



Construction and Practice of Digital and Intelligent Teaching Platform with Multi-way Connectivity for Entrepreneurship and Innovation

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Abstract. The 20th National Congress of the Communist Party of China has clearly specified the goals and tasks for the development of the Party and the state in the new era and new journey, especially attaching great importance to the informatized and digital development. Moreover, a range of new requirements are presented on accelerating the construction of digital China. In recent years, colleges and universities have consistently promoted the deepening of education and teaching reform and innovation through innovation and entrepreneurship as the driver. Colleges and universities should fully implement the spirit of the 20th National Congress of the CPC and give full play to the driving and leading functions of informatization and digitalization for modern teaching and innovation with Chinese characteristics. To this end, colleges and universities should grasp new opportunities, shape new models and implement innovative cultivation of college talents. Moreover, efforts should be made to explore and develop a digital and intelligent teaching platform with multi-way connectivity for entrepreneurship and innovation.

Keywords: Informatization and digitalization; Innovation and entrepreneurship; Intelligent teaching; Practice

1 Introduction

In the new era of rapid development of informatization and digitalization, the teaching faculty of the university earnestly studies and implements the important statements of General Secretary Xi Jinping on education and the spirit of the National Education Conference, and thoroughly executes the decision and deployment of the Central Committee of the CPC and the State Council on deepening the reform of innovation and entrepreneurship education in colleges and universities. Moreover, it insists that innovation guides entrepreneurship, entrepreneurship drives employment, and informatization and digitalization are applied throughout education and teaching. It strives to build an information-based and digital intelligent teaching platform for entrepreneurship and innovation that is multi-way connected and deeply integrated with "teaching, competition and entrepreneurship." Thus, a new model of innovation and entrepreneurship education and a new ecosystem of innovation and entrepreneurship education through the whole chain can be implemented.

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R. Chitrakar et al. (eds.), *Proceedings of the 4th International Conference on New Computational Social Science (ICNCSS 2024)*, Advances in Social Science, Education and Humanities Research 844,
https://doi.org/10.2991/978-2-38476-230-9_23

2 Opportunities for development and reform of information-based and digital education for entrepreneurship and innovation

Informationization and digitalization in the new era have put forward higher requirements for the cultivation of talents in colleges and universities. Innovation capability, communication and collaboration capability, complex problem-solving capability and human-computer collaboration capability will become key future-oriented capabilities and the key to cultivate talents in the future. The change of talent demand compels the education model to be transformed and upgraded in an all-round way, and it is an inevitable choice to accelerate the construction of a high-quality education system supported by informatization and digitization. At this stage, building an intelligent teaching service platform is an essential means to push forward the informatized and digitalized education.

2.1 Planning from a high starting point, and establishing rules and systems for practical effectiveness

Universities should attach great importance to innovation and entrepreneurship education and constantly attempt to integrate informatization and digitalization into teaching practice, and explore institutional policies that combine process incentives with result incentives. They create an upgraded version of innovation and entrepreneurship education and fully stimulate the enthusiasm and motivation of teachers and students to participate in competitions.

Entrepreneurship and innovation courses should all be included in the talent training program, and these courses should be included in the management of basic credits. Universities should set credit requirements for students' participation in projects from the academic system and incentives, and many social practice projects, including entrepreneurship and innovation competition projects, should be managed as part of students' innovation practice credits. Students' evaluation of merit, participation in the postgraduate entrance exams and postgraduate recommendation should all be linked to the project competition. At the same time, universities should further reform the teacher evaluation system and implement a dynamic assessment mechanism for the faculty team. Teachers' title evaluation, salaries and bonuses are closely linked to the project competition.

In terms of talent cultivation, universities should emphasize the protection of students' creative ideas, encourage them to sustain their entrepreneurial enthusiasm and stimulate their innovative spirit. In the specific cultivation process, they should respect students' individuality and teach them according to their abilities, so that they can develop in a personalized way on the basis of all-round development. Moreover, they should establish the barrel theory and date picking theory to help students make up for their weaknesses, encourage them to pick up dates with the longest board in their hands, and maximize their strengths. Thus, it can effectively improve and cultivate their innovative and entrepreneurial capabilities, and realize value creation.

2.2 Positioning with high standards, and combining points and areas for innovation

Based on the new development stage, colleges and universities should fully implement the new development concept, deeply implement the innovation-driven strategy and improve the intelligent cultivation system of innovation and entrepreneurship talents. They should build an information-based and digital teaching platform, create an innovation ecosystem in the university from point to surface, improve students' independent innovation capabilities, and facilitate the symbiotic coupling of the innovation chain, industry chain, system chain, and result chain.

