

# *Research on Teaching Mode of Innovation and Entrepreneurship Education from the Perspective of Big Data*

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**Abstract:** Innovation and entrepreneurship education has become an important entry point for a new round of college education and teaching reform. At present, in terms of innovation and entrepreneurship education based on the perspective of "big data", there is a lack of effective education and teaching model, and there is a lack of relevant platform support. On the basis of systematically combing the status quo and relevant theories of college students' innovation and entrepreneurship education at home and abroad, this project uses "big data" technology to collect, store, analyze and mine various data in the process of innovation and entrepreneurship, studies the teaching mode of college students' innovation and entrepreneurship education, develops corresponding platforms, and provides teachers with more accurate teaching resources. Provide students with a more realistic environment for innovation and entrepreneurship, and provide more scientific support for decision-making in the process of innovation and entrepreneurship. The teaching effect is tested through data and survey interviews, aiming to explore effective and feasible teaching mode of innovation and entrepreneurship education and the overall design and realization of online teaching platform.

## **1. Introduction**

This paper uses big data technology to collect, store and pre-process various data in the process of innovation and entrepreneurship, including but not limited to innovation and entrepreneurship project data, entrepreneurs' personal information, market data, etc. By using machine learning, data mining and other technologies[1], the collected data is analyzed and mined to extract valuable information and provide more accurate support for teaching.

By studying the teaching mode of innovation and entrepreneurship education from the perspective of big data, the application of big data technology in innovation and entrepreneurship education and teaching is explored, the basic principles of teaching mode design are proposed, the prototype of teaching mode is initially built through the practice of "teaching + project" in the daily teaching process, and the information collection and extraction of valuable information are constantly carried out through "big data" technology in the later stage[2]. This study renews the teaching model and realizes the combination of teaching practice and theory, teaching content and

current affairs. This study re-examines the main body, platform, link and the connection and aggregation between each other in the teaching process, and further optimizes the teaching model design.

Based on the MVC software design model, through the case study and empirical analysis under the research data mining technology, the key success factors and realization paths of the innovation and entrepreneurship education teaching model from the perspective of big data are summarized and concluded. Systematically sorted out the product design ideas and development needs, designed the overall framework and core business process of the platform, developed the front end of the platform and various functional modules. The module includes project data, market data and other information visualization module, pre-school skills diagnosis module, online learning module, stage test module and assessment, information and resource sharing module, project team formation and project implementation management module. Finally, the effect is analyzed and tested through the platform online.

## 2. Literature Review

Using CNKI system to search statistics, 8452 literatures with keywords "innovation and entrepreneurship education for college students" were directly searched; The keywords "big data" and "innovation and entrepreneurship education" were set for simultaneous search, and there were 473 relevant literatures, reaching a peak in 2019.

Colleges and universities are the territory of college students' innovation and entrepreneurship education. Their advantages lie in technology and creativity, while their weaknesses lie in funds and platforms[3]. At present, there are relatively few researches on the design and application of innovation and entrepreneurship education platform from the perspective of big data.

There are many forms or modes of foreign innovation and entrepreneurship platforms, most of which are business incubators. For example, there is an incubator platform based on the background of the park or formed with large enterprises as the core. Based on the advantages of science and technology, big data and its own resources, this platform can play a good role in incubating the innovation and entrepreneurship education of college students[4]. There is a mentoring platform that provides all aspects of guidance and support for startups. Through exchanges and brainstorming, sparks can be generated and innovative and entrepreneurial projects can be born; There are diversified online innovation and entrepreneurship incubation platforms represented by Techcrunch, GitHub, Idea Lab, Rock Health, Mass Challenge, You Web, Hacker DoJo, Tech Stars and other Internet platforms[5]. It involves high-quality services for innovation and entrepreneurship, establishing links between entrepreneurs and investors, and incubating models such as internal incubation, precision incubation, and talent incubation, as well as public welfare models and input and output models, which provide a strong resource integration and key link docking role for innovation and entrepreneurship, and promote their healthy and sustainable development.

