

Research on the Application of Virtual Simulation Experimental Teaching in the Securities Investment Course

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Abstract: With the rapid development of information technology and the increasing complexity of the financial market, the teaching methods and means of the Securities Investment course in universities are facing new challenges and opportunities. The purpose of this paper is to discuss the application and construction path of virtual simulation experimental teaching in the Securities Investment course. Firstly, it analyses the problems existing in the teaching of traditional securities investment courses, such as the disconnection between theory and practice and the single teaching mode. In order to solve these problems, this paper puts forward the necessity of introducing virtual simulation experimental teaching and details the specific application path of virtual simulation experimental teaching in the Securities Investment course.

Keywords: Virtual simulation experimental teaching; Securities Investment; Teaching reform

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1. Introduction

With the rapid development of information technology and digitalization today, higher education is undergoing unprecedented changes. Especially in the field of financial education, with the increasing complexity and globalization of the financial market, the traditional theoretical teaching mode has been unable to meet the needs of modern financial personnel training. In particular, the course Securities Investment, as the core course of finance, is highly experimental and applied, and requires a high comprehensive quality of students ^[1]. Therefore, how to effectively use modern technology to improve the teaching quality and effect of the Securities Investment course has become a problem requiring urgent solutions in the field of higher education.

As an emerging teaching mode, virtual simulation experimental teaching, with its high degree of simulation and interactivity, provides new ideas and methods for the teaching reform of securities investment courses. By building a virtual simulation experimental teaching platform, students can operate securities investment in the simulated financial market, experience the real investment environment and process, deepen their understanding

and application of theoretical knowledge, and improve their practical skills and innovation ability ^[2]. At the same time, virtual simulation experimental teaching can also break through time and space limitations, realize open teaching, stimulate students' learning enthusiasm, and improve the teaching effect.

2. Current status of the application of virtual simulation experimental teaching in the course of securities investment in universities

2.1. Lack of a dedicated virtual simulation teaching platform

At present, many universities have not yet established a special virtual simulation teaching platform for the securities investment course. Due to the lack of a dedicated platform, the teaching content is often limited to traditional theoretical teaching, while the experimental teaching part is often based on case studies or simple simulation operations, which lack systematicity and depth. Some universities use free simulation trading platforms available on the market for their securities investment courses. However, these free securities investment software options found online often leave teachers with insufficient control over the teaching process. Consequently, students may place orders arbitrarily on the simulation platform and neglect further management of their trades ^[3]. The experimental effect is not obvious, and students' practical skills can not be trained.

2.2. Inadequate teaching management of laboratory courses

The management of experimental teaching lacks standardization, and there is a lack of reliable regulatory standards for quality control in the areas of teaching objectives, teaching methods, teaching effects, and teaching evaluation. Experimental teaching has always emphasized form over content, and although the professional talent training program has designed a better experimental teaching program, the importance of the quality of experimental teaching is still insufficient in its implementation ^[4].

2.3. Teacher mismatch

Although university teachers have high academic qualifications, they fail to have sufficient industry experience due to years of teaching work. The experimental teaching of securities investment requires a large number of "double-qualified" teachers with practical experience. When universities hire teachers, they generally emphasize academic qualifications over practical experience. They prioritize education over hands-on experience, often introducing teachers who lack practical expertise in securities investment. These teachers are unable to address real-world professional issues related to securities investment, and there is no established mechanism for ongoing teacher training to keep them up-to-date with industry developments. A teacher training mechanism has not been established to meet the needs of experimental teaching of securities investment. The personnel in charge of curriculum design and organization of virtual simulation experimental teaching need to fully understand the basic characteristics of the technology and grasp the experimental operation process and specific technical control measures ^[5]. However, due to the insufficient allocation of teachers, the degree of professionalism is low, making it difficult to ensure the quality of teaching and technical expertise. Most of the professional teachers, in addition to participating in classroom experimental teaching activities, have not been integrated into the laboratory planning, platform maintenance, technology reform, and other activities, so the construction of virtual simulation experimental courses and school-based construction failed to integrate organically.