Colleges and universities should perform the tasks of "promoting teaching with competition, encouraging learning with competition and facilitating innovation with competition" in innovation and entrepreneurship education, and implement three reforms of "teaching models, learning models and talent training models." At the same time, they should integrate innovation and entrepreneurship education into the whole process of talent training, and enrich the teaching cases and data of the intelligent teaching platform. After years of practice, we have explored a new path for cultivating applied talents, and have been guiding and motivating college students to dare to make a breakthrough and innovation in education, so as to achieve high-quality development of innovation and entrepreneurship education.

3 Promoting practical innovation and assembling entrepreneurship and innovation wisdom through multi-way connectivity

3.1 Advancing with high standard and making strong moves for fueling motivation

Under the leadership of the innovation and entrepreneurship education model that deeply integrates teaching, competition and entrepreneurship in multiple ways, the university should adopt innovative measures that break conventions, use extraordinary efforts and strive for leadership in raising the benchmark, and create a new situation in advancing under pressure. They should leverage the multi-way connected model to achieve a fundamental shift from the concept of employment-based education to innovation and entrepreneurship education. Moreover, they should practically apply the information-based and digital platform to the teaching process. The university has established an information-based and digital entrepreneurship and innovation teaching system under the responsibility of the principal, dean, teaching secretary, and director of the teaching and research department. It has set up a team of teachers and researchers in entrepreneurship management to bring together their leadership in innovation and entrepreneurship and give full play to the leading role of teachers in entrepreneurship and innovation. Thus, it forms an all-round and multi-level development pattern with academic tutors, counselors and Yingchuang Association, focuses on enhancing students' innovation spirit, entrepreneurial consciousness and ability to use information technology, and continuously improves the quality of talent training. Moreover, it ignites the spirit of teachers and students with a strong atmosphere of innovation and entrepreneurship, and launches a new journey of building an infor-

mation-based and digital teaching platform for the university with heightened enthusiasm.

3.2 Implementing with high efficiency and making practical moves to promote progress

The university insists on the student-centered and output-oriented system, puts students as the subject of teaching, adjusts and changes teaching contents and methods around students' growth and development, professional characteristics and employment priorities, and further implements project-based teaching, experiential learning and collaborative education models. It utilizes an information-based and digital intelligent teaching platform for entrepreneurship and innovation to fully implement teaching in the flipped classroom. In this way, teachers are no longer transmitting knowledge and students are no longer passive recipients of information. Instead, they can become partners and collaborate in the discussion and implementation of projects, thus enabling the deep integration of information technology, education and teaching.

It should rely on academic tutors and outstanding student representatives to coach students' innovation and entrepreneurship activities throughout the process, and assist all students to improve their innovation and entrepreneurship capabilities. By building the teaching team of entrepreneurship and innovation and designing the teaching content of innovation and entrepreneurship as the entry point, it should carry out the project simulation design and road show training of the platform. In this way, students can initially build innovation and entrepreneurship thinking, capabilities and knowledge systems. Moreover, it should build an intelligent platform and cultivate enterprise mentors to facilitate the deep integration of professional practice, social practice and innovation and entrepreneurship practice.

4 Consolidating the foundation with entrepreneurship and innovation, and showing the first results of intelligent teaching of entrepreneurship and innovation

4.1 Transforming methods and turning bottlenecks into tools

Building an information-based and digital intelligent teaching platform for entrepreneurship and innovation, and creating an atmosphere of innovation and entrepreneurship are intended to cultivate students' ability to be innovative and entrepreneurial, and to solve real social problems. It is also the fundamental goal and driving force of promoting innovation and entrepreneurship in recent years. On the second anniversary of his visit to Shandong, General Secretary Xi Jinping pointed out that the replacement of the old drivers of growth will start again and a new chapter of high-quality development will be made.

Focusing on the strategic goal of the replacement of the old drivers of growth in Shandong, the university has organized a special research and in-depth investigation on the replacement of the old drivers of growth based on the innovation and entrepreneurship competitions. Relying on the intelligent teaching platform of entrepreneurship and innovation, the university has established more than 30 project teams to create new ideas and solve problems around the actual problems of the replacement of

old drivers of growth in Shandong. It advocates analyzing with new perspectives, planning with new ideas, taking reform and innovation as the fundamental driving force, integrating development and security, transforming and upgrading traditional drivers of growth and cultivating new ones. These project teams have developed green feed additives - pentacyclic triterpenoids and new environmentally friendly seaweed water-soluble fertilizers for food safety and human health, marine ecology, fisheries and tourism development, and rural ecological environment. Moreover, they apply the concept that lucid waters and lush mountains are invaluable assets, in order to continuously improve the quality of ecological environment.

