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Innovation and Practice of Three-in-One Precise Collaborative Education Model of "Curriculum + Platform + Social Service" in Colleges and Universities

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Abstract: *Collaborative education mode is full of vitality in the current education field. This study focuses on the innovation and practice of the three-in-one precise collaborative education mode of "curriculum + platform + social service" in colleges and universities, aiming at realizing the deep integration of education and social needs and improving students' comprehensive quality and practical ability through curriculum reform, teaching platform construction and social service participation. The research shows that the three-in-one precise collaborative education mode of "curriculum + platform + social service" in colleges and universities has remarkable effect in improving students' comprehensive quality and practical ability. Specifically, under the collaborative education mode, the students' project completion rate is above 90.4%, the average employment satisfaction rate is 91.675, and the average course score is significantly higher than that of the traditional mode, which shows the obvious advantages of the collaborative education mode in education quality and student satisfaction.*

Keywords: *Collaborative Education Mode, Three-Dimensional Integration, Employment Satisfaction, Curriculum Revolution*

1. Introduction

With the continuous advancement of globalization and technological innovation, higher education is undergoing profound changes. Especially in cultivating high-quality professionals, the traditional education model has gradually failed to meet the diverse needs of society for talents. As a new educational model, collaborative education mode shows its potential and advantages in improving students' comprehensive quality by integrating educational resources, optimizing teaching methods and strengthening practical links.

This paper explores and practices the three-in-one precise collaborative education mode of "curriculum + platform + social service" in colleges and universities. On the basis of existing research, the understanding of collaborative education mode is further deepened, and an innovative education and teaching mode is put forward, aiming at realizing the deep integration of higher education and social needs and improving students' professional knowledge, practical ability and innovative thinking.

The first part of the article is the introduction, which introduces the research background and significance of collaborative education model, as well as the research contribution and structure overview of this paper; the second part is related work, summarizing the research status and development trend in the field of collaborative education mode at home and abroad; the third part is the method, which expounds the data collection and analysis methods adopted in this study, including literature review, questionnaire survey, interview and case analysis; the fourth part is the result and discussion, which shows the implementation effect of collaborative education mode and reveals the difference between it and traditional teaching mode through comparative experiments; the last part is the conclusion, which summarizes the main findings of this study and looks forward to the future development of collaborative education mode.

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2. Related Work

In the field of contemporary education, collaborative education mode is gradually becoming the key way to cultivate high-quality professionals. Through the improvement of operation mechanism and operation guarantee, Cheng Gang realized the organic exploration of collaborative education mode, and strived to make full use of the hard-won educational resources of engineering practice bases in Tibet, improve the professional skills of engineering talents in Tibetan universities, and lay the foundation for steadily promoting the construction of new engineering in plateau areas and cultivating "reliable, applicable and retained" applied talents [1]. He Wei, from the perspective of the integration of production and education, combined with the mode of school-enterprise collaborative education, analyzed the current situation and development trend of cross-border electronic commerce market, summarized the basic requirements and abilities of talents in cross-border electronic commerce, and put forward the mode of school-enterprise collaborative education based on the integration of production and education [2]. In order to better cultivate high-quality college graduates majoring in animal medicine, Bai Rui carried out the practice of integration of production and education and cooperation between schools and enterprises, and linked the interests of both schools and enterprises from the aspects of formulating and revising the training plan for animal medicine talents, reforming teaching methods and establishing a "double-qualified" teacher-enterprise co-training mechanism [3]. Taking the provincial smart agricultural college of Shanxi Agricultural University as an example, Wang Chao explored the "1234" collaborative education mode of "1 core, 2 tutors, 3 platforms and 4 systems" in smart agricultural industrial college, providing reference for the development and talent training mode of smart agricultural industrial college in China [4]. In response to the current problems faced by vocational colleges in collaborative education, such as insufficient top-level planning, limited professional knowledge, lagging platform construction, and a shortage of dual teacher talents, Cao Xiangyu believes that it is urgent to focus on the diversified background of student sources, explore the construction path of the "big data+" collaborative education model in vocational colleges through collaborative design, dual track parallel, improved carriers, and internal training and external introduction, and provide suggestions and recommendations to improve the quality of collaborative education in vocational colleges [5].

