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RESEARCH ARTICLE

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Exploration of the Practice of School Enterprise Collaborative Nurturing Dual Creation Linkage Teaching Mode

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Abstracts: With the promotion of economic globalization and scientific and technological innovation, university education needs to be more closely integrated with the actual industry and market demand, to cultivate innovative and practical talents adapted to the development of the society. Under the new requirements for higher education and the changing needs of society, the application and practice of the school-enterprise collaborative education dual-creation linkage teaching mode has also received more attention. This teaching mode advocates close cooperation and collaboration between schools and enterprises, and realizes the sharing of educational resources and complementary advantages through joint teaching, scientific research, and practical activities. Therefore, it is of great significance to explore the practice of school-enterprise collaborative education and dual-creation linkage teaching mode, which can break through the boundaries of traditional education, promote the deep integration of university education and industrial development, cultivate high-quality talents with innovative and entrepreneurial spirit and ability, and make a positive contribution to the sustainable development of the society and innovation drive.

Keywords: university-enterprise collaborative education; dual-creation linkage; teaching mode; teaching practice

Introduction:

In modern higher education, university-enterprise cooperation has been supported by policies and funding, which has encouraged universities and enterprises to establish close cooperative relationships to jointly promote the development of innovation and entrepreneurship education. The implementation of this model can, on the one hand, enable students to be exposed to real industrial environments and practical problems, and improve their practical and innovative abilities, and, on the other hand, provide enterprises with talent reserves and technical support, which promotes the innovation ability and competitiveness of enterprises. In this context, schools and enterprises need to actively explore new modes and new ways of innovation and entrepreneurship education, strengthen cooperation, and jointly cultivate innovative talents to meet the needs of the times.

1. The design and characteristics of school-enterprise collaborative education dual-creation linkage teaching mode

1.1 Design Principles and Objectives of the Mode

The design of the School-Enterprise Collaborative Nurturing Dual-creation Linkage Teaching Mode is based on the principles of win-win cooperation, practice orientation, student subjectivity, a combination of teaching content with industry demand and diversity of teaching assessment, aiming at realizing the close cooperation between the school and the enterprise, and promoting the cultivation of innovation and entrepreneurship and the

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enhancement of the practical ability of the students. Through the partnership between schools and enterprises, the model focuses on combining theoretical knowledge with practical skills, cultivating students' professional competence, and encouraging students to take the initiative to participate in learning and innovation, and entrepreneurship activities, cultivating their independent learning ability, teamwork ability, and innovative thinking. The model requires an integrated and comprehensive optimization of teaching content, teaching methods, teaching evaluation, etc., to train students in the form of school-enterprise cooperation, so that they can acquire the knowledge, skills, and experience needed for comprehensive development (Liu, 2023). The goal of this model is to cultivate students' innovation and entrepreneurial ability and practical ability, improve their comprehensive quality and employment competitiveness, lay the foundation for their future development, and provide society with more talents with dual-creation ability.

1.2 Combination and design of teaching content

In the school-enterprise collaborative education dual-creation linkage teaching mode, the combination and design of teaching content requires combining the teaching content of the school with the practical needs of the enterprise, to meet the needs of the students' comprehensive development and the requirements of practical application. The teaching content is to integrate theoretical knowledge with practical skills, and through project-driven teaching and practical activities, students can apply what they have learned to solve problems in real scenarios. And the design of teaching content should be in line with the practical needs of enterprises, through cooperation with enterprises to carry out practical projects, so that students can be exposed to real business environments and challenges, and develop their ability to adapt to the workplace. In addition, the design of teaching content should also pay attention to the cutting edge of the industry and the direction of innovation, and introduce the latest theoretical knowledge and technological trends, to cultivate students' innovative thinking and entrepreneurial awareness. By working closely with enterprises, schools can obtain their professional resources and practical experience and integrate them into the teaching content, so that students can be exposed to real industry situations and problems and gain practical experience and inspiration from them. Under the school-enterprise collaborative parenting dual-creation linkage teaching mode, the practical ability and professionalism of students can be improved, so that they can better adapt to future work challenges and innovation and entrepreneurship needs (Zhang, 2023).

