

Construction and Implementation Strategies of Maker Education System of Universities in Shaanxi Province under the Background of Innovation and Entrepreneurship

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Abstract: Creator education aims to cultivate learner's creative ability, problem solving ability and technical literacy. Under the background of innovation and entrepreneurship, the course of creator education in Shaanxi province has been generally opened, but the system of creator education has not yet been constructed completely. This paper analyses the key construction models of the creator education system in Shaanxi universities, and gives the corresponding implementation strategies, including promoting maker culture, constructing maker space and strengthening cooperation of universities and enterprises to provide some references for the relevant researchers.

1. Introduction

Nowadays, innovation and entrepreneurship have become distinct labels in the new era, which are also the basic requirements of economic and social development and comprehensive education reform [1]. Maker education has become an important part of education system in the era of innovation. The purpose of the creative education in colleges and universities is to retain and stimulate student's innovative consciousness and creativity, to enable students to enjoy the joy of practice and sharing, and to cultivate students' independent and complete personality. The development of maker education is a new problem, which needs the coordinated promotion of all sectors of society. Delegates hope to actively carry out the pilot project of creative education in the province, speed up the promotion of creative education into the campus; carry out creative competition activities to expand the impact of creative education and awareness of creative education; summarize and promote innovative cases of education and teaching, give play to the role of demonstration and driving. Maker refers to a person who transforms an idea with certain technological challenges into reality. The maker should have the necessary knowledge base and the ability and consciousness of innovation, practice, sharing and communication. Nowadays, with the development of manufacturing technology, information technology and the demand of multi-market, the creative education with integration of subject knowledge and information technology becomes an effective way to realize the cultivation of core competitiveness in the future. The integration of the maker movement and education has become inevitable. Maker education, in a broad sense, refers to a form of education oriented by fostering the creative spirit of the public; in a narrow sense, it is an educational mode oriented by fostering young people's creativity [2]. It's an important subject for universities in Shaanxi province to construct a comprehensive maker education system.

2. Construction Models of Maker Education System of Universities in Shaanxi Province under the Background of Innovation and Entrepreneurship

2.1 Project-driven Model.

Project-driven model is a student-centered teaching model. By promoting the development of student's self-study ability, information-gathering ability and presentation of learning outcomes, learners' knowledge and skills in the cognitive field can be improved. Students actively learn and construct knowledge frameworks through technical and non-technical means in the process of

project-based learning and in the process of communicating and sharing with learning partners. A typical feature of project-based learning model is the comprehensiveness of learning projects. In project-driven model, the project that learners need to solve cannot be solved by a single subject knowledge, so the project-driven model emphasizes that learners should learn to integrate other subject knowledge to solve the problem. Therefore, the project-based learning model needs learners to integrate the knowledge and skills of all subjects in the learning process, and can solve the problems encountered in the process of project learning from different perspectives. This learning mode also breaks the disadvantage of the division of knowledge in subject-based teaching. Because the project-based learning mode requires students to use their open thinking and imagination to think from different perspectives, and then integrate knowledge and life experience of other disciplines to solve the problem smoothly. Therefore, project-driven model gives learners a relaxed and free learning environment to promote the cultivation of learner's divergent thinking, to free play to their imagination, to promote their own learning results to have more personal characteristics, and to stimulate the creative potential of learners. In the creative teaching mode, the design of creative project is particularly relevant. It should come from the real world and be closely related to students. It can arouse student's thirst for knowledge, integrate the core knowledge and skills required by students' future career positions, contribute to the sustainable development of student's comprehensive vocational ability, and stimulate students' creative thinking, and promote student's reflection and improvement [3].

