



# Construction of Web-Based Entrepreneurship and Innovation Simulation Training Platform for College Students

Mei Guo<sup>(✉)</sup> and Bingzhan Liu

Shandong Institute of Commerce and Technology, Jinan 250103, Shandong, China  
471791682@qq.com

**Abstract.** At present, colleges and universities will focus on the reform of innovation and entrepreneurship education and build a dual-innovation education mechanism oriented to cultivating innovative and entrepreneurial talents. In this regard, based on the problems existing in the current teaching system of innovation and entrepreneurship education in colleges and universities, such as outdated teaching methods, lack of training conditions, and shortage of professional teachers, this paper puts forward a comprehensive construction scheme of entrepreneurship and innovation simulation training platform to realize the reform and innovation of entrepreneurship and innovation education teaching mode. The training platform takes Web technology as the core, completes the design and development of front-end functional service interface and back-end server, and completes the analysis and processing of data information with the help of SQL Server database, thus realizing the network and digital transformation of the entrepreneurship and innovation teaching process. The simulation test results of the platform show that the functional modules such as entrepreneurship and innovation classroom, innovative training, entrepreneurial practice and comprehensive evaluation operate normally, which improves students' mastery of theoretical knowledge and strengthens their practical application ability, and makes a beneficial attempt to create a new ecology of entrepreneurship and innovation education and teaching.

**Keywords:** Web technology · mass entrepreneurship and innovation education · network simulation training · computer software application

## 1 Introduction

The strategy of “mass entrepreneurship and innovation” is an inevitable choice for China to adhere to the road of innovation-driven development in the new era, and it is also the policy basis for guiding the practice of educational innovation in colleges and universities [1]. Contemporary college students, as a fresh force to effectively implement the “mass entrepreneurship and innovation” strategy, need to receive the necessary double innovation education on campus and strengthen the cultivation of their entrepreneurial awareness, innovative spirit and innovative entrepreneurial ability. However, in the current practice of innovation and entrepreneurship education in colleges and universities,

there are some problems, such as low attention, outdated teaching methods, lack of training conditions and shortage of professional teachers, which seriously affect the all-round development of students and can not effectively promote graduates' smooth entrepreneurship and employment [2]. In view of this, this paper holds that colleges and universities should actively deepen the reform of "mass entrepreneurship and innovation" education and teaching, and give full play to the application advantages of the new generation of digital information technology in the education field. In this paper, a Web-based simulated training platform for college students' mass entrepreneurship and innovation is built to strengthen the cultivation of students' mass entrepreneurship and innovation ability and form a mass entrepreneurship and innovation education system combining theoretical knowledge with practical ability [3]. As a comprehensive platform for data information and application services, the mass entrepreneurship and innovation simulation training platform for college students can promote the reform of traditional teaching mode in the form of online teaching and simulation practice, promote the adjustment and optimization of teaching process, and make contributions to promoting the continuous development of innovation and entrepreneurship in colleges and universities.

## 2 Development Process

The framework structure of college students' entrepreneurship and innovation simulation training platform can be divided into three parts: client, server and database. Among them, the client will take the VUE framework as the core, and use Visual Studio Code software to complete the design and deployment, so as to meet the demand that users can remotely obtain corresponding functional services [4]. The construction of the server needs the help of various Web application templates under ASP.NET to standardize the relationship between various data interfaces and functional levels, form a clear functional structure and platform service content, and complete the regulation and response of user requests [5]. For the database part, we can complete the formulation of various data tables, data sets and caching strategies according to the actual needs of the platform.

The overall development of the platform will be based on Windows 10.0–64-bit operating system, and the .NET Framework 4.7 development framework and Visual Studio 2019 will be adopted to provide an integrated development environment for developing applications in C# language. Select SQL Server 2019 as the database platform, and download SQL Server Management Studio to complete the configuration and management of the database [6]. Through the introduction of the above key technical theories, the overall environment of system development, the configuration of related software and tools are determined, and the technical feasibility of the overall project of college students' entrepreneurship and innovation simulation training platform is also clarified.

## 3 Functional Implementation

### 3.1 Student Side

#### a. Mass entrepreneurship and innovation class

The platform will provide different types of dual-creative teaching resources, mainly involving many aspects, such as career development planning, employment guidance, entrepreneurship foundation and practice, innovative thinking and training, enterprise management and research, and the form is mainly network video courses, which is convenient for student users to choose their own learning. The multi-dimensional and three-dimensional content system makes up for the lack of classroom teaching content, and improves the ubiquity of mass entrepreneurship and innovation education by online teaching [7].

#### b. Innovative training

Under this functional module, teachers will build different simulated innovative training with case-based and experiential teaching methods according to the teaching focus of mass entrepreneurship and innovation education, in order to improve the mastery of knowledge in the training process [8]. The innovative training can be completed independently or in teams. A large number of scenes that fit the reality can not only broaden students' horizons, stimulate students' interest, but also effectively strengthen students' ability to integrate theory with practice.

#### c. Entrepreneurial actual combat

Under this function module, student users can experience the whole life cycle process of an enterprise, from registration and establishment, investigation and planning, operation and management, to development decision-making, decline and extinction. In the process, student users will play the role of founders to complete the drills of different practical projects at different stages, and fully perceive the pressure and value behind entrepreneurship, so as to achieve the purpose of cultivating entrepreneurial spirit and enhancing entrepreneurial ability.