1.3 Selection of teaching methods and Means

To effectively promote students' learning and the cultivation of innovation and entrepreneurship, the school-enterprise collaborative education dual-creation linkage teaching model advocates the use of project-driven teaching methods, which allow students to participate in the process of solving practical problems through the design and implementation of actual projects, and cultivate their practical ability and teamwork spirit. Or it adopts heuristic teaching methods, encourages students to think out of the box, explores multiple ways of solving problems, and triggers students' thinking and independent learning through guidance and questioning. In actual teaching activities, information technology means, such as online platforms, virtual laboratories, and remote cooperation tools, can be used to realize cross-regional and cross-time cooperation between schools and enterprises, and to broaden students' learning channels and access to resources. Field trips, internships, and practical training can also be used to expose students to real enterprise environments and work practices and to enhance their professionalism and practical ability. Teachers play the role of counselors and mentors in the teaching process, providing guidance, feedback, and evaluation to stimulate students' creative potential and self-confidence (Xiong & Xu, 2018). Reasonable selection and application of teaching methods and means can promote students' active learning and innovative thinking, and cultivate their

practical ability and ability to adapt to future career development.

1.4 Changes in the Roles and Interaction of Teachers and Students

The school-enterprise collaborative education dual-creation linkage teaching mode has brought about a significant change in the roles of teachers and students and the way of interaction, in which the teacher's role is changed from the traditional knowledge transmitter to the student's mentor and guide. Instead of just providing information and answering questions, teachers play the role of facilitators of learning and innovation, guiding students to active exploration, independent thinking, and teamwork, and stimulating their creativity and problem-solving abilities. Teachers are also responsible for the design and organization of the project, providing necessary guidance and feedback to help students achieve the project goals (Liu & Zhao & Nan,2022). At the same time, the role of students in this model changes from passive knowledge receivers to active learners and innovators. Students need to actively participate in the process of planning, executing, and evaluating the project, be responsible for teamwork and task division, and continuously improve their problem-solving and practical skills. The way teachers and students interact with each other has become more equal and interactive. The interaction between teachers and students is more open and flexible, promoting the collision of ideas and knowledge sharing through discussion, counseling, and feedback. At the same time, students also realize the co-construction of knowledge and exchange of experience through cooperation and collaboration. This new way of teacher-student interaction encourages students to express their own views and independent thinking, enhances their independent learning and problem-solving ability, promotes an in-depth understanding of knowledge and effective use of practice, and provides assistance for students' dual-creation development (Yang & Huang & Fang & Liu ,2021).

2. The practical exploration of school-enterprise collaborative education dual-creation linkage teaching mode

2.1Teacher team formation and training

Under the school-enterprise collaborative nurturing dual-creation linkage teaching mode, the formation of the teacher team should focus on multidisciplinary and cross-field combinations, to be able to meet diversified teaching needs and the development of practical projects. The team members should include subject experts, enterprise mentors, and education researchers to ensure an effective combination of teaching content and practical needs. And the teacher team needs to undergo professional training to improve their ability and quality under the school-enterprise cooperative teaching mode. The training may include the concept of innovation and entrepreneurship education, project management and teamwork skills, and the sharing of practical experience in enterprises, etc. Teachers should also be encouraged to learn about cutting-edge industry dynamics and the latest technological trends, to keep the teaching content updated and in line with the practice (Sun , 2019). Teacher teams can also share teaching experiences, learn from each other and learn from each other through cross-school and cross-business exchanges and cooperation to continuously improve the quality and level of teaching.

A university cooperates with a local technology company to carry out the university-enterprise collaborative education dual-creation linkage teaching mode and to provide students with high-quality faculty, the formation of the teacher team is carried out in the form of university-enterprise cooperation. In this program, the teacher team consists of teachers from the school and professionals from the technology company. Teachers from the school act as academic guides and curriculum designers of the program, responsible for providing professional theoretical knowledge and teaching methods. Professionals from technology companies participate as business mentors and are responsible for providing practical resources such as

hands-on projects, industry cases, and entrepreneurial guidance. Such a combination ensures the combination of teaching content and practical needs, enabling students to be exposed to the latest technology trends and industry dynamics, and students can provide a reference for their future innovation and entrepreneurship in their exposure to these practical resources.

