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A Practical Discussion on the Enhancement of Students' Innovative Ability by Utilizing Virtual Simulation Technology for Innovative Entrepreneurship Education Curriculum Designs

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Abstract In recent years, the application of virtual simulation technology in the field of education has become more and more extensive, providing new ideas for innovation and entrepreneurship education. This study explores the effect of designing innovation and entrepreneurship education courses using virtual simulation technology on the improvement of students' innovation ability. Using questionnaire research and platform data collection methods, the research model is constructed in three dimensions, namely, individual learning, course sharing platform learning and teamwork, and the data are analyzed by Bayesian Structural Equation Modeling (BSEM), taking N colleges and universities as an example. The results of the study show that: learning on the course sharing platform has the greatest influence on knowledge acquisition, with a standard regression coefficient of 0.455; the direct influence of teamwork on entrepreneurship (0.189) is greater than that on innovation (0.129); and the influence of knowledge acquisition on innovation (0.744) is significantly higher than that on entrepreneurship (0.737). It is found that the innovation and entrepreneurship course design created by virtual simulation technology can effectively improve students' ability to solve practical problems, based on this, we put forward three suggestions, namely, clarifying the functional positioning, improving teachers' ability and building a virtual simulation platform. This study provides practical reference for innovation and entrepreneurship education in colleges and universities, confirms the positive role of virtual simulation technology in entrepreneurship education, and is a revelation for innovation and entrepreneurship education reform.

Index Terms Virtual simulation technology, Innovation and entrepreneurship education, Curriculum design, Innovation ability, Bayesian structural equation modeling, Knowledge acquisition

I. Introduction

In contemporary society, innovation ability has become one of the key factors promoting social progress and economic development [1], [2]. With the continuous advancement of technology and the intensification of market competition, traditional competitive advantages are gradually weakening, and innovation ability has become the key for enterprises and individuals to stand out in the competition. For individuals, innovation ability is an important means to enhance self-worth and achieve personal development. For enterprises, innovation ability is a necessary condition for building core competitiveness and achieving sustainable development. For a country, innovation capacity is an important support for promoting industrial upgrading and enhancing international competitiveness [3]-[6]. Therefore, enhancing students' innovation ability has become one of the important tasks in contemporary society.

In the courses of innovation and entrepreneurship education, cultivating students' innovation ability is an important means for current educational institutions [7]. With the continuous deepening of globalization and the knowledge economy, innovation and entrepreneurship education is gradually receiving attention. In the early days, innovation and entrepreneurship education was mainly concentrated in business schools or engineering colleges and was taught as part of professional courses. With the changes of The Times and the development of the economy, more and more countries and regions have recognized the importance of innovation and entrepreneurship to national competitiveness and sustainable economic development [8]. Therefore, innovation and entrepreneurship education has gradually expanded from professional fields to the entire school and has become a part of the higher education system. At present, innovation and entrepreneurship education courses present diverse models and characteristics. A common model is interdisciplinary integrated innovation and entrepreneurship education. By integrating knowledge and skills from different disciplines, it cultivates students'

comprehensive quality and innovation ability. This model emphasizes interdisciplinary integration and teamwork, and focuses on the cultivation of practical application and innovative practice ability [9]-[12]. Another model is entrepreneurship-oriented innovation and entrepreneurship education. Through entrepreneurship education, an entrepreneurial atmosphere is created to stimulate students' entrepreneurial enthusiasm and spirit, and cultivate their entrepreneurial ability and quality. This model focuses on entrepreneurial practice and the development of entrepreneurial projects, encourages students to actively participate in entrepreneurial activities, and improves the success rate of entrepreneurship [13]-[16].

