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Research and Strategy Analysis of Integrated Professional and Creative Course System in Higher Education

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Keywords: Integration of professional education and innovation and entrepreneurship education, course system, talent cultivation, innovation and entrepreneurship, investigation, strategies

Abstract: As the reform for cultivating innovative and entrepreneurial talents deepens, it has become a trend for various parties including the government, industry, and universities to collaborate and integrate their efforts. It is no longer feasible for universities to cultivate innovative and entrepreneurial talents solely through individual majors or colleges. Against this backdrop, a survey is conducted to examine the current status of the integrated professional and creative course system in higher education. The analysis is carried out from the perspectives of competent authorities, teachers, and students, aiming to construct a comprehensive integration course system that integrates vertically and horizontally, with diverse educational objectives, interdisciplinary integration, comprehensive organizational management, and multi-faceted faculty integration. This system aims to solve the problems of unclear objectives, low level of resource integration, and a single management system in the cultivation of innovation and entrepreneurship talents in universities.

1. Introduction

Integrating innovation and entrepreneurship education into professional education is crucial for nurturing innovative talent in higher education, and is a significant aspect of the developmental growth of higher education in China. The course system serves as the primary mechanism for integration, and is essential for enhancing the quality of talent development. However, when compared to international innovation education, China's higher education for cultivating innovative talent is still in its nascent stage. Universities have undergone an evolution from a unit-based to a project-based system, and subsequently, to an ecological system in terms of innovation talent cultivation reform. This suggests that constructing an integrated professional and creative course system can no longer be accomplished solely within a single major or college. Therefore, there is a need to build a vertically and horizontally integrated course system that aligns with diverse educational objectives, incorporates interdisciplinary integration, entails comprehensive organizational management, and involves multi-faceted faculty integration [1]. This is a critical concern for universities to implement the national "innovation-driven development strategy" and achieve high-quality talent support.

2. Research Status

Between 1997 and 2005, the Organization for Economic Cooperation and Development (OECD) introduced the idea of core competencies in their research project, "Definition and Selection of Competencies (DeSeCo): Theoretical Framework and Conceptual Basis", which included complex cognitive processes such as metacognition, creativity, and critical thinking. In 2012, the United Nations Educational, Scientific and Cultural Organization (UNESCO) identified "creative thinking, critical thinking, and problem-solving abilities" as fundamental indicators for nurturing innovative qualities. In 2016, the European Union proposed the "Entrepreneurship Competence Framework", which advocates for the integration of an innovative and entrepreneurial mindset throughout the entire education system.

In terms of integrating innovation and entrepreneurship education into professional education, universities have attempted to construct an effective "triple helix" education integration model that combines professional education, innovation education, and entrepreneurship education [2]. This involves deep integration of innovation and entrepreneurship education with professional education, and the establishment of a "triple integration" talent training system [3].

In terms of knowledge transformation, promoting collaborative innovation among universities requires stimulating university vitality, enhancing autonomy and collaboration, establishing cross-border mechanisms, and creating a heterogeneous element flow [4]. Therefore, entrepreneurship courses can be divided into knowledge and discipline courses, activity and practice courses, and environmental and implicit courses [5]. Through collaborative learning, sharing, and creation, a spiral of cross-organizational knowledge creation can be achieved [6].

However, there are still some problems with the current innovation and entrepreneurship education course system in China, such as unclear course goals, homogeneous content, and formalized teaching methods [7]. Additionally, university-level innovation and entrepreneurship education still faces problems such as courses being superficial and outdated educational content [8].

3. Survey Overview and Data Analysis

The research subjects of this survey were divided into three categories: curriculum management departments, course teachers, and students. The research team conducted surveys at 144 universities, including curriculum management departments from 110 universities, 7,410 teachers involved in innovation and entrepreneurship education integration from 114 universities, and 96,310 students who participated in the questionnaire filling from 117 universities.