Moreover, Telilia had developed an intelligent cooperative educational game and integrated learning analysis tools to support English vocabulary teaching [6]. Inada Y analyzed the effects of the two modes by comparing the co-creation of physics classroom and online classroom in the cooperative education of industry and university [7]. Al Rawashdeh A Z studied the advantages and disadvantages of e-learning by analyzing college students' views on e-learning [8]. Okunlaya R O, based on the application of artificial intelligence in library services, provided new opportunities for the digital transformation of university education and proposed an innovative conceptual framework for achieving artificial intelligence in university library services [9]. Huallpa J J discussed the ethical problems that may be encountered when using Chat GPT in university education [10]. According to the above research, the existing research is still insufficient in the systematicness and accuracy of collaborative education mode, especially in the effective integration of curriculum content, teaching platform and social practice, which needs further innovation and practice. This study focuses on how to achieve the deep integration of higher education and social needs through curriculum reform, teaching platform construction and social service participation, and improve students' comprehensive quality and practical ability.

3. Method

3.1. "Curriculum + Platform + Social Service" Mode

"Course + Platform + Social Service" three-dimensional integrated and precise collaborative education mode has become an important way for colleges and universities to explore and cultivate innovative talents [11-12]. This model aims to improve students' comprehensive quality and professional ability by integrating course teaching, network platform and social practice.

The University of Electronic Science and Technology of China has built a "1234" intelligent network education platform, promoted the precise ideological and political education, and realized the functions of full-time education informationization, whole-process education visualization and all-round education integration through the deep integration of big data technology. Shenzhen polytechnic, on the other hand, has built a "three platforms, six links" innovative and integrated

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practice teaching mode, taking school-enterprise cooperation and work-study combination as the logical starting point, and following the growth law of technical and skilled talents, and constructed a "vertical and horizontal coordination" practice teaching mode.

With "Three Persistences and Three Promotions", Wuhan University deepens the work of educating students in social practice, persists in educating people for the party and the country, enhances the leading power of practice, and cultivates students' feelings of home and country. At the same time, it insists on collaborative innovation, promotes the systematic practice, and forges students' abilities and skills. University of Science and Technology Beijing explores the construction of "2+3+4" mechanism, makes great efforts to promote practical education, strengthens top-level design, builds a big pattern of practical education, runs through the education chain and creates a new mechanism of practical education.

3.2. Accurate Collaborative Education

The precise collaborative education mode is an innovation and expansion of the traditional education mode [13-14]. Relying on the formulation of personalized education plan, it designs customized learning and development plan for each student on the basis of analyzing students' characteristics and needs. The application of information technology, especially big data and artificial intelligence technology, makes it possible to accurately analyze students' learning behavior and provides data support for teaching decision-making.

The construction of cooperative education mechanism of home, school and community emphasizes the close cooperation among schools, families and society, and through communication and resource sharing, it forms an educational synergy to promote students' all-round development. The deepening of practical teaching allows students to combine theoretical knowledge with practical operation in the process of participating in social practice, and enhances students' practical ability and innovative spirit.

The innovation of education evaluation system helps to find out the problems in the process of education and make adjustments by establishing a scientific evaluation model to comprehensively and objectively evaluate the growth process of students. The construction of digital platform integrates all kinds of educational resources, realizes the real-time sharing and exchange of educational information, and improves the intelligence and convenience of educational services.

3.3. Data Collection

Table 1: Questionnaire data results

Survey ID	Question Type	Positive Feedback	Neutral Feedback	Negative Feedback	Total Feedback	Average Satisfaction
Survey01	Relevance of Course Content	95	40	15	150	4.5
Survey02	Appropriate Course Difficulty	80	50	20	150	4.3
Survey03	Platform Access Speed	70	60	20	150	4.1
Survey04	Completeness of Platform Features	75	55	20	150	4.2
Survey05	Opportunities for Social Service Practice	100	30	20	150	4.6
Survey06	Teacher Interaction and Support	85	45	20	150	4.4
Survey07	Overall Evaluation of Collaborative Education Model	90	45	15	150	4.7