4.2 Tapping the potential, turning inefficiency into real efficiency

Rural revitalization is another big challenge after China's full victory in poverty alleviation, and it is also a glorious mission for university students to contribute to the society and the country. In order to cultivate students' courage to take up the national responsibility, the university has established an information-based and digital intelligent teaching platform for entrepreneurship and innovation. Based on this, the university has continuously injected fresh resources into the development of the countryside and contributed to the modernization of agriculture with the Internet+ College Student Innovation and Entrepreneurship Competition titled "Track of the Red Dream Building Tour for Youth." The university is committed to guiding students to learn about the country and its people from the ground in China, and demonstrate their responsibility through practical actions. In the past two years, it has carried out projects such as shrimp farming in rice fields, the transformation of waste tea into treasure, cultural innovation, livestock breeding and intangible cultural heritage inheritance. The teachers of the university have led the students to travel into the countryside on red tourism, integrating the ideological education, professional education and innovation and entrepreneurship education. It combines the innovation and entrepreneurship practice of university students with targeted poverty alleviation and rural revitalization strategies, and delivers a substantial answer to the questions of "what kind of students should be trained, how to train them and for whom to train them."

Over the past two years, the university has been involved in serving 6,011 households in the Red Tour campaigns, with 118 press reports about the campaigns and reaching 141 schools. It effectively integrates information technology, digitalization and innovation and entrepreneurship education. With the development concept of empowering innovation with science and technology and revitalizing the countryside with technology, the project "Top Quality Tea -- High-Value Utilization of Summer and Autumn Tea" aims to improve the economic development of the tea village by taking the extraction technology and deep processing of catechin as the key points. Because of this, the local economic structure was transformed from a single cultivation industry to a production and processing industry with the cooperation of farmers and enterprises, achieving the integration of primary and secondary industries. The project of "Dreaming of Weaving with Cattail - Innovation of Cattail Weaving Technique to Enable Rural Revitalization" was designed by combining crafts, industry and culture to create an innovative product channel, develop online and offline sales channels, and build the brand of Qingzhao to bring cattail weaving products to customers at home and abroad. With the original intention of restoring the eyesight of every teenager, the project of "Pupil Eyes Without Disease - A Practitioner of Chinese Medicine to Heal Youth Eyesight" used more than 30 kinds of Chinese herbs to develop the Tongming Shiqing Eye

Patch, which effectively regulates the structure of the retina structure, truly solving Chinese problems with Chinese methods.

4.3 Optimizing the layout, changing fragmentation into synergy

The university has been carrying out the reform of innovation and entrepreneurship education, and it has been able to improve classroom teaching, facilitate students' independent learning, guide and support disadvantaged areas combined with practices and guide the development of local cultures. Through the collaboration with industry enterprises, it has been optimizing the development of the information-based and digital intelligent teaching platform for entrepreneurship and innovation. Furthermore, it encourages students to participate, focuses on the transformation of their achievements, and keeps exploring a new model of innovation and entrepreneurship training with the participation of the university and enterprises. In 2022, the university organized all faculty and students to participate in the 8th "Internet+" College Student Innovation and Entrepreneurship Competition and the College Student Innovation and Entrepreneurship Training Program. So far, the university's projects have won 3 provincial gold medals, 14 silver medals and 3 bronze medals in the main course, the track of the Red Dream Building Tour for Youth, the vocational education track and the industry proposition track. In addition, it participated in 7 sub-competitions of Shandong College Student Science and Technology Festival and guided students' teams to register 8 enterprises. The university will continue to optimize its information-based and digital intelligent teaching platform for entrepreneurship and innovation, giving full play to the platform and carrying out guidance and incubation services. Combined with the university's professional characteristics, it will cooperate with relevant industry enterprises to thoroughly implement the innovation and entrepreneurship training program for college students. It will create an environment where students dare to be the first and they are tolerant of failure.

5 Conclusion

In the context of big data, the construction and practice of the information-based and digital intelligent teaching platform for entrepreneurship and innovation has enabled more prominent and effective entrepreneurship and innovation education. Teachers can teach flexibly and deeply, and students can learn comprehensively and precisely. Moreover, it should further promote the cultivation of students' awareness and ability of entrepreneurship and innovation and collaborate to educate students, so that the talents cultivated by colleges and universities can truly meet the needs of national and social development. To this end, the intelligent platform needs to further effectively pool high-quality resources, create a new mode that is networked, immersive and intelligent, and promote its regular application. Moreover, new teaching modules with new technologies should be developed to provide a whole range of intelligent and personalized services for teaching and learning, as well as facilitate students to make bold innovations and start their own businesses.

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