3.1. Analysis of Survey Data from the Competent Department of Integrated Professional and Creative Courses

3.1.1. The Management Departments for Integrated Professional and Creative Courses

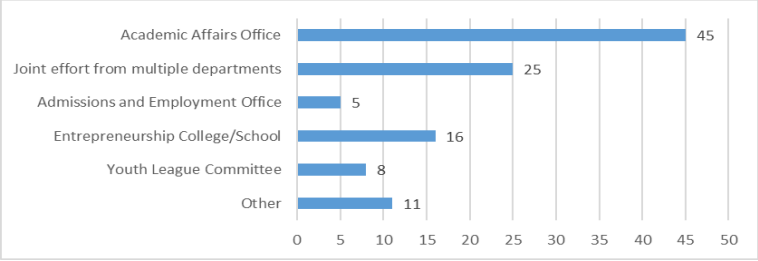

Figure 1: The departments responsible for the management of integrated professional and creative courses

According to Figure 1, the management of the programs is handled by the academic affairs office in 45 universities (40.91%), jointly managed by multiple departments in 25 universities (22.73%), managed by the entrepreneurship college in 16 universities (14.55%), managed by the student union in 8 universities (7.27%), managed by the admissions and employment office in 5 universities (4.55%), and managed by other departments in 11 universities (10%).

3.1.2. The Number of Students Enrolling in Integrated Professional and Creative Courses

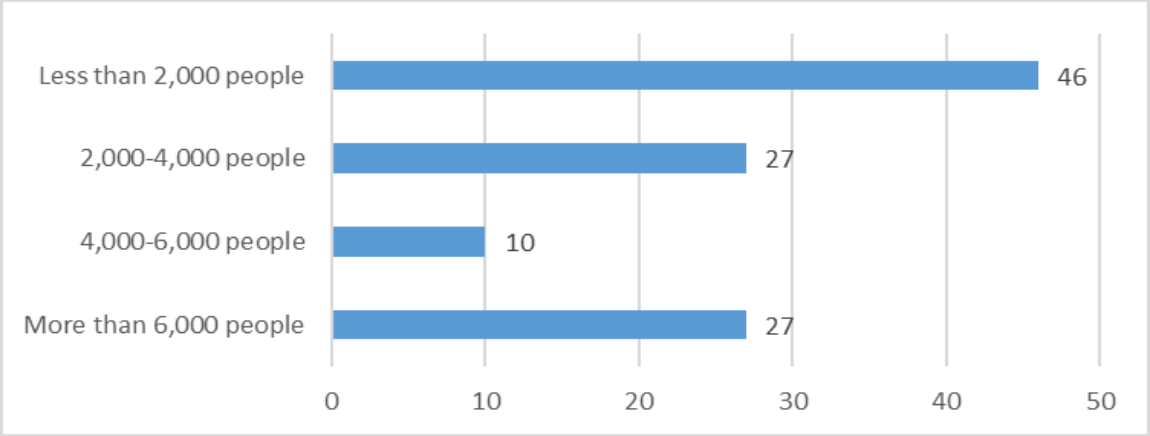

Figure 2: The number of students enrolling in integrated professional and creative courses

According to Figure 2, 27 schools (24.55%) had over 6,000 participants, 10 schools (9.09%) had between 4,000 and 6,000 participants, 27 schools (24.55%) had between 2,000 and 4,000 participants, and 46 schools (41.82%) had fewer than 2,000 participants.