In China, the most widely used and popular platforms nationwide are the university student innovation and entrepreneurship training program platform independently built by the state and various localities and the university student entrepreneurship service network based on the "Internet +" competition, which are the most typical and mature. The two platforms cover policy information, project management and docking, expert guidance, business incubation, investment and financing, etc. This research focuses on four aspects of "mass innovation and innovation" platform, including elements integration, capacity opening, model innovation, and regional cooperation.

Under the strong guidance of the national platform, universities at all levels are also constantly exploring, designing and practicing the research and application of the innovation and entrepreneurship education platform for college students[6]. Scholar Li Hui holds that innovative

practice education is the realization carrier and fundamental guarantee of cultivating students' innovative ability. This research insists that practice is the basis of innovation, and builds a platform for innovation practice education. For example, carry out the "excellent engineer education and training program", advocate the student-oriented innovation and experimental reform, promote the combination of production, university and research personnel training mode, and carry out diversified discipline competitions.

Scholar Yang Liping et al. designed the network platform for college students' innovation and entrepreneurship education based on SSH architecture, adopted Strutsk+Spring+Hibernate framework and MVC software development model. An innovative and entrepreneurial education network platform architecture model is proposed, which is composed of system management, online education management, collaborative cooperation and enterprise social demand.

Scholars Zhang Chen and others believe that an integrated practice platform of innovation and entrepreneurship for college students should be built, which deeply integrates innovation and entrepreneurship practice with professional and off-campus practice[7-8]. Scholars Li Zhanping and others put forward the "cloud entrepreneurship" platform model. It is based on the construction of China's university dedicated network, with the help of the Internet cloud technology platform, through the online integration of enterprises, teachers, and entrepreneurial teams to carry out innovation and entrepreneurship education and practice. In this study, ten professional services such as information consultation, human finance and product display are provided on the cloud, and public services such as sales, logistics, investment and financing are provided [9]. This study provides entrepreneurial opportunities and internship bases for students as shown in Table 1.

Table 1: Comparison of research status at home and abroad

Foreign research status		Domestic research present	
Technological advantage	Mainstream platform	Technological advantage	Mainstream platform
Based on the advantages of science and technology, big data and its own resources, it plays an effective incubation role in the launch of innovation and entrepreneurship education for college students; Provide all aspects of guidance and support for the start-up, through exchanges and brainstorming, spark, the birth of innovative entrepreneurial projects	Techcrunch, GitHub, Idea Lab, Rock Health, Mass Challenge, You Web, Hacker DoJo, Tech Stars	The perception platform of innovative practice education is built through cognition law. Adhere to practice is the foundation of innovation, build innovation practice education practice platform; To build an integrated practice platform of innovation and entrepreneurship for college students, which deeply integrates innovation and entrepreneurship practice with professional and off-campus practice.	"Excellent Engineer Education Programme" "Cloud entrepreneurship" platform model

### 3. Design of Teaching Mode of College Students' Innovation and Entrepreneurship Education from the Perspective of "Big Data"

Establish a learning model with "cultivating students' ability" and "attaching importance to students' personalized development" as the key, pay attention to students' individual differentiated development, and help them realize personalized knowledge construction and innovation ability improvement[10]. Take learners as the main body, enhance the process of learning connection. Enhance process connectivity with students as the main body. In the teaching design process of college students' innovation and entrepreneurship education from the perspective of "big data", the hot information is visually displayed through big data technology. The teaching platform will inevitably produce a large number of learning behavior, interaction, background operation and maintenance data, which will be analyzed by artificial intelligence to build student models, recommend targeted courses to students, strengthen the learners' active participation in learning, independent thinking, hands-on practice and the connection between nodes, and at the same time enhance the training practice process of teamwork ability.

Use "big data" to realize the sharing and co-construction of learning resources and the innovation of learning tools and means, and establish a knowledge network system. Using big data technology as the basis for teaching adjustment, teachers guide the teaching process to comprehensively improve students' ability and accomplishment. In the teaching design process of college students' innovation and entrepreneurship education from the perspective of "big data", teachers should pay attention to the design of teaching situation and the arrangement and organization of teaching practice activities. Adopt diversified teaching evaluation mechanism. According to the different functions of teaching evaluation, it can be divided into diagnostic, formative and summative evaluation. Through data tracking, students' learning effectiveness and contribution in this field are assessed. Teaching model of college students' innovation and entrepreneurship education from the perspective of "big data" is show in Figure 1.