However, in 2023, the "Blue Book on the Quality of Innovation and Entrepreneurship Education in Colleges and Universities" released by the Ministry of Education indicated that the practical courses of innovation and entrepreneurship education were far lower than the theoretical courses, and the improvement of students' innovation ability was not significant. The reason for this is that theoretical knowledge is overly imparted to students, and there is a lack of corresponding practical exercises in the classroom to match the theoretical knowledge, resulting in a serious disconnection between theory and practice [17], [18]. Furthermore, in the traditional practice of innovation and entrepreneurship education, the simulated entrepreneurial environment is relatively stable and mild, with a large gap from the real entrepreneurial environment. This leads to an increase in the entrepreneurial decision-making risks for students in reality, a weakening of their entrepreneurial endurance, and is not conducive to the cultivation of students' innovative personality [19]-[22]. Moreover, during the entrepreneurial process, talents from different disciplinary backgrounds have relatively few combinations. Most of them belong to the same discipline and major. Students' thinking is difficult to break away from the familiar circle, resulting in weak cross-disciplinary communication ability of the team in real entrepreneurship, which is not conducive to the cultivation of innovative thinking in innovation ability [23], [24]. The uneven distribution of educational resources and the inconsistent quality and effect of innovation and entrepreneurship education courses are also important reasons hindering the improvement of students' innovation ability [25], [26]. Virtual simulation technology is an advanced simulation and modeling method based on computer technology. By creating a virtual environment, it enables people to interact with it and generate sensory experiences. When applied to innovation and entrepreneurship education courses, it simulates a real entrepreneurial environment, allowing students to understand and learn relevant knowledge more intuitively and improving their learning outcomes and interest [27].

The current innovation-driven development strategy has put forward new requirements for talent cultivation, and it has become an important mission of higher education to improve the innovation and entrepreneurship ability of college students. Traditional innovation and entrepreneurship education faces many challenges: on the one hand, theory and practice are disconnected, and it is difficult for students to get real entrepreneurial experience in campus environment; on the other hand, entrepreneurial practice requires a lot of capital, space and equipment support, and universities are often difficult to provide enough resources. Under the background of digital transformation, virtual simulation technology brings new ideas to solve these problems. Virtual simulation technology can simulate real entrepreneurial scenarios, allowing students to experience the whole process of entrepreneurship in an immersive environment, while significantly reducing teaching costs and risks. However, the research on the application of virtual simulation technology in innovation and entrepreneurship education is still in the exploratory stage, especially the lack of empirical analysis of its implementation effect. Based on this, this study takes university N as an example to explore the practical path of virtual simulation technology-enabled innovation and entrepreneurship education curriculum design and its effect on the enhancement of students' innovation ability. The study firstly analyzes the functional positioning of virtual simulation technology in innovation and entrepreneurship education, and clarifies its specific application in three levels of course objectives, contents and implementation paths. Secondly, the research model of individual learning, course sharing platform learning and teamwork is constructed to explore the influence mechanism of virtual simulation innovation and entrepreneurship education on students' innovation and entrepreneurship ability, and the direct and indirect influence of the teaching process on the teaching effect is examined with the knowledge acquisition as the mediating variable. Through the systematic research and data analysis of three batches of students in spring 2023, fall 2023 and spring 2024, the Bayesian structural equation modeling method is adopted to identify the intrinsic connection between the variables and to verify the actual effect of virtual simulation experimental teaching on the enhancement of students' innovation ability. Based on the results of the study, this paper further explores the development direction of the integration of virtual simulation technology and innovation and entrepreneurship courses, and puts forward targeted suggestions on how to improve the scientificity and effectiveness of course design. This study not only enriches the theoretical research on innovation and entrepreneurship education, but also provides practical reference for universities to carry out virtual simulation innovation and entrepreneurship education, which is an important revelation for promoting innovation and entrepreneurship education reform.

II. Virtual simulation technology empowers innovation and entrepreneurship education curriculum design

Virtual simulation technology can simulate a highly simulated virtual environment, which can help optimize the structure of innovation and entrepreneurship education courses, break the inherent disciplinary barriers, and enhance the students' course experience, and the following is a discussion of the virtual simulation technology-enabled innovation and entrepreneurship education course design.

II. A.Purpose of the course

The use of virtual simulation technology teaching is mainly designed for the reality can not provide funds, real operating scenes and other experience opportunities and resources, students are difficult to feel the entrepreneurial environment, operating environment, marketing strategy and business competition strategy and other difficult problems, it is difficult to improve the comprehensive ability of business management. With the help of the virtual platform, students can gain profound experience in the industry, and comprehensively acquire and improve the ability of product planning, production operation management, marketing, financial analysis, and so on.

II. B.Course content

Taking entrepreneurial team building as an entry point, we have independently developed a virtual simulation system for entrepreneurial team building, evaluation and management by adopting 3D modeling, animation, voice recognition, human-computer interaction and other technologies to train students' team building and management abilities, and to promote students' overall improvement of their team awareness and innovation ability.