3.1.3. The Composition of Teaching Staff for Integrated Professional and Creative Education

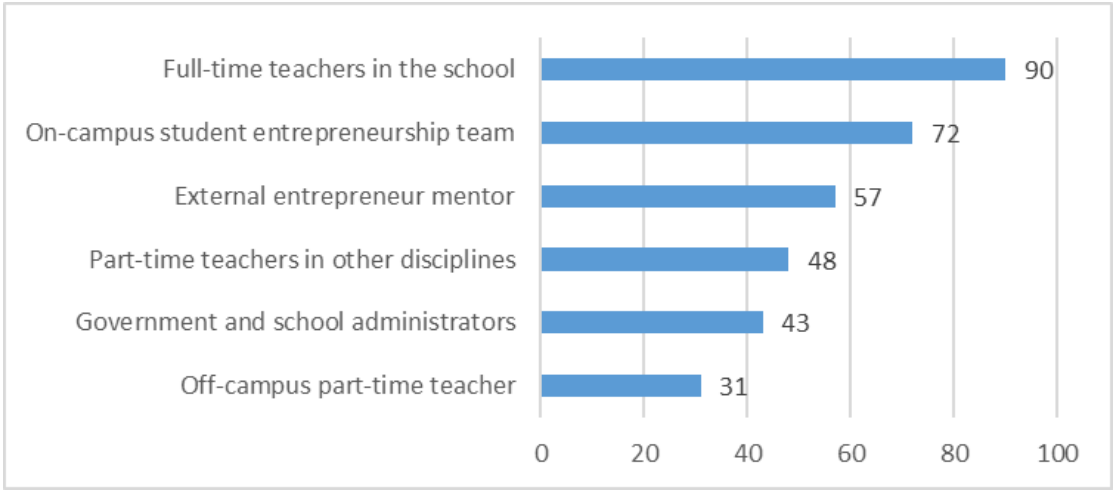

Figure 3: The composition of teaching staff for integrated professional and creative education

According to Figure 3, there are a total of 90 schools (82.82%) with full-time faculty dedicated to integrated professional and creative education, 72 schools (65.45%) have student entrepreneurship work teams, 57 schools (51.82%) have external entrepreneur mentors, 48 schools (43.64%) have part-time teachers from other disciplines, 43 schools (39.09%) have government and school management personnel involved, and 31 schools (28.18%) have outside teachers serving as part-time faculty.

3.1.4. Difficulty in Building a Course System with Integrated Professional and Creative Education

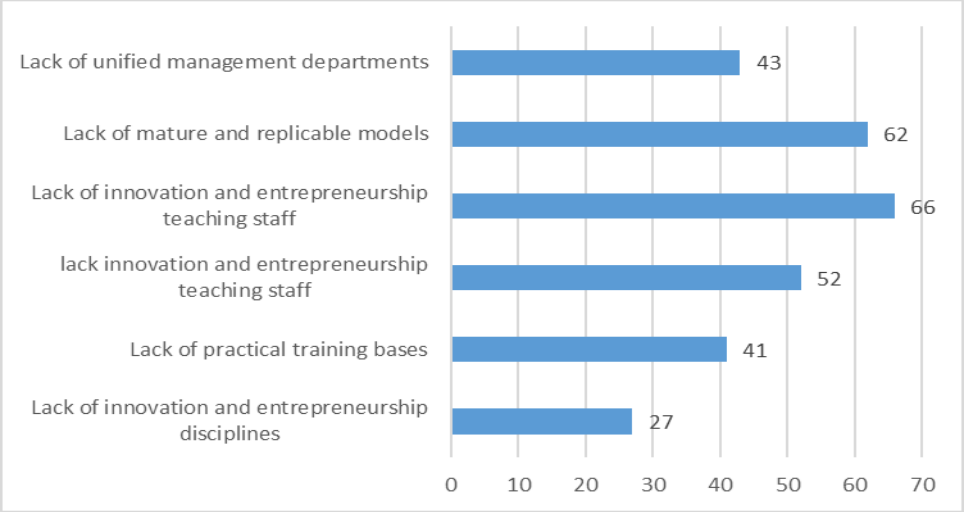

Figure 4: Difficulty in building a course system with integrated professional and creative education

According to the statistics presented in Figure 4, the difficulties in constructing a course system with integrated professional and creative education include the following: 43 schools (39.09%) lack a unified management department, 62 schools (56.36%) lack mature and replicable models, 66 schools (60%) lack innovation and entrepreneurship teaching staff, 52 schools (47.27%) lack financial support, 41 schools (37.27%) lack practical training bases, and 27 schools (24.55%) lack innovation and entrepreneurship disciplines.