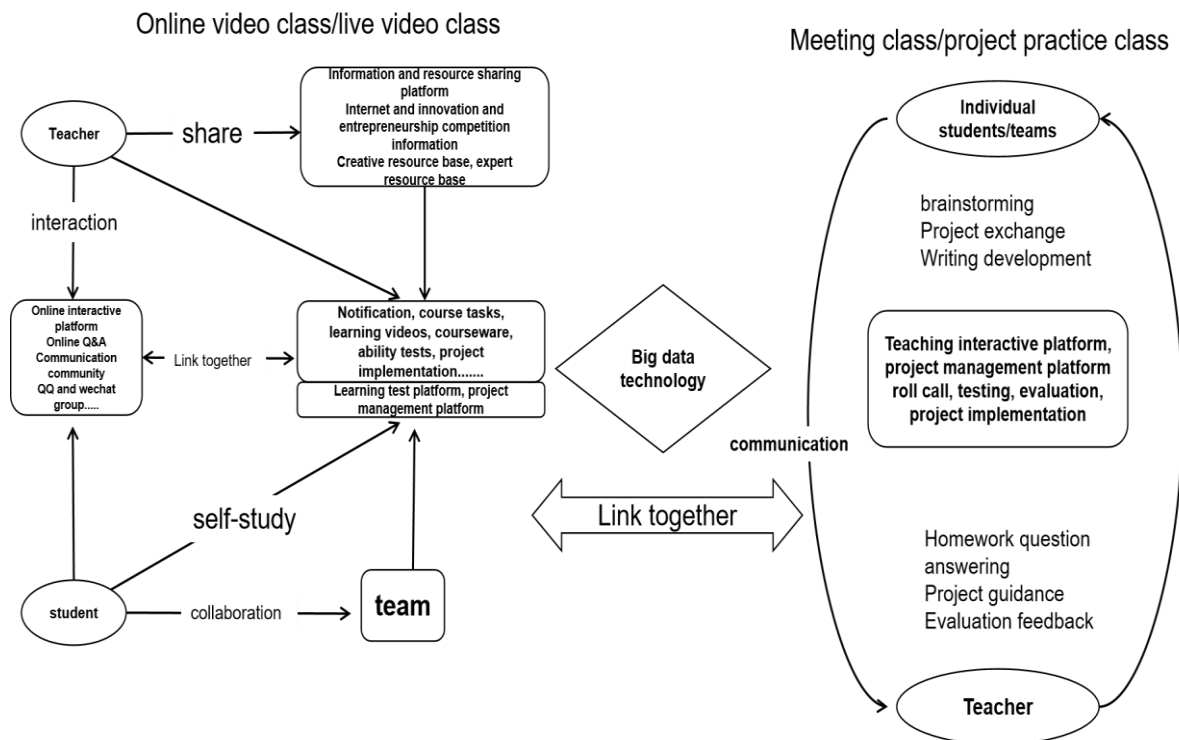


Figure 1: Teaching model of college students' innovation and entrepreneurship education from the perspective of "big data"

## 4. Design and Implementation of Innovation and Entrepreneurship Teaching Platform from the Perspective of "Big Data"

The MVC software development model, MySQL database and big data technology are used to develop the innovation and entrepreneurship teaching platform, which is mainly designed for two main business flows: the learning main business flow and the project main business flow, as shown in Figure 2.

Learning main business process: This business flow mainly realizes students' online ability test, entering the learning module to carry out independent video learning, and can obtain more knowledge and resources in the information module and sharing module at any time during the learning process, and can also interact with teachers.

Project main business process: After the students have accumulated knowledge to a certain extent, they can obtain the competition notice or initiate the project independently in the information module, and initiate the team formation task in the team formation module[11]. Other students can choose to register, and the team leader can check the situation of the applicants according to the big data analysis database to judge whether they agree to join the team. After the team formation is successful, the team members will collectively write the project plan and pass the teacher's review. After several times of online reporting and guidance, the final results will be reported to participate in the competition or docking enterprises for entrepreneurial project incubation and transformation. Innovation and entrepreneurship teaching platform from the perspective of "big data" is show in Figure 2.