II. C.Constructive thinking

In the virtual simulation design of innovation and entrepreneurship education, the following methods are usually used:

(1) Modeling method. Simulate team formation through the method of constructing models (DISC model), train and evaluate students' behavior in this simulation situation, so that students can be able to do with team spirit and teamwork ability when they enter the society and join enterprises.

(2) Situational method. Through virtual simulation projects and environments, students are provided with the opportunity to interact with other members of the team in a certain situation.

(3) Comparative method. Taking team building, evaluation and management as three dimensions, from creative project design, development to realization, the whole chain runs through and realizes the process of team formation, evaluation and later management.

II. D.Implementation pathways

Virtual simulation training adheres to the experimental teaching concept of “student-centered and problem-oriented”, takes the core objectives of the course as the entry point, selects the model, builds the index system, adopts 3D modeling, animation, voice recognition, human-computer interaction and other technologies to develop simulation systems and platforms, evaluate and manage virtual simulation systems and platforms, and realizes the teaching objectives and tasks in the virtual environment. Teaching objectives and tasks. In the innovation and entrepreneurship education program based on virtual simulation technology, three modules are proposed, and the implementation path module of the innovation and entrepreneurship education program is shown in Figure 1.

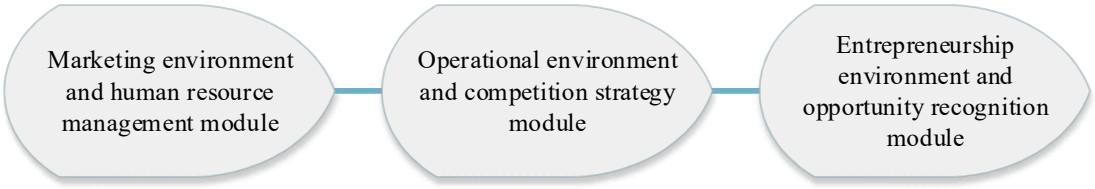


Figure 1: The implementation path module of the innovative entrepreneurship course

The first module is the Entrepreneurial Environment and Opportunity Identification Module, which mainly examines students' methodology, data collection ability and insight into business opportunities learned in the market research course, their ability to review literature and basic research, their ability to review relevant

information and research results, and their ability to design questionnaires or interview outlines for a certain issue, and finally form a business plan.

The second module is Operation Environment and Competitive Strategy module, which mainly examines students' understanding and mastery of the contents taught in the operation management course, their knowledge of the competitive environment of enterprises, and their ability to simulate the entrepreneurial operation session. With the help of the virtual platform, students can get the profound practical experience of entrepreneurs and business operators in the industry in a short time, and comprehensively obtain and improve the product planning ability, production operation and management ability, marketing and customer service ability, financial analysis ability, personnel organization ability, etc. Students are able to obtain and improve the product planning ability, production operation and management ability, marketing and customer service ability, financial analysis ability, and personnel organization ability. According to the internal and external environment of the enterprise, the team can make decisions to propose the competitive strategy of the virtual enterprise or project.

The third module is the marketing environment and human resource management module, which provides comprehensive training on related professional knowledge and skills, such as human resource planning and analysis, recruitment decision-making, strategy-oriented marketing strategy formulation, competitive environment analysis and rival strategy formulation, marketing promotion and pricing strategy. Understanding and mastering the specific practical methods of enterprise marketing management in a real enterprise environment, being able to make marketing decisions, personnel recruitment, salary design, etc. according to the project progress of the virtual simulation environment, the competitive environment and the sales volume of the virtual market, which will eventually be sorted according to the company's operation, personnel recruitment and sales volume.

III. Research design

On the basis of exploring the design of innovation and entrepreneurship virtual simulation experimental course, this chapter constructs a research model of innovation and entrepreneurship virtual simulation experimental teaching to enhance students' innovation ability, i.e., individual learning and teamwork have a direct positive impact on students' innovation and entrepreneurship ability and an indirect impact through knowledge acquisition, and course sharing platform learning has an indirect positive impact on innovation and entrepreneurship ability through knowledge acquisition.