Data collection is the basic work to ensure the quality and depth of research. Firstly, through

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literature review, we collect and analyze the existing academic materials, policy documents and related books, and grasp the theoretical development and practical progress. Then, a questionnaire survey is designed to collect the opinions and feedback of different groups such as students, teachers and parents quantitatively. The questionnaire contains closed questions and open questions to facilitate statistical analysis of the data. The specific questionnaire results are shown in Table 1:

Table 1 contains seven different survey numbers, and each number corresponds to a specific survey question. Under each survey question, the number of positive feedback, neutral feedback and negative feedback is listed, which reflects the different attitudes and evaluations of respondents to the survey questions.

In addition, through semi-structured interviews, the participants' personal experiences, attitudes and needs were understood, including university administrators, teachers, students, parents and social service partners. In some cases, on-site observation is conducted to record the actual operation of collaborative education activities to ensure the authenticity and validity of the data.

The design and implementation of experiments and pilot projects allow the new collaborative education mode to be tested under controlled conditions and relevant data to be collected. Then, the collected data are processed by qualitative and quantitative analysis methods, including content analysis, discourse analysis, descriptive statistics and inferential statistics. Finally, different sources and types of data are integrated to form an understanding of the collaborative education model in colleges and universities.

It should be noted that in the whole process of data collection, ethical issues must be considered to ensure that the privacy and informed consent rights of participants are fully respected and relevant research ethics and regulatory requirements are observed.

3.4. Curriculum System Construction

The construction of curriculum system is the core link to realize the educational goal [15]. First of all, the educational objectives of the curriculum system are clearly defined, which are closely related to the objectives of the overall collaborative education model, aiming at cultivating students' professional knowledge, practical ability and social responsibility. Through market research and student demand survey, detailed demand analysis is carried out to ensure that the course content can meet the development needs of society and students.

The development of course content covers theoretical courses, experimental courses, case studies and project practice. Modern teaching methods such as flip classroom, project-based learning and problem-oriented learning are adopted to improve students' active learning ability and innovative thinking. Integrating resources inside and outside the school, including teachers, teaching materials, laboratories and network platforms, provide rich learning resources, and use online learning management system to realize curriculum resource sharing and distance teaching.

Social service project integration allows students to learn and experience in practice through voluntary service and community participation. The school establishes a diversified curriculum evaluation system, including formative evaluation and summative evaluation, to ensure the comprehensiveness and fairness of the evaluation. The administration strengthens teacher training to improve teachers' professional abilities and teaching skills, particularly their teaching implementation ability under the collaborative education mode.

Based on students' feedback, teaching effects, and changes in social needs, the academic department adjusts and optimizes the curriculum system to ensure its continuous improvement and updating. The institution encourages interdisciplinary course design, promotes exchanges and cooperation between different disciplines, and broadens students' knowledge horizons.

4. Results and Discussion

4.1. Experimental Scheme

In the research, this paper establishes the student-centered educational concept, ensures that the course content is closely related to practical application, and cultivates students' comprehensive ability. In the aspect of curriculum system integration, this study has designed and adjusted the existing curriculum to ensure that the curriculum content not only covers theoretical knowledge, but also

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includes practical skills and social service learning, so as to achieve the educational goal of all-round development. At the same time, the online learning management system is used to share course resources, conduct online interaction and distance teaching. Based on the above contents, this paper realizes the scheme design of the three-dimensional integrated collaborative education mode. In order to further understand the effect of the scheme designed in this paper in practical application, this paper makes a concrete comparative experiment with the traditional teaching mode, focusing on three key indicators: project completion, employment rate and average score of course scores, and reveals the concrete effects of the collaborative education mode in promoting students' knowledge absorption, skill improvement and social practice ability.

Before the experiment began, 40 students were taught in collaborative education mode and traditional mode respectively. Among them, in view of the collaborative education mode, the course teaching plan is designed and implemented, and the online interactive platform is developed and deployed to support students' course learning, discussion and communication and task cooperation. At the same time, the institution coordinates with community partners to plan and implement social service projects, ensuring that students can apply theoretical knowledge to solve practical problems. The traditional teaching mode adopts the traditional offline teaching mode. In the teaching process, collecting data about project completion, employment satisfaction and average scores of courses, and record key events of teaching activities and students' feedback.