2.2 Cooperation-driven Model.

Cooperation-driven model is a group learning model composed of several heterogeneous students in the form of cooperation and mutual assistance [4]. Members have common goals and tasks, and each group member has its own module of responsibility. There is a clear division of labor and a close relationship between learners. Students are encouraged to integrate their abilities and strive together to accomplish common tasks and improve their learning abilities. Cooperative driving mode provides learners with a relaxed, happy and mutually supportive learning environment. Through the communication and communication between learners in the learning process, students can share resources, learn from each other what they have done well, and further improve and strengthen their abilities, inspire their wisdom and potential; in the interaction with learning groups and teachers, they exercise their expressive ability and communication skills, and enable learners to learn later. The study career shows more self-confidence; enables students to understand how to innovatively learn in cooperation with their friends; and forms a good cooperative relationship and a healthy sense of competition among learners. At the same time, through communication with teachers and classmates, students have changed their social awareness, social skills and so on. Cooperative driving influences student's values, attitudes, abilities and world outlook through interaction, collaboration and communication, which is conducive to the formation of students' good personality. Maker education encourages learners to cooperate and communicate across regions, disciplines and even stages of education, breaks the boundaries of traditional teaching space, enriches learning knowledge, broadens their horizons, contacts more novel knowledge and technology, and promotes innovation through a variety of ideological collisions. In this process, through cooperation and communication, students can increase. Friendship can also develop language skills.

2.3 Experiment-driven Model.

The experiment-driven model is a research-based learning model, which advocates the spirit of inquiry learning, stimulates student's learning motivation, and cultivates students' innovative consciousness and technical literacy. In the process of learning, let students carry out exploratory learning alone or in groups. We should solve problems with experimental results and research data, so that students can learn on the basis of practice, pay attention to the collaboration between learners and the integration of science and humanity, so that students can truly integrate into the technological world in the process of learning, improve student's digital literacy, and cultivate design ability. Force, operation ability and inquiry ability can promote student's continuous growth and development in learning. In teaching, we should consider the progressiveness of knowledge and make a general

teaching design for the whole chapter. In the learning process, each group first chooses a research topic according to the characteristics and teaching objectives of this section. In determining the grouping, we should take into account the characteristics, learning ability, communication and communication ability of each group member, the expected learning effect and the required learning tools to ensure the feasibility. On the basis of preliminary preparation, a complete conceptual design is formed. Considering the influence of different factors, a number of design schemes are generated, and the best implementation scheme is selected by weighing and comparing. This link requires learners to produce their works according to their own implementation plan. Students constantly reflect and summarize in practice, and make corresponding adjustments and improvements to the program. Under the guidance of teachers, each group tests and tests its own work again, learns from other groups on the basis of summarizing its own group defects, and then makes its own plan more reasonable after revision.

3. Implementation Strategies of Maker Education System of Universities in Shaanxi Province under the Background of Innovation and Entrepreneurship

3.1 Promote Maker Culture.

It is often not enough to carry out maker education only by the strength of the educational circles. It requires the concerted efforts of all sectors of society, which requires appropriate values to guide society. Therefore, we need to establish a customer culture. In order to establish a customer-creating culture, we need to hold competitions, lectures, carnivals and other customer-creating activities to strengthen the participation of social personnel. At the same time, choose the theme close to life, so that people feel that the maker is closely related to life. Then show the people excellent results, preferably the results of ordinary people participating in the creation of customers, easier to resonate with the people, so that they have a sense of identity. Campus culture is rooted in social culture. The growth and development of higher vocational education cannot be separated from the soil of social culture. Only when the whole society has formed the respect for innovation and the enthusiasm of the whole people to participate in and support the campaign of creating customers can we effectively promote the influence of social creating culture on campus culture and effectively promote the development of creating customers education in higher vocational colleges. To achieve this situation. On the one hand, it depends on the government's advocacy and policy encouragement, on the other hand, it depends on the attitude of higher vocational colleges toward the education of makers; the government should actively organize various activities of makers such as the carnival of makers, the competition of makers, and encourage enterprises, educational departments and various social organizations to participate in it, which has great effect on the propaganda and promotion of the culture of makers. We should popularize a wide range of creative education activities in order to create an innovative, practical and shared campus cultural atmosphere for creative visitors. Shaanxi garlic passenger space has created the first commercial 3D printing solution service center in northwest China. After a year's commercialization attempt, the garlic mud science and technology team explored a new model that combines its own customer culture with industry incubation. "Freedom, openness and sharing" is the concept of garlic mud maker space, which influences the maker education system in Shaanxi.