III. A. Sample Selection

In this study, online questionnaire research and platform data collection were conducted in University N as an example. From March 2023 to June 2024, 535 questionnaires were received. After data cleaning and eliminating answer duplicates, there were 510 valid questionnaires, including 167 in spring 2023, 174 in fall 2023, and 169 in spring 2024. The quality of the questionnaire data was examined by SPSS 22.0, and the reliability was evaluated by calculating the Cronbach′s a value of the questioned items, and the structural validity was evaluated by exploratory factor analysis with KMO and Bartlett's test of sphericity, and the results showed that the reliability and validity met the requirements.

III. B. Variable composition

Based on the characteristics of virtual simulation experimental course on innovation and entrepreneurship and related research results, the questionnaire of this study mainly measures the teaching process of virtual simulation innovation and entrepreneurship course with three variables: individual learning, course sharing platform learning, and teamwork. The knowledge acquisition variable was used to measure the mediation effect. The 2 variables of innovation ability and entrepreneurship ability are used to measure the teaching effect, and the impact of virtual simulation course of innovation and entrepreneurship education on the improvement of students' innovation ability is mainly studied. The virtual simulation teaching mainly refers to the innovative entrepreneurship education course design in the previous paper.

III. C. Research methodology

The study mainly uses mathematical and statistical methods and Bayesian structural equation modeling to analyze and explore the path of innovation and entrepreneurship education based on virtual simulation technology to improve students' innovation ability. Compared with the traditional frequency school of thought (such as the great likelihood estimation method), the advantage of the Bayesian estimation method is that it can incorporate existing knowledge or background information in the process of parameter estimation.

Bayes' theorem is an important part of the Bayesian estimation method, for the observed sample data y and the model parameters, Bayes' theorem is shown in Equation (1):

$$p(\theta \mid y) = \frac{p(y \mid \theta)p(\theta)}{p(x)} \tag{1}$$

where $p(\theta y)$ denotes the probability that a model parameter value occurs in that sample data, i.e., the posterior probability of the parameter. $p(y \mid \theta)$ denotes the probability of occurrence in the sample data at that parameter value. $p(\theta)$ denotes the prior probability information for that parameter, reflecting the likelihood of different values of the parameter in the overall sample.

In Bayesian estimation, it is necessary to estimate the distributional pattern and the possible range of values of the parameter based on the available information, i.e., to set the prior distribution of the model parameters and the corresponding hyperparameters. Based on Equation (1), the researcher can obtain the posterior distribution of the parameters and get the posterior point estimates of the parameters based on the mean, median, or plurality of the posterior distribution.

Take the validated factor analysis model containing p measurement entries and q latent factors $(p > q)$ as an example, Bayesian structural equation modeling is specifically introduced. This validated factor analysis model is shown in equation (2):

$$y_i = \mu + \Lambda\omega_i + \varepsilon_i, i = 1.....n \tag{2}$$

where y_i is the vector of continuous observations representing $p \times 1$. μ is a vector of intercepts representing $p \times 1$. Λ is a factor loading matrix for $p \times q$, representing the relationship between the observed and latent variables. ω_i denotes a $q \times 1$ vector of factor scores. ε_i is a $p \times 1$ vector of measurement errors (residuals) obeying a multivariate normal distribution with mean 0 and variance Ψ. In traditional frequency school estimation methods, the cross loadings as well as the residual covariance parameters are strictly limited to 0. Thus, Ψ is a diagonal matrix, and an entry in Λ corresponds to only one factor.

In Bayesian structural equation modeling, the unknown parameters $\theta = (\mu, \Lambda, \Psi, \omega)$ can be set as informed prior distribution, weakly informed prior distribution or uninformed prior distribution with large variance based on existing theories or research results in validated factor analysis, and combined with the sample information as well as prior information to use the Markov Chain Monte Carlo algorithm (MCMC) estimation method to obtain the posterior distribution of the unknown parameters.

IV. Research data and test results

IV. A. Analysis of Students' Learning Behavior

According to the collected teaching data of virtual simulation innovation and entrepreneurship courses, the analysis of students' learning behaviors is conducted, which basically covers the major categories of majors in N colleges and universities, including management X1, gold and trade X2, information engineering X3, media art and design X4 and language X5, which makes the samples richer and more relevant.

