entrepreneurial ability and professional quality. As a key pathway to achieving this goal, the deep integration of professional education and innovation and entrepreneurship education requires to be implemented based on an efficient teaching model. The traditional teaching model mainly focuses on knowledge impartation, and has some problems, such as the divorce between theory and practice, inadequate initiative of students, and weak cultivation of innovation ability, making it difficult to meet the education demand of the deep integration of professional education and innovation and entrepreneurship education. Project-based learning (PBL) takes projects as carrier, problems as orientation, and emphasizes practical exploration and collaborative innovation. With its these advantages, PBL has become an important bond between professional education and innovation and entrepreneurship education. This paper aims to reconstruct the theoretical connotation of PBL from the perspective of the integration of professional education and innovation and entrepreneurship education, analyze its application status quo and bottlenecks in practice, explore the key factors affecting the application effect, and construct a PBL practice model that meets the needs of integration of professional education and innovation and entrepreneurship education to provide theoretical reference for colleges and universities to optimize teaching models and improve the quality of talent cultivation and provide decision-making basis for the education administrative departments to make relevant teaching reform policies and improve the education system.

Keywords: Integration of Professional Education and Innovation and Entrepreneurship Education (IPEIEE), Project-Based Learning (PBL), Theory Reconstruction, Practice Model, Talent Cultivation, Teaching Reform

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1.Introduction

Under the dual background of the innovation-driven development strategy and the “Double First-Class” construction of higher education, IPEIEE has become the core direction of the reform of talent cultivation in colleges and universities [1]. Its core essence lies in breaking down the barriers between professional education and innovation and entrepreneurship education, integrating the cultivation of innovation and entrepreneurship philosophy and ability cultivation into the whole process of professional knowledge impartation, and achieving a synergetic improvement of “professional ability” and “creative thinking and entrepreneurial ability”. Since PBL was introduced to China at the end of the 20th century, although it has been applied in the professional teaching of some universities, it has mostly been confined to practical training in a single professional field, has not fully integrated in the elements of innovation and entrepreneurship, and thus is disconnected from the educational objectives of IPEIEE. From the perspective of IPEIEE, PBL needs to break through the limitations of the traditional model. On the one hand, it is necessary to start from the real problems in the professional field to ensure that projects deeply correspond to the professional knowledge system; On the other hand, it is necessary to incorporate the dimension of innovation and entrepreneurship to guide students to carry out market research, risk assessment, proposal iteration, and achievement

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transformation, and other innovative activities in project practice. However, when current colleges and universities are promoting PBL from the perspective of IPEIEE, they generally encounter the problems such as inadequate theoretical support (such as lack of a systematic framework for the combination of IPEIEE and PBL), ambiguous practical pathways (such as the divorce between project design and innovation and entrepreneurship goals), and incomplete guarantee systems (such as the mismatch of teaching staff, resources, and assessment mechanisms), which have led to the failure to fully exert the educational value of PBL. Therefore, it is of significant theoretical value and practical significance to reconstruct the theory of PBL from the perspective of IPEIEE, and explore a scientific and feasible practice model [2].

2.The Role and Application Status Quo of PBL from the Perspective of IPEIEE

2.1 *The Role of PBL in Talent Cultivation from the Perspective of IPEIEE*

The core demand of IPEIEE is to achieve the integrated cultivation of "professional quality" and "innovation and entrepreneurship ability", and PBL provides an inherent compatibility for this demand through its unique teaching logic. Firstly, PBL takes "real projects" as its carrier, is able to transform the core knowledge of professional fields into practical tasks that can be explored. During the process of completing projects, students can not only deepen their understanding of professional theories, but also enhance their professional practical ability by solving complex problems in the projects (such as technical breakthrough and proposal optimization). Secondly, PBL emphasizes "problem-oriented" and "innovative exploration". Under the framework of IPEIEE, project design will integrate market demand analysis, innovative proposal design, commercial value assessment, and other elements to guide students to get out of the box of a single professional perspective and shift from "solving technical problems" to "creating market value", and gradually cultivate innovative thinking and entrepreneurship awareness. Finally, PBL emphasizes "collaborative learning". Students accomplish projects in teams, which require division of labor and collaboration, communication and coordination, and joint decision-making. This process not only enhances team collaboration skills, but also simulates the team operation mode in real entrepreneurial scenarios, and lay a foundation for future innovation and entrepreneurship practice [3].