3.2. Analysis of the Survey Data of the Lecturers of Integrated Professional and Creative Courses

3.2.1. The Professional Background of Teachers Engaged in Integrated Professional and Creative education

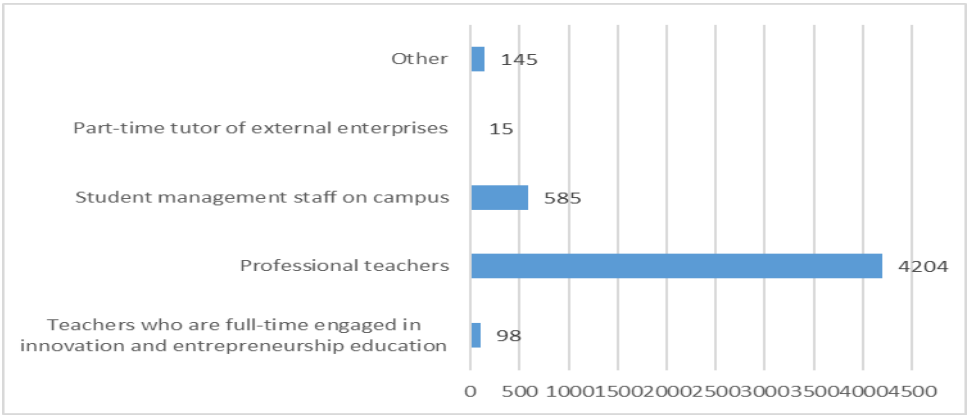

Figure 5: The professional background of teachers engaged in integrated professional and creative education

According to the statistics in Figure 5, there are 98 full-time teachers (1.94%) dedicated to innovation and entrepreneurship education, 4,204 professional course teachers (83.3%), 585 school staff members in charge of student management (11.59%), 15 external enterprise part-time mentors

(0.3%), and 145 others (2.87%).

3.2.2. Teachers' Practical Experience in Integrated Professional and Creative Education

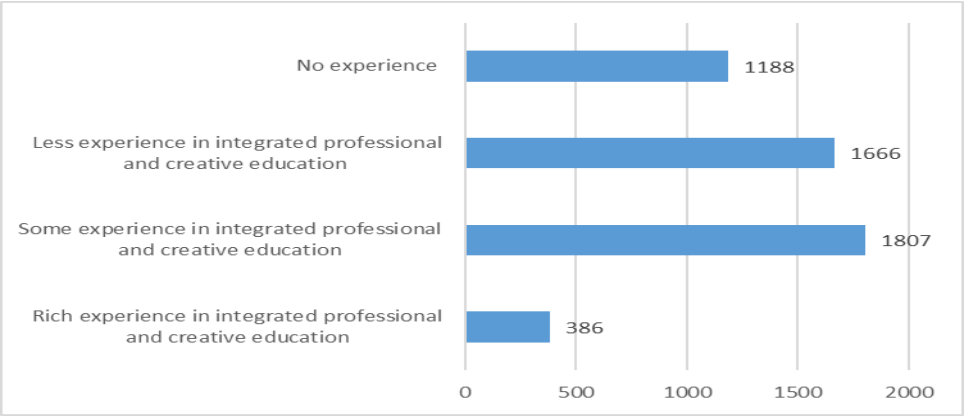

Figure 6: Teachers' practical experience in integrated professional and creative education

According to the statistics in Figure 6, 386 teachers (7.65%) have rich experience in integrated professional and creative education, 1,807 (35.8%) have some work experience, 1,666 (33.01%) have little experience and 1,188 (23.54%) have no experience.