IV. A. 1) Data on individual learning behaviors

Students' individual learning behavior data include three categories: average attendance scores, average course sharing platform scores, and average individual practical training report scores, and the overall three batches of learning behavior data related to each major are shown in Figure 2. The attendance of students in each type of major is above 94 points, and only the attendance score of language students in spring 2023 is slightly lower at 82.14 points. It reflects that the vast majority of students in the virtual simulation innovation and entrepreneurship course have a more positive learning attitude, attend classes on time according to the course requirements, and basically meet the required number of attendance in the course. In terms of the learning situation on the course sharing platform, the scores of the students of all majors in the three batches were above 88, indicating that the students in the innovation and entrepreneurship course under virtual simulation have good learning situation on the course sharing platform. Regarding the status of individual practical training report, the overall score of the practical training report of the Spring 2023 batch was only passing, 69.78, in which the average score of students in one category of majors failed to pass.The overall scores of the individual practical training report of the students in Fall 2023 and Spring 2024 were 87.68 and 81.19, which were at a good level.

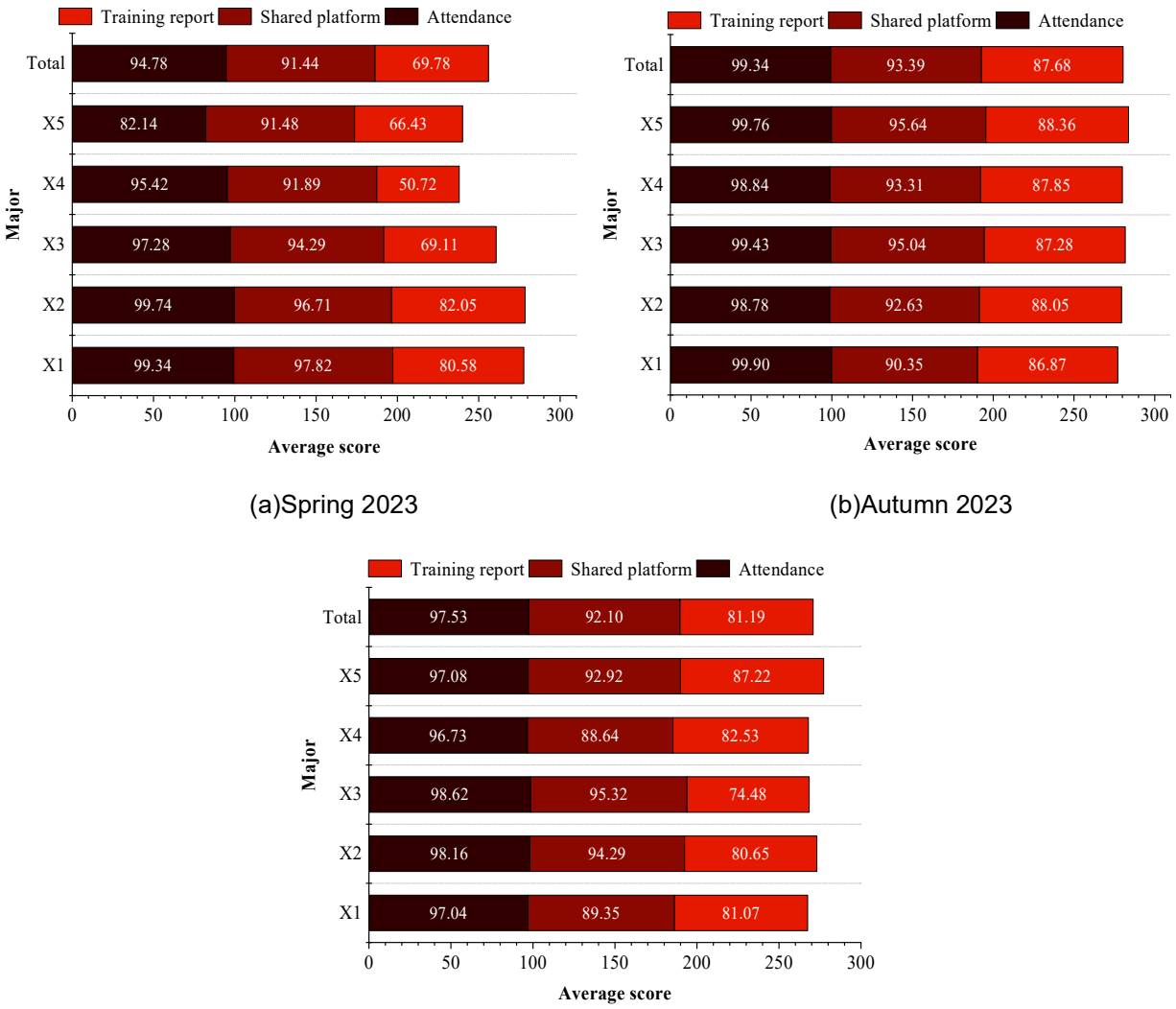
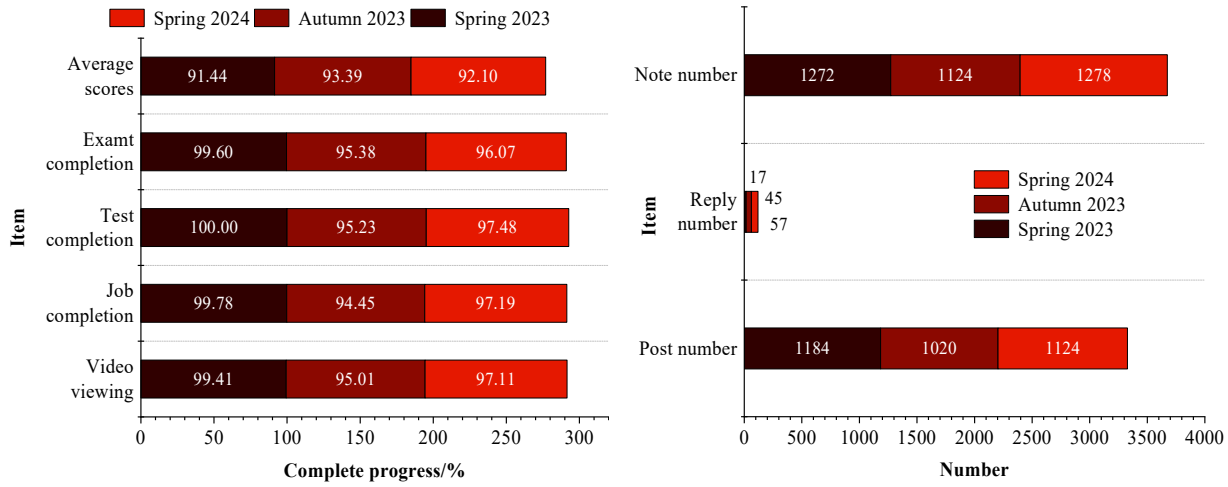