2.2 *The Application Status Quo of PBL from the Perspective of IPEIEE*

When colleges and universities are promoting PBL from the perspective of IPEIEE, although certain results have been achieved, there are still many problems, which are mainly reflected in the following two aspects. The first is that the project design is disconnected from the goals of IPEIEE, and the compatibility is inadequate. When designing PBL projects, some colleges and universities either overly emphasize professional practice and neglect integrating innovation and entrepreneurship elements in, for instance, PBL projects in science and engineering mostly focus on technological realization and do not involve market demand, technology commercialization and other content, resulting in that students only master professional skills and lack innovative consciousness, or blindly pursue the label of "innovation and entrepreneurship" and deviate from the professional basis, for instance, PBL projects in liberal arts overly emphasize the writing of business plans without integrating the core knowledge of the professional field (such as projects in journalism studies that are not related to content innovation and optimization of propagation modes), resulting in that projects are merely formalistic and fail to achieve a synergetic improvement of professional ability and innovation ability. Furthermore, PBL projects in some universities are mostly "simulation projects" (such as virtual topics and classroom demonstration projects), and lack alignment with enterprises. As a result, the project outcomes are difficult to be transformed into practical value, which weakens students' motivation for innovation and entrepreneurship. The second is the inadequate integration of resources and the absence of collaborative mechanisms, which leads to the phenomenon of "practice silo". On the one hand, there is a lack of effective collaboration among various departments of colleges and universities (such as professional colleges and departments, innovation and entrepreneurship colleges, and experiment centers). Professional teachers are familiar with specialized knowledge, but lack experience in innovation and entrepreneurship teaching, while innovation and

entrepreneurship teachers understand the logic of innovation and entrepreneurship, but have limited knowledge in their professional fields. It is difficult for the two to form a teaching synergy. Experimental resources, maker space, and entrepreneurship incubation platforms are managed separately. When students carry out PBL projects, they need to coordinate resources across departments, which is inefficient. [4]

3.Influential Factors for the Application Effect of PBL from the Perspective of IPEIEE

3.1 *Internal Factors*

The supply of teaching resources and the construction of the teaching staff in colleges and universities are the core internal factors influencing the application effect of PBL in IPEIEE. From the perspective of resource supply, if colleges and universities can provide adequate hardware support (such as professional laboratories, maker space, and project incubation platforms) and software resources (such as industry databases, innovation and entrepreneurship case libraries, and project management tools) for PBL teaching, and establish some resource coordination mechanisms (such as cross-departmental resource sharing platforms), they can provide a good practical foundation for students to carry out PBL projects. Conversely, if resources are scarce or scattered, projects will be hard to be implemented and students cannot carry out practice well.

In the terms of the teaching staff, PBL from the perspective of IPEIEE places far higher demand on teachers' competence than traditional teaching. Teachers need to have profound knowledge in their professional fields, systematic understanding of innovation and entrepreneurship, as well as practical ability in project guidance, team guidance, and risk control. If colleges and universities have composite teaching team composed of "professional teachers + innovation and entrepreneurship mentors + industry experts", and establish regular teacher training mechanisms (such as professional education and innovation integration teaching ability research and studies and training, industry practice training), they can effectively guide students to accomplish professional exploration and innovative practice in projects. Conversely, if teachers only have a single professional background and lack teaching experience and practical ability in innovation and entrepreneurship, it will lead to that project guidance become formalistic and it is difficult to achieve the educational objectives of IPEIEE.