4.2. Implementation Effect

In this paper, a comparative experiment between collaborative education mode and traditional teaching mode is realized, and the comparative experimental data are quantitatively analyzed. Among them, the comparative results of project completion are shown in Figure 1:

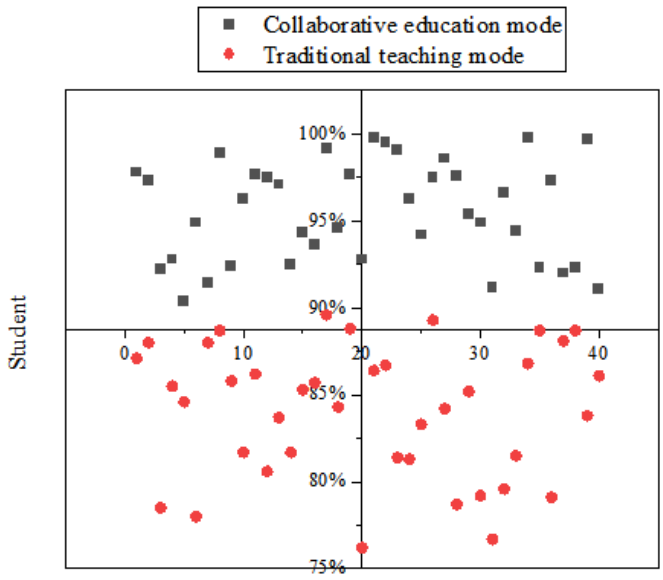

Figure 1: Project Completion Degree

By analyzing the project completion data in Figure 1, this paper finds that the project completion degree of 40 students in collaborative education mode is always higher than that in traditional teaching mode. Specifically, the degree of students' project completion under the collaborative education mode is above 90.4%, but the traditional teaching mode is below 89.6%, which shows that the collaborative education mode has obvious advantages in promoting students' project completion. Further analysis of these data shows that the improvement of students' project completion under collaborative education mode is due to the more personalized learning path and richer learning resources provided by this mode.

Figure 2 shows the comparison results of employment satisfaction:

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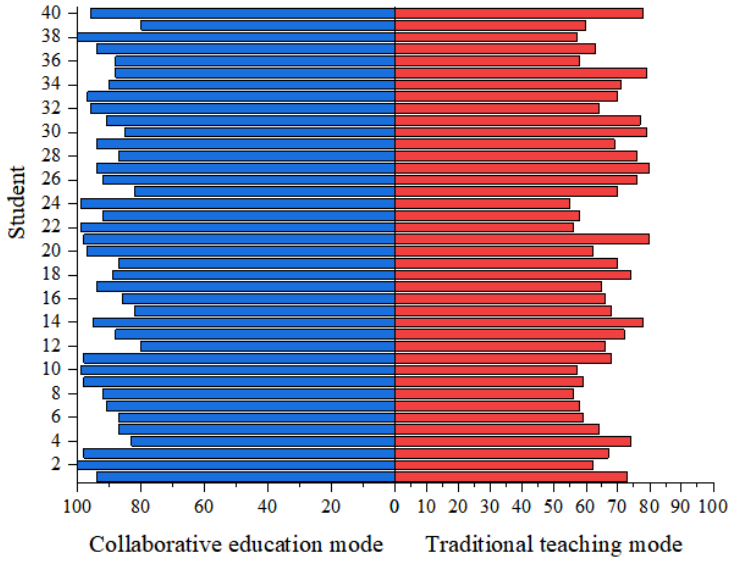

Figure 2: Employment satisfaction

According to the data in Figure 2, after careful analysis, this paper found that the average employment satisfaction of students under the collaborative education mode reached 91.675, showing a high degree of satisfaction; under the same circumstances, the average employment satisfaction of the traditional teaching mode is only 67.35, which is far lower than that of the collaborative education mode. This difference stems from the multi-dimensional education method of the collaborative education mode, which is closely combined with course learning, practical training and social services. Under the collaborative education mode, students have the opportunity to get in touch with the real working environment and participate in practical work projects. These experiences enable them to better understand the needs of the industry and improve their professional skills and professionalism.