Figure 2: he relevant learning behavior data of each professional student

IV. A. 2) Learning on course-sharing platforms

In the learning situation of the course sharing platform, the progress of students' video viewing, homework, quiz and exam completion, interactive communication and grades can be directly exported from the platform, and the average grade of each batch of students can be calculated. The statistics of the learning situation of the course sharing platform are shown in Figure 3, and Figures (a) and (b) show the progress of individual video viewing, homework completion, quiz completion and exam completion, as well as the interactive communication situation and the number of notes, respectively. From the overall data, the completion of all tasks and the grades of the students in each batch are high, reflecting that most of the students are highly motivated to learn, and the overall average grades of the students in the three batches are 91.44, 93.39 and 92.10. In addition, according to the real-time statistics of platform learning in each batch, it was found that students who watched videos related to important rules before class performed better during class, and most of them would choose to complete all the learning content in advance while the course was in progress. However, it is difficult to guarantee the self-study effect of the course resources, for example, it is difficult to exclude that some students have the behavior of hanging up to watch videos in the video watching progress project.



(a)Complete progress (b)Interactive communication and notes

Figure 3:The course sharing platform learning situation statistics

IV. A. 3) Teamwork behavior data

The aspect of teamwork behavior includes three dimensions: business transaction volume, total team sharing score and team result book. Teamwork behavior data statistics are shown in Table 1. The team operation data only uses the business transaction volume as an indicator to consider, and other operation ranking data are not compared due to the different initial parameters of the system and market competition in each batch. The overall business transaction volume in the spring of 2023 is relatively low in the three batches, with an average value of 195.81, and the real-time attention can be paid to the data of the business transaction volume during the course teaching and intervene in advance. The total team sharing score includes corporate culture, business model, and summary report scores, all of which are scored on-site by the mentor team based on the criteria, and the batches are relatively close to each other, ranging from 256.49 to 261.27, with a high level of student participation. The team results booklet, on the other hand, was used as an important basis for team reflection and was scored by the instructor, with a more uniform scoring standard, and the average scores for spring 2023, fall 2023 and spring 2024 were 81.06, 83.01 and 81.33. Overall, the sample students performed well in teamwork in the virtual simulation innovation and entrepreneurship course.