3.2 *External Factors*

Policy support and industrial collaboration are the key external factors influencing the application effect of PBL from the perspective of IPEIEE. From the perspective of policy support, if the education administrative departments issue a complete set of policies for the teaching reform of IPEIEE, including special fund support (such as funding for PBL teaching reform projects), teaching standard guidelines (such as the construction specifications for PBL courses from the perspective of IPEIEE), and achievement recognition mechanisms (such as the alignment between PBL project achievements and innovation and entrepreneurship competition), they can provide a clear direction and guarantee for colleges and universities to promote PBL from the perspective of IPEIEE. Conversely, if there are inadequate policy support and a lack of top-level design, it will lead colleges and universities to blindly explore teaching reform, and makes it difficult to form a large-scale and standardized teaching model.

In the terms of industrial collaboration, enterprises are important practical sites and resource providers for PBL from the perspective of IPEIEE. If enterprises can deeply engage in PBL teaching (such as providing real project topics, dispatching technical experts as mentors, and opening up practice bases), and establish project achievement transformation mechanisms (such as incubating and investing in outstanding PBL projects), it will realize a closed loop of "teaching - practice - employment/entrepreneurship", and enhance the practical value and educational effect of PBL. Conversely, if there are inadequate collaboration between schools and enterprises, and low engagement of enterprises, it will lead to that PBL projects are divorced from the industry reality, make it difficult for students to obtain real innovation and entrepreneurship experiences and affect the quality of ability cultivation.

4.Theory Reconstruction and Practice Model Construction of PBL from the Perspective of IPEIEE

4.1 *Theory Reconstruction: PBL Theoretical Framework Based on "Three-dimensional Collaboration"*

From the perspective of IPEIEE, it is imperative to reconstruct PBL theory. The key lies in breaking the dualistic limitations of "knowledge - practice" in the traditional PBL model and then establishing a three-dimensional collaborative theoretical system of "professional ability - innovative thinking - entrepreneurial ability". Among them, professional ability dimension is based on systematic professional knowledge, and focuses on accurately finding out the integrating points among PBL projects, core major courses, and talent cultivation objectives, and during the project execution process, breaking down abstract professional theoretical knowledge into specific tasks, such as technical breakthrough, proposal design, and precise data analysis. Participating in projects personally, students can not only deepen their understanding of professional knowledge, but also effectively enhance their practical skills. And this will ensure that PBL always closely adheres to the core direction of professional education. The innovative thinking dimension integrates a complete logical chain of "problem discovery - proposal innovation - iterative optimization". In project design, teachers can set an "innovation challenge time", such as conducting product innovation based on actual market demand and exploring method innovation in response to technical bottlenecks, emphasize cultivating students' critical thinking, divergent thinking, and ability to handle complex problems, and help them make the leap from simple knowledge application to active knowledge creation through diverse methods such as organizing brainstorming to spark ideas, conducting cross-border discussions to develop thoughts, and conducting user interviews to grasp market demand.

4.2 *Practice Model: "Four-Phase Closed-Loop" PBL Practice Model*

The first is subject collaboration. Project design teams composed of "professional teachers + innovation and entrepreneurship mentors + enterprise experts" jointly determine the project themes that must simultaneously meet the requirements of "professional relevance" (aligning with core professional knowledge), "innovation challenge" (having clear problems to be solved), and "market feasibility" (matching with industry demand or social pain points). For instance, computer science can design a project called "Development of an Agricultural Product E-commerce Platform for Rural Revitalization", which not only involves professional knowledge such as programming and databases, but also needs to address the innovation issue of "user experience optimization", and analyze the market demand and business model of rural e-commerce.

The second is resource preparation. It is necessary to integrate resources from colleges and universities (professional laboratories, maker space, and databases) and enterprises (practice bases, technical equipment, industry data), clearly define the hardware, software and teacher support required for the projects, and make a detailed project task book (including goals, processes, time nodes, and assessment criteria).