2.2 Integration and Utilization of enterprise resources

The integration of enterprise resources involves the establishment of cooperative relationships and resource-sharing with schools. Enterprises can provide resources such as practical projects, industry cases, professional tutors, etc., and jointly design and carry out teaching activities with schools. Through close cooperation with schools, enterprises incorporate their own practical experience, advanced technology, and industry dynamics into the teaching content, so that students can be exposed to real business environments and challenges, and enhance their level of practical professional quality. The utilization of enterprise resources includes practical internships, guidance by enterprise mentors, and the construction of business incubation bases, etc., so that students can personally participate in the actual work of enterprises and enhance their skill level and professional competitiveness. Enterprise resources can also be used to support students' innovation and entrepreneurship training and incubation projects, supporting students such as entrepreneurial mentors, entrepreneurial funds, and market channels, and promoting the development of their entrepreneurial potential and innovation ability. Under university-enterprise cooperation, the integration of enterprise resources can effectively broaden students' employment channels and career development opportunities, and through enterprise internships and university-enterprise cooperation programs, students can establish good career networks and cooperative relationships with enterprises and lay a solid foundation for their career development and innovation and entrepreneurship (Sun & Shi & He, 2019).

A university and an electronic technology enterprise carry out university-enterprise cooperation to jointly develop talent training programs, in this university-enterprise cooperation project, a team of four students obtained support for the cooperative project plan, the team project is smart home system development, the student team cooperates with the enterprise to design and develop the smart home system, including smart lighting, smart security, smart home appliances and so on. Using the development platform and technical guidance provided by the enterprise, the students combined their innovative thinking and technical knowledge to realize a functional and easy-to-operate smart home system. The project not only familiarized students with IoT technology and system integration but also cultivated their teamwork and project management skills. And in the cooperation between the student team and the enterprise, this entrepreneurial project has a high commercial potential. The project team has formulated an effective marketing strategy and promotion plan through market research, competition analysis, and target customer positioning, including product positioning, brand promotion, channel selection, and marketing activities planning. Utilizing the marketing resources and professional guidance provided by the enterprise, the student team actively participated in promotional activities to showcase and promote the product through online and offline channels. They also conducted in-depth communication and negotiation with potential partners and investors to seek cooperation opportunities and obtain financial support, and finally successfully realized the market promotion of their entrepreneurial projects and achieved certain commercial results and business cooperation.

2.3 Selection and guidance of dual-venture projects

The selection of dual-venture projects should be based on the student's interests, professional backgrounds, and innovation potentials, and students can choose suitable dual-venture projects according to their interests and specialties so that they can participate in them more actively and proactively.

The selection of projects should focus on innovation, practicability, and feasibility, aiming at cultivating students' innovative thinking, problem-solving ability, and entrepreneurial awareness. Teachers and business mentors play an important role in dual-entrepreneurship education, and they should provide professional guidance and support to help students clarify project goals, make plans and solve problems. The guidance includes project planning, market research, business model design, teamwork, and other aspects, to cultivate students' project management ability, teamwork ability, and innovation and entrepreneurship skills (Su & Yang , 2019). In the process of guidance, teachers and business mentors should adopt heuristic teaching methods to encourage students to learn independently, explore actively, and reflect continuously, cultivate their innovative spirit and problem-solving ability, and help students overcome difficulties and achieve practical results.

As an example, a university cooperates with a new energy technology company to carry out a dual-venture project, for example, to cultivate students' innovation and entrepreneurial ability, and practical skills in the field of new energy, in the selection of the project and taking into account the students' professional background and interest, and at the same time, also pay attention to the market demand and social issues, and finally determined as the intelligent solar charging station project. The selection of this dual-venture project is based on a variety of factors, the new energy field is an important direction of the current social development, the intelligent solar charging station is a representative project of sustainable development and green energy, the project involved students mainly in electrical engineering, energy engineering, and the students' majors are closely related to the project, which can provide them with the professional knowledge of the practice of the direct combination of the opportunity to promote the integration of subject knowledge and practical application. The program is closely related to the students' majors. As a partner, this new energy technology company provides abundant resources to support the project. The company owns advanced solar energy technology and an intelligent charging system and provides students with experimental equipment and technical guidance. Professionals from the company acted as project mentors, cooperated with the students to carry out the project, guided the students to solve technical problems and business challenges, and provided project funding and market development support to help the students transform the project results into commercial value.

Summarize

The traditional education model is often too theoretical and isolated from practice to meet the needs of students' innovation and entrepreneurship training. The practical exploration of the university-enterprise collaborative education dual-creation linkage teaching mode is an important direction for the development of innovation and entrepreneurship education in colleges and universities, which provides students with broader development platforms and opportunities, and at the same time promotes in-depth cooperation between colleges and universities and industries. Only through continuous exploration and innovation can we continue to improve this model, cultivate more high-quality talents with innovative spirit and practical ability, and make positive contributions to the sustainable development and innovation drive of society.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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