3.2.3. Number of Training Related to Integrated Professional and Creative Education

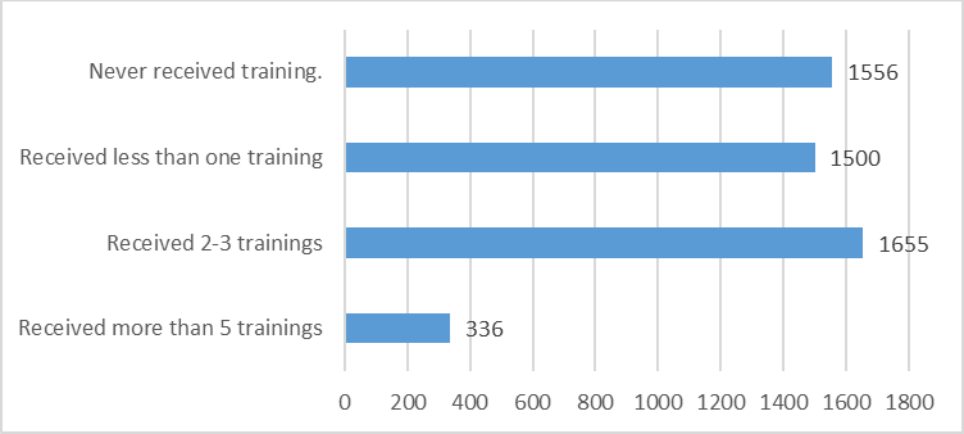

Figure 7: Number of training related to integrated professional and creative education

According to the statistics in Figure 7, 336 of them (6.66%) have received more than 5 trainings, 1,655 (32.79%) have received 2-3 trainings, 1,500 (29.72%) have received less than 1 training, and 1,556 (30.83%) have never received any training.

3.2.4. Difficulty in Building a Course System with Integrated Professional and creative Education

According to the statistics in Figure 8, the difficulties in building a course system include: inadequate training facilities in 3,037 cases (60.17%), insufficient teaching staff in 2,552 cases (50.56%), insufficient funding in 2,550 cases (50.53%), insufficient integration of theoretical and practical learning in 2,302 cases (45.61%), lack of textbooks suitable for professional characteristics in 1,791 cases (35.49%), inadequate decomposition of job capabilities required by employers in 1,589 cases (31.48%), and weak learning motivation among students in 1,021 cases (20.23%).

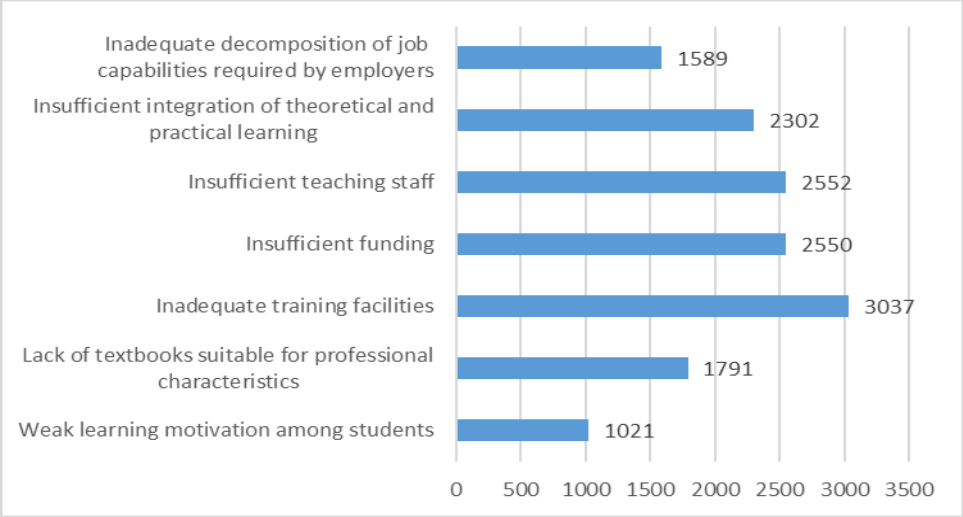

Figure 8: Difficulty in building a course system with integrated professional and creative education