The third is group collaboration. Students form groups of 4 to 6 and allocate tasks based on their interest and ability (such as the technology research and development group, market analysis group, and commercial planning group). They establish a team collaboration mechanism (such as regular meetings, task allocation, and progress tracking) to simulate the real operation mode of a project team.

The fourth is dual-mentor guidance. Each team is assigned a "professional mentor" to guide technical issues and an "innovation and entrepreneurship mentor/enterprise expert" to guide innovation directions and business logic. An online and offline combined guidance approach is adopted. Regular offline seminars are organized to solve project difficulties, and real-time Q&A is provided online through the teaching platforms to monitor project progress.

The fifth is multi-dimensional exploration. Students accomplish "professional exploration" (such as technical proposal argumentation, prototype development), "innovative exploration" (such as user demand research, proposal iteration), and "entrepreneurial exploration" (such as market competition analysis, cost estimation) in practice, and record the exploration process and results through learning logs and phased reports.

The sixth is achievement Exhibition. Colleges and universities should organize "Project Defense Meetings for PBL from the perspective of IPEIEE", and invite professional teachers, innovation and entrepreneurship mentors, enterprise representatives, and industry experts to form a panel of judges. Student teams present their project achievements (such as technical reports, product prototypes, and business plans) through PPTs, prototype demonstrations, and business roadshows, and are subject to questions and comments from the panel of judges.

The seventh is diversified evaluation. Colleges and universities should establish a diversified assessment system featuring "process + outcome, quantitative + qualitative, teachers and students + enterprises". The process assessment focuses on student engagement, collaboration ability and explorative spirit in projects, which are quantified through learning logs, peer assessment and mentor assessment); The outcome assessment focuses on the professional value of projects (technological innovation, professional alignment), innovative value (novelty of the proposals, problem-solving effect), and commercial value (market potential, feasibility). Enterprise assessment focuses on the compatibility of projects with industry demand and the possibility of achievement transformation to ensure that the assessment results fully reflect the comprehensive ability of students.

5.Conclusion

Project-based learning (PBL) from the perspective of IPEIEE is an important way to improve the quality of talent cultivation. At present, colleges and universities are confronted with difficulties in theoretical support, practical pathways, and other aspects and are also affected by multiple internal and external factors in advancing PBL from the perspective of IPEIEE. Constructing a three-dimensional collaborative theoretical framework of "professional ability - innovative thinking - entrepreneurial ability" and a "four-stage closed-loop" practice model can provide theoretical guidance and practical pathways for it. In the future, colleges and universities should enhance internal resource integration and collaborative teaching among faculty members. The education administrative departments improve policies and assessment criteria. Enterprises deepen the collaboration between schools and enterprises and provide resources. Multi-party collaborative optimized theory and model can achieve educational objectives and cultivate composite talents.

References:

[1] *Jing Shi.(2025)Reform Strategies of Teaching Content and Methods of Finance Courses from the Perspective of the "Integration of Professional Education and Innovation and Entrepreneurship Education" [J].The Theory and Practice of Innovation and Entrepreneurship,8(14),19-22.*

[2] *Baijun Deng and Jun Wu.(2025)Systematic Pathways for Transforming Enterprise Problems into Teaching Scenarios from the Perspective of Industry-Education Integration:Practical Exploration of Course Development Tools Based on the "Integration of Professional Education and Innovation and Entrepreneurship Education" [J].Research in Higher Education of Engineering,S1,226-233.*

[3] *Qinyan Huang,Chunxia Huang,and Guanlei Yin.(2025)Collaborative Education Pathways of College Counselors from the Perspective of the Integration of Professional Education and Innovation and Entrepreneurship Education into Ideological and Political Practice Courses:A Case Study of Guangxi Minzu Normal University[J].Public Relations World,11,142-144.*

[4] *Lei Chen.(2025)Construction of a Training System of the Integration of Professional Education and Innovation and Entrepreneurship Education for Preschool Education in Colleges and Universities from the Perspective of Digitalization[J].Journal of Ningbo Childhood Education College,27(03),11-14+24.*