Table 1: Statistics on team collaboration behavior data

Batch		Spring 2023	Autumn 2023	Spring 2024
Business transaction volume	Min	21.17	30.95	16.07
	Max	824.68	1027.06	2000.81
	Mean	195.81	366.52	315.91
	SD	176.72	283.17	388.5
	Variance	31157.47	82522.15	14724.21
Team sharing scores	Min	236.41	256.58	250.57
	Max	267.90	285.69	269.85
	Mean	256.49	264.92	261.27
	SD	6.45	5.02	5.58
	Variance	27.82	29.48	22.94
Team work pamphlet	Min	21.32	63.41	61.48
	Max	92.27	95.32	95.66
	Mean	81.06	83.01	81.33
	SD	12.15	10.53	9.59
	Variance	176.01	82.22	80.18

IV. B. Analysis of test results

Next, this study estimates the model test results for spring 2024 and 2023 based on the analysis of student learning behaviors, specifically analyzing the differences in the relationships between various variables over time.

The regression coefficients for each path in the 2023 academic year model and the regression coefficients for each path in the spring 2024 model are shown in Tables 2 and 3, where ** indicates a p-value less than 0.05, and *** indicates a p-value less than 0.01. The influence relationships among variables in 2023 passed the significance test ($p < 0.01$). Regarding the impact on knowledge acquisition, the learning variable from the course-sharing platform has the greatest influence, with a standard regression coefficient of 0.455, followed by individual learning and team collaboration, with the latter two having little difference in impact, with standard regression coefficients of 0.186 and 1.164, respectively. The direct impact of individual learning on innovation capability (0.113) is greater than its direct impact on entrepreneurial capability (0.062). The direct impact of team collaboration on entrepreneurial capability (0.189) is greater than its direct impact on innovation capability (0.129). Overall, team collaboration has a greater direct impact on innovation and entrepreneurship than individual learning. The impact of knowledge acquisition on innovation capability (0.744) is greater than its impact on entrepreneurial capability (0.137).

Table 2: The regression coefficient test of the model of the 2023 school year

Path			Regression coefficient	SE	T value	P value	Standard regression coefficient
Knowledge acquisition	←	Individual learning	0.185	0.031	9.869	***	0.186
Knowledge acquisition	←	Team collaboration	0.183	0.032	13.833	***	0.164
Knowledge acquisition	←	Platform learning	0.431	0.035	18.836	***	0.455
Innovative ability	←	Knowledge acquisition	0.688	0.021	9.794	***	0.744
Entrepreneurial ability	←	Knowledge acquisition	0.672	0.027	11.377	***	0.737
Innovative ability	←	Individual learning	0.109	0.024	8.862	***	0.113
Innovative ability	←	Team collaboration	0.161	0.019	18.553	***	0.129
Entrepreneurial ability	←	Team collaboration	0.224	0.032	4.934	***	0.189
Entrepreneurial ability	←	Individual learning	0.065	0.025	15.625	***	0.062

The impact of the virtual simulation-based innovation and entrepreneurship course on students' innovation and entrepreneurship abilities passed the test at the 0.01 level. Course shared platform learning had the greatest impact on knowledge acquisition, followed by teamwork. The direct effect of individual learning on innovation ability is greater than the direct effect on entrepreneurial ability. The direct effect of teamwork on entrepreneurial competence is greater than the direct effect on innovation competence. Overall, teamwork has a greater direct impact on innovation and entrepreneurship than individual learning, and knowledge acquisition has a greater impact on innovation capability than on entrepreneurial capability.