The average score of the course is shown in Figure 3:

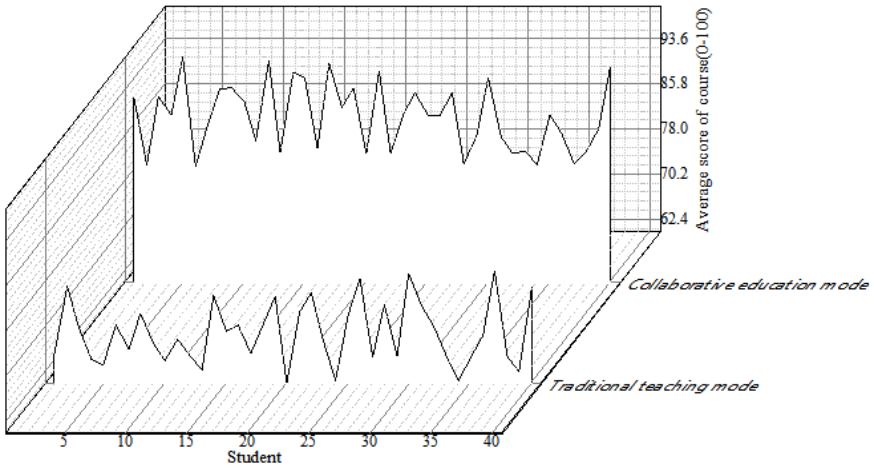

Figure 3: Average scores of courses

As shown in Figure 3, the average score of course shows that the average score of students' course under the collaborative education mode is generally higher than that under the traditional mode. In the first set of data, the average score of students in the collaborative education mode is 92.2, but it is only 65.3 in the traditional teaching mode, which is a huge gap, indicating that the collaborative education mode has significant advantages in improving students' curriculum performance. This difference stems from many factors of collaborative education model, including more personalized learning path, more interactive teaching methods and closer teacher-student relationship.

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4.3. Discussion

The three-in-one precise collaborative education mode of "curriculum + platform + social service" in colleges and universities has shown remarkable effect in improving students' comprehensive quality. This model provides a comprehensive and in-depth learning environment for students by combining rich course content, interactive online platform and practical social service activities. This environment not only strengthens students' mastery of professional knowledge, but also promotes the development of their critical thinking, innovative ability and social skills.

Although it has made great achievements, it also faces some limitations in the implementation process. The lack of diversity and individualization of teaching methods affects students' learning experience and effect. Therefore, diversified teaching strategies should be adopted to meet the learning needs of different students. Meanwhile, the administration establishes a robust evaluation and feedback mechanism to keep abreast of students' learning progress and provide specific feedback. The professional development of teachers and the promotion of students' participation are also the key factors for the success of implementing the new model. By providing professional training and incentive mechanism, teachers' teaching ability and students' enthusiasm for participation can be improved.

5. Conclusion

Through systematic research and theoretical research, this paper proves that the three-in-one precise collaborative education mode of "curriculum + platform + social service" in colleges and universities has played a significant role in improving students' comprehensive quality and practical ability. Aiming at the problems existing in the traditional education model, such as scattered educational resources, single teaching method and weak practical links, this study puts forward an innovative education model, and verifies its effectiveness through comparative experiments. Under the collaborative education mode, students' project completion, employment satisfaction and average scores of courses are significantly better than the traditional teaching mode. These results show that the collaborative education mode has obvious advantages in education quality and student satisfaction.

However, the research sample and implementation scope of this study are limited, which affects the universal applicability of the conclusion. Secondly, in the process of implementing the collaborative education model, there are challenges in resource allocation, teaching method innovation and evaluation mechanism improvement.

Looking forward to the future, the further development of collaborative education model needs to expand the research samples and implementation scope to enhance the universality and adaptability of the research conclusions; optimize the allocation of resources, strengthen teacher training, and improve the implementation effect of the education model; innovate teaching methods and strengthen personalized teaching to meet the learning needs of different students.

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