### 3.2 Teacher Side

Under the mass entrepreneurship and innovation simulation training platform, teacher users are mainly responsible for the organization and management of teaching practice. In addition, teacher users will also evaluate the learning effect of student users. The platform can capture the complex learning behavior data generated by student users in the platform in real time, and construct the evaluation system standard of learning effect, as shown in Table 1.

The platform will complete the construction of the judgment matrix based on the actual scoring results. According to the judgment matrix, the sample weight  $P$  and the entropy value  $E$  of a single index are calculated by entropy method, and the final index weight  $W$  is calculated according to the difference coefficient  $D$  of a single index. The overall calculation process is shown in Formula 1, where  $m$  represents the number of samples [9]. After the weight of each index value is determined, the platform automatically calculates the teaching effect score.

$$P = \frac{A_{ij}}{\sum_{i=1}^n A_{ij}}, E = -\frac{1}{\ln(m)} \times \sum_{i=1}^m (P \times \ln(P)), D = 1 - E, W = \frac{D}{\sum_{i=1}^m D} \quad (1)$$

**Table 1.** Learning effect evaluation system

Primary index	Secondary index	Evaluation standards
Learning attitude A <sub>1</sub>	Login frequency A <sub>11</sub> , study duration A <sub>12</sub> , cumulative time A <sub>13</sub>	Excellent: 3 points Good: 2 points Poor: 1 point
Learning process A <sub>2</sub>	Training completion degree A <sub>21</sub> , actual combat completion A <sub>22</sub> , team ability A <sub>23</sub>	
Learning outcome A <sub>3</sub>	Training score A <sub>31</sub> , actual combat score A <sub>32</sub> , teacher score A <sub>33</sub>	

**Table 2.** Evaluation results of learning effect of college students' mass entrepreneurship and innovation simulation training

	Primary index	Secondary index	Weighted value	Item score	Average score
Learning effect score	A <sub>1</sub>	A <sub>11</sub>	$W_{11} = 0.057$	1.98	2.11
		A <sub>12</sub>	$W_{12} = 0.108$	2.06	
	A <sub>2</sub>	A <sub>21</sub>	$W_{21} = 0.071$	2.44	
		A <sub>22</sub>	$W_{22} = 0.075$	2.84	
	A <sub>3</sub>	A <sub>31</sub>	$W_{31} = 0.154$	2.31	
		A <sub>32</sub>	$W_{32} = 0.093$	2.67	
...	...	...	...		

In order to verify the operation of the evaluation function of the platform, the platform uses the data of 20 students' mass entrepreneurship and innovation simulation training to analyze and test. The total test time is one week, and the final platform scoring results are shown in Table 2. The simulation test results show that the platform can automatically evaluate the learning effect of college students' mass entrepreneurship and innovation simulation training, which makes up for the difficulties in supervision and evaluation of general online teaching platforms and provides the necessary digital basis for improving the effectiveness of mass entrepreneurship and innovation education and teaching [10].

## 4 Conclusion

In order to improve the effectiveness of mass entrepreneurship and innovation education in colleges and universities, this paper puts forward a design scheme of mass entrepreneurship and innovation simulation training platform based on many shortcomings faced by the current traditional teaching model. The platform has reshaped the whole process and all aspects of the teaching practice of entrepreneurship and innovation, focusing on combining theoretical knowledge teaching with actual combat simulation, and creating a new ecology of entrepreneurship and innovation education in colleges

and universities in the new era. In the follow-up research, the platform will further enhance the diversity of functional services, strengthen the immersion and authenticity of entrepreneurial actual combat, and open up a new direction for the modernization and intelligent construction of higher education.

## References

1. He Mouhai, Cai Qiong. Exploration on the Reform of Talent Cultivation Mechanism under the Strategic Background of "Mass Entrepreneurship and Innovation". *The Theory And Practice Of Innovation And Entrepreneurship*.2020.04.
2. Zhao Yan, Ji Changwei. Current Situation and Countermeasures of Entrepreneurship and Innovation Education in Local Universities under the New Situation. *Chinese Journal of Commerce*.2021.11.
3. Wang Lei. Leading the Reform and Development of Mass Entrepreneurship and Innovation Education in Colleges and Universities with Five Development Concepts. *Education and Vocation*.2021.05.
4. Liu Yaru, Zhang Jun. Research on Vue.js Framework in Website Front-end Development. *Computer Programming Skills & Maintenance*.2022.01.
5. Guo Yingying. Research on Building Web Server and Security Management. *Electronics World*.2020.07.
6. Song Yafei. Application of "ASP.NET" Technology in Enterprise Website Design. *Wireless Internet Technology*.2022.02.
7. Gao Yuan. Analysis on the Practice Teaching Reform of Digital Education in Colleges and Universities in the New era under the Background of Mass Entrepreneurship and Innovation. *Think Tank Era* .2019.11.
8. Shi Yu, Feng Guangzhi, et al. Practice and Exploration of College Students' Innovation and Entrepreneurship Training Platform in Application-oriented Universities. *Food Industries*.2023.02.
9. Lin Jianchao. Realization of Determining the Weight of Evaluation Index by Entropy Weight Method in Excel . *Chinese Journal of Hospital Statistics*.2020.08.
10. Cheng Zhenlin. Behavior Analysis of Network Learn Supported by Multimodal Data. *China Adult Education*.2022.04.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