Table 3: The regression coefficient test of the model of the 2024 spring year

Path			Regression coefficient	SE	T value	P value	Standard regression coefficient
Knowledge acquisition	←	Individual learning	0.115	0.018	12.847	***	0.122
Knowledge acquisition	←	Team collaboration	0.269	0.042	12.515	***	0.205
Knowledge acquisition	←	Platform learning	0.483	0.017	8.666	***	0.506
Innovative ability	←	Knowledge acquisition	0.712	0.019	18.151	***	0.746
Entrepreneurial ability	←	Knowledge acquisition	0.705	0.028	4.686	***	0.758
Innovative ability	←	Individual learning	0.102	0.026	19.636	***	0.110
Innovative ability	←	Team collaboration	0.178	0.032	13.985	***	0.131
Entrepreneurial ability	←	Team collaboration	0.282	0.035	15.019	***	0.225
Entrepreneurial ability	←	Individual learning	0.056	0.037	4.133	***	0.058

The comparison between spring 2024 and 2023 shows that for the impact of knowledge acquisition, course sharing platform learning is the most influential in all cases, and individual learning is not as influential in spring 2024 as it was in 2023. In terms of the impact of knowledge acquisition on innovation and entrepreneurship, 2023 had less impact than spring 2024 on innovation and entrepreneurship. The impact of individual learning on innovative and entrepreneurial competence is better in 2023 than in spring 2024 for both. In terms of the impact of teamwork on innovation and entrepreneurship ability, both spring 2024 are better than spring 2023.

The stability of the model is verified through empirical analysis, and the intrinsic influence mechanism of the model is tested, that is, the innovation and entrepreneurship course under virtual simulation has an enhancing

effect on the cultivation of students' innovation ability, the virtual simulation experimental teaching effect is good, and the cultivation of students' innovation ability is higher than entrepreneurship ability.

IV. C. Construction Insights

Based on the previous analysis, this section discusses the development direction of the integration of virtual simulation technology and innovation and entrepreneurship courses, and gives the construction revelation of virtual simulation technology applied to innovation and entrepreneurship education.

IV. C. 1) Clarifying functional positioning

Virtual simulation technology in innovation and entrepreneurship courses mainly plays the role of improving students' ability to solve practical problems and restoring realistic situations to accumulate experience. In the process of course development, universities should carry out more in-depth control of technology, content and other aspects, and update the existing courses by combining the experience of education practitioners and course users, so as to accurately solve the actual problems in the courses.

IV. C. 2) Improvement of teachers' capacity

Young teachers with enthusiasm for teaching, research, technical skills and innovation ability should be mobilized to participate more in the construction of innovation and entrepreneurship projects, build a reasonable echelon of educational talents, clarify the promotion space for full-time teachers, and improve the professional level of the teaching team in a three-dimensional and diversified way.

IV. C. 3) Construction of a virtual simulation platform

Make full use of network technology, give full play to the advantages of specialties and teachers, integrate entrepreneurship education resources, and build an open and shared entrepreneurship virtual simulation experimental teaching platform. Starting from multiple perspectives such as entrepreneurship courses, entrepreneurship teachers, entrepreneurship research, entrepreneurship competitions, entrepreneurship clubs and training, entrepreneurship alumni resources, etc., we will complete the resource integration on line, and form a virtual simulation experimental teaching platform system with the functions of entrepreneurship theoretical teaching, entrepreneurship scientific research, experimental teaching and practical teaching complementary to each other, and mutually promote each other.

V. Conclusion

This study explores the effect of innovative entrepreneurship education program design on the improvement of students' innovation ability based on virtual simulation technology. By analyzing the research data of 510 students in three batches in college N, the following conclusions are drawn.

The virtual simulation innovation and entrepreneurship course can effectively improve students' innovation ability and entrepreneurship ability, and the cultivation effect on innovation ability is more significant.

In terms of influencing factors, learning on the course sharing platform has the greatest influence on knowledge acquisition (standard regression coefficient 0.455), and the direct influence of teamwork on entrepreneurial ability (0.189) is significantly higher than that of individual learning (0.062).

From the time change trend, the impact of teamwork on innovation and entrepreneurship ability (0.131 and 0.225) in the spring semester of 2024 increased compared with that in the academic year of 2023, indicating that the importance of teamwork in virtual simulation teaching is becoming more and more prominent.

Virtual simulation technology successfully solves the problems of lack of funds, scenarios and resources in traditional entrepreneurship education by providing a highly simulated virtual environment.

The study suggests that colleges and universities should clearly define the function and positioning of virtual simulation technology in innovation and entrepreneurship education, cultivate a team of teachers with professional ability, and build an open and shared virtual simulation platform, so as to better serve innovation and entrepreneurship talent cultivation and promote the quality of innovation and entrepreneurship education in colleges and universities.

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