3.3. Analysis on the Survey Data of Students Majoring in Integrated Professional and creative Courses

3.3.1. Students' Understanding of Integrated Professional and Creative Education

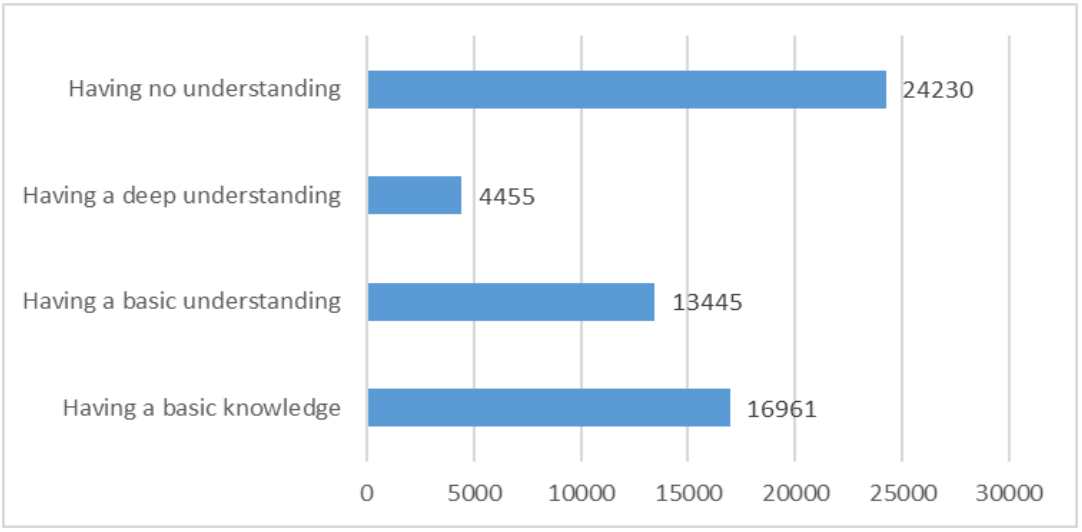

Figure 9: Students' understanding of integrated professional and creative education

According to the statistics in Figure 9, 13,511 students (36.3%) did not know about integrated professional and creative education, 10,843 students (29.13%) heard about it, 8,994 students (24.17%) basically understood it, and 3,871 students (10.4%) knew it very well.

3.3.2. The Proportion of Integrated Professional and Creative Courses in the Courses Taken

According to the statistics in Figure 10, 2,079 courses (3.52%) are all related to integrated professional and creative courses, a small number of courses, 30,456 (51.54%), are related, 14,879 (25.18%) courses have no relation, most courses, 5,595 (9.47%), are related to it to a large extent, and half of the courses, 6,082 (10.29%), are related.

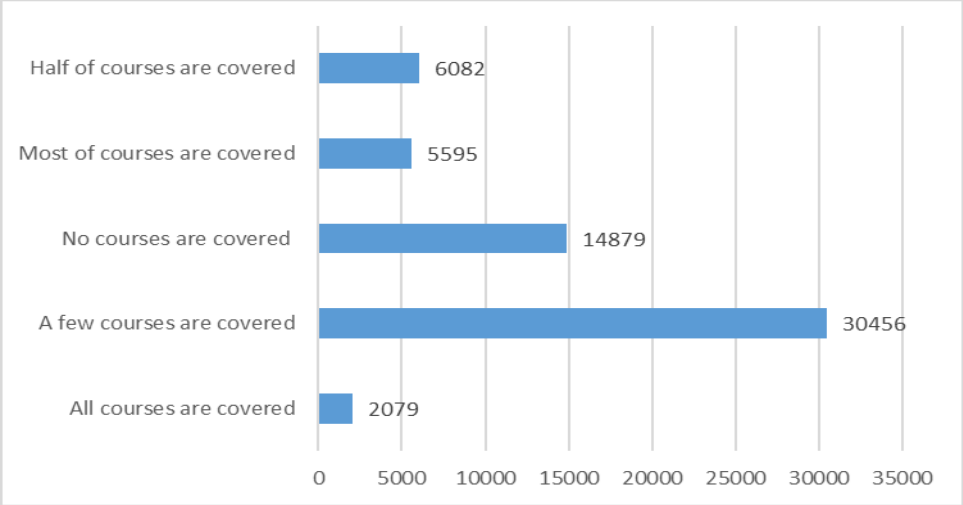

Figure 10: The proportion of integrated professional and creative courses in the courses taken

4. Analysis of the Issues in Building an Integrated Professional and Creative Course System in Universities

Overall, there are still too few integrated professional and creative courses in universities, and students are not very familiar with them. The supervisory departments are scattered, and teachers responsible for integrated professional and creative courses often lack a strong background in entrepreneurship and innovation, receive insufficient training, and need to improve their practical abilities.