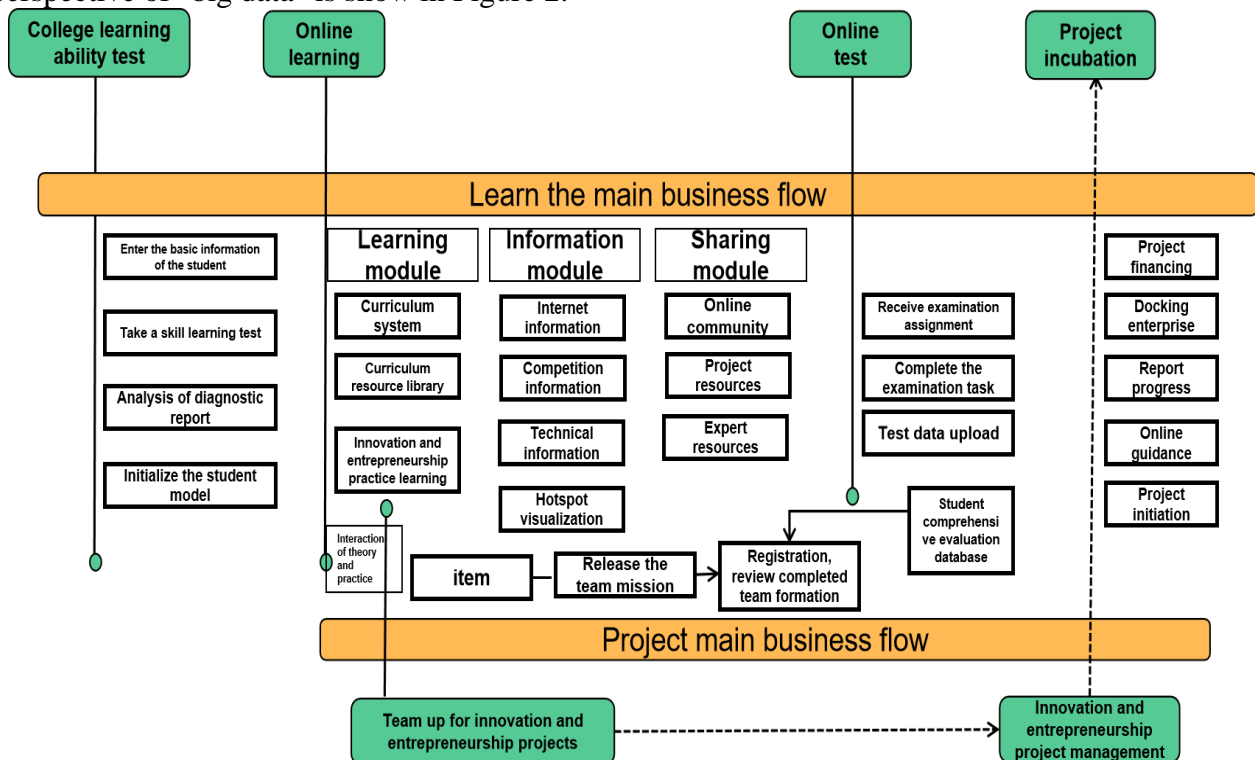


Figure 2: Innovation and entrepreneurship teaching platform from the perspective of "big data"

## 5. Conclusion

Construct the teaching model of college students' innovation and entrepreneurship education from the perspective of "big data". Through the practice of "teaching + project" in the daily teaching process, the prototype of the teaching model is initially built. Later, through the continuous

integration of teaching practice and theory, the main body, platform, link and the connection and aggregation of each other in the teaching process are re-examined, the teaching model design is further optimized, and an organic learning ecosystem with multi-subject management and interaction is built.

Second, design and develop an innovation and entrepreneurship education platform for college students from the perspective of "big data". Based on the MVC software design and development model, this study integrates the teaching model through extensive questionnaire analysis and teaching practice, and plans the design ideas and development requirements of the product. This study designed the overall framework and core business process of the platform, and developed and realized various functional modules of the platform front-end and pre-school skill diagnosis, online learning, stage testing and evaluation, information and resource sharing, project team building, and project implementation management. The innovation and entrepreneurship education platform for college students from the perspective of "big data" can be promoted to major universities across the country for operation and use.

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