3.2 Construct Maker Space.

The successful implementation of creator space in Beijing, Zhejiang and other developed provinces and cities plays an important role in promoting creator education in the society. On the one hand, it promotes the establishment of maker culture in Shaanxi Province. On the other hand, there are many technicians in the society who can provide technical support and guidance for the education of creative clients. Establish customer-creating community, carry out public welfare customer-creating activities, establish customer-creating space according to regional characteristics, and realize the combination of scientific research and production. In addition to off-line customer space, online virtual customer space should also be vigorously promoted. Virtual Creator Space has

more abundant resources and stronger sharing. Shaanxi province has a large base of netizens, so many people can enter virtual customer space, use the resources of virtual customer space to learn, record the process of customer creation activities and share the results of customer creation. College entrepreneurship education emphasizes the cultivation of student's innovative ability and quality of entrepreneurs, and emphasizes the combination of entrepreneurship activities and curriculum teaching. University and society should connect and communicate with each other. Draw lessons from the construction and operation experience of social visitor-creating space. We should give full play to the role of education in serving regional economic development by introducing excellent enterprise resources, building customer space with enterprises, gathering the research and development capabilities of high-quality teachers and the advantages of enterprise production and sales, and encouraging and guiding students to actively join the customer team. Xi'an Pioneer Coffee Block is a famous tourist space in Shaanxi Province. Taking coffee culture as a platform, it will create a more free and informative sharing platform for entrepreneurs in Xi'an, which will open the door of the world for entrepreneurs. In the future, there will be 100 innovative service institutions at home and abroad, create 100 multi-functional public spaces, gather 300 angel investors and entrepreneurship mentors, cultivate and incubate 1000 entrepreneurship teams, organize 2000 entrepreneurship activities and promote social employment of more than 10,000 people. With the emergence and rapid growth of service ecological platform, Xi'an Pioneer Coffee Block is growing into a new highland for cultivating innovative talents. At the same time, it also attracts the world's leading ideological trends intertwined in Xi'an.

3.3 Strengthen Cooperation of Universities and Enterprises.

Today's education is divorced from the real situation, students learn knowledge, but do not know how to apply it to real life. Colleges and universities can provide new theoretical knowledge for enterprises, and enterprises can provide places for students to practice. The purpose of student's learning is to enter the society. The education and teaching of schools should understand the needs of social enterprises and various jobs, and carry out practical activities in different fields to help students integrate into society. This requires the participation of enterprises. Colleges and universities seldom allocate theoretical research-based confirmatory experimental equipment to assist students in cognitive learning, but use open and flexible skill-operating training equipment to design comprehensive, applied and innovative expansion projects to cultivate student's comprehensive vocational ability. Due to the emphasis on the cultivation of student's practical skills and the use of integrated teaching places, the training room is rich in resources and has the common tools, materials and equipment needed to carry out customer-creating activities. At present, every higher vocational college has invested heavily in the construction of digital campus and digital teaching resources. It integrates teaching, library, educational administration, office system and student service into one platform to actively promote the new information-based teaching mode. With the development of information technology, colleges and universities in Shaanxi Province are fully integrating online and offline resources and implementing mixed teaching strategies. Professional technicians in enterprises have rich production experience, which is a valuable resource for students. Schools should make good use of these professional technicians to form a good cooperative relationship. Student's strong scientific research ability is a great help for enterprises to develop new products. Students' advanced ideas can also promote the reform and progress of enterprises, and realize the school-enterprise cooperation and win-win situation. In November 2018, Xi'an Human Resources and Social Security Bureau set up the first Xi'an Creator College in Xi'an Foreign Affairs College. The school will work together to create a new platform to provide comprehensive management and services for young creators, encourage more college students to find jobs and start businesses in Xi'an, and strive to form innovative and entrepreneurial brands with Xi'an characteristics.

4. Conclusion

With the proposal of "Innovation and Entrepreneurship Strategy", the importance and role of maker education in universities in Shaanxi province have been highlighted, which has received

attention from all aspects. It is not only the need of the times, but also the general trend of the development of universities in Shaanxi province. Only by speeding up the construction of the maker education system in Shaanxi province can we cultivate more excellent customers to meet the development needs of the new normal economy.

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