The difficulties in course construction mainly stem from the incomplete innovation and entrepreneurship education system, unclear innovation and entrepreneurship education standards, a lack of a well-designed course system, insufficient numbers of excellent specialized and innovative teachers, inadequate off-campus innovation and entrepreneurship practice bases, insufficient use of information technology in innovation and entrepreneurship services, shortages and low quality of courses, insufficient understanding among some teachers of the concept of “integrated professional and creative education”, weak student awareness of entrepreneurship, insufficient interdisciplinary integration, difficulties in transforming specialized and innovative project results, insufficient funding, and difficulties in resource integration and redundant construction.

Suggestions for improving the integrated professional and creative course system in universities focus on refining the requirements for various student innovation and entrepreneurship abilities, promoting resource sharing, enhancing information technology infrastructure, conducting teacher training related to innovation and entrepreneurship, providing policy support for assessment and promotion, increasing investment in specialized and innovative teaching funds, undertaking special research on teaching reform, establishing credits for scientific and technological innovation courses, conducting provincial and national selection of integrated professional and creative courses, compiling outlines, textbooks, and case libraries for integrated professional and creative education, and more.

5. Recommendations for Improving the Construction of the Integrated Professional and Creative Course system in Universities

5.1. At the Educational Administration Level

It is urgent to establish quality standards for integrated professional and creative courses, refine

the requirements for innovative and entrepreneurial competence, and clarify the educational goals for talent classification. Guidance should be provided on the teaching objectives, management mechanisms, integration forms, teaching methods, faculty development, and base construction in the construction of the integrated professional and creative course system.

The establishment of a network of integrated professional and creative courses is encouraged to be pursued by universities, with the full utilization of the advantages of research universities, applied universities, and vocational colleges. Through multidimensional exchanges and training of integrated professional and creative course teachers, a team of such teachers can be built. Overall planning of universities should be strengthened, information exchange and sharing should be achieved, and common development should be promoted [9].

5.2. At the University and Teacher Level

Universities should establish a coordinated and unified mechanism for managing integrated professional and creative courses, to avoid scattered management and ensure a collaborative effort towards entrepreneurship education [10]. Efforts should be made to promote entrepreneurship and innovation education widely and cover more students, while improving the quality and efficiency of practice platform construction. The deep integration of social forces with the teaching, scientific research, and talent training of the school should be effectively utilized to create a high-quality applied talent training model.

The role of assessment and evaluation in entrepreneurship and innovation education should be fully utilized. Bonuses and empowerment should be provided to integrated professional and creative course construction through various channels such as the development of top-notch courses, class hour calculation, professional title evaluation, year-end assessment, laboratory construction, and school-enterprise internship base construction.

The exemplary role of high-quality courses and outstanding teachers should be strengthened. Advanced experiences in integrated professional and creative course construction from both inside and outside the province should be studied deeply. The importance of entrepreneurship and innovation education should be emphasized in the process of formulating talent training programs, teaching outlines, and other teaching standards, with reasonable course and hour settings, and entrepreneurship and innovation education should be integrated throughout the entire talent training process.

The hardware and software construction of the integrated professional and creative course system should be improved, and special training for the teaching staff should be provided. The composition of the integrated professional and creative teaching team should be diversified, and basic infrastructure and integration platforms such as teaching software, internship bases, and science and technology competitions should be provided.

5.3. At the Student Level

The importance of the integrated professional and creative courses in cultivating students' innovation, quality, and abilities should be widely promoted, and the teaching objectives, methods, and carriers of such courses should be popularized.

Students should be encouraged to participate in the integration of professional and creative courses through various forms such as technology competitions, extracurricular activities, associations, and learning communities, thus expanding the space for entrepreneurship and innovation education. Joint training paths should be explored by encouraging collaboration between subject teachers and student work teams.

6. Conclusions

Incorporating innovation and entrepreneurship education into professional education is an essential step for improving students' innovative skills in the talent cultivation process of universities. By establishing a matrix management system, integrating cross-disciplinary courses and resources, developing a team of teachers with expertise in both innovation and entrepreneurship education and their respective fields, and tailoring strategies for different target groups, a cross-disciplinary teaching system can be ultimately formed. This is a feasible approach to implementing the organization of talent cultivation for entrepreneurial and innovative individuals.

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