3. The practical significance of the application of virtual simulation experimental teaching in the securities investment course in universities

The traditional teaching mode of securities investment courses is based on theoretical teaching and free simulation trading software experiments. This traditional teaching mode is inadequate in many aspects. Professional securities investment virtual simulation experiments can show students the real securities investment platform. In the digital experimental teaching platform, students can actively participate in organizing experimental activities, fostering their enthusiasm and creativity and encouraging them to engage more deeply with the experiments ^[6]. Virtual simulation experimental technology has a low application cost, outstanding educational effect, and other application values, and can solve the high difficulty of organizing experimental teaching or internship activities, environmental insecurity, and other problems. In the context of the university's connotative development mode, combining the virtual and the real can fundamentally solve the difficulties and problems in higher education experiments and promote the improvement of the quality of financial personnel training in higher education.

4. The application path of virtual simulation experimental teaching in the securities investment course in universities

4.1. School-enterprise cooperation

The application of virtual simulation experimental teaching in the securities investment course is very important, which can provide students with the opportunity to learn and experiment in a safe and controlled environment, simulating real trading scenarios. To achieve this goal, it is imperative to build a virtual simulation experimental teaching system. School-enterprise cooperation can effectively achieve this goal. School-enterprise cooperation is the key to building a successful virtual simulation experimental teaching system, whereby enterprises can provide resources such as equipment, personnel, and technical guidance, while schools can provide the necessary curriculum knowledge and infrastructure. Through cooperation, both parties can develop virtual simulation laboratories to be applied in the curriculum of the securities investment course, providing students with a learning and experimental environment that simulates the real world. School-enterprise cooperation helps to ensure that the knowledge and technical points of securities investment science will be made available to students in a safe experimental environment through the interaction of the virtual simulation laboratory teaching system to enable them to master the relevant knowledge and abilities. Firstly, before the virtual simulation laboratory is built, both parties should sign cooperation agreements promptly to ensure that students can obtain the resources and skills needed to be effective in virtual simulation experiments. These agreements should clarify the roles and responsibilities of the school and the enterprise and set out the expectations of both parties to ensure that teachers and students receive the necessary guidance and support throughout the virtual simulation experiment. Secondly, a virtual simulation experiment teaching platform should be jointly built to prepare for subsequent course project implantation. Lastly, the virtual simulation experimental teaching content is based on the course projects of the securities investment course as a carrier, and the design links of these course projects should be logical and interactive and should include both theoretical and experimental parts. By providing students with a comprehensive experimental learning experience, these course projects will ensure that they can fully grasp and apply what they have learned in the virtual simulation experimental environment ^[7]. In summary, the goal of virtual simulation experimental teaching system construction can be effectively achieved through school-enterprise cooperation and construction. Through the construction of virtual simulation laboratories, the development of application platforms, the construction of virtual simulation experimental courses, etc., the university and enterprises are prompted to work together to create an immersive experimental learning

environment for students.

4.2. Construction of a virtual simulation project system for the experimental course of securities investment

The construction of the virtual simulation project system for the experimental course of securities investment is a process combining systematicity and practicability, aiming to simulate the real securities investment operation through the virtual simulation environment to improve the student's ability to apply the theory of securities investment and practical operation skills. **Table 1** shows the specific steps and contents of the construction of the project system.

Table 1. Specific steps of the virtual simulation experiment project

Steps	Virtual simulation experimental project	Experimental purpose
1	Learning the practical knowledge of securities investment (Python big data processing and analysis principles, intelligent investment process, video viewing format)	Providing students with an initial understanding of the practical process of securities investment and giving them an insight into real securities investment
2	Knowledge testing module (conducting tests on theories related to securities investment as well as knowledge related to big data and smart trading to test knowledge reserves)	Testing students' theoretical knowledge reserve related to securities investment
3	Risk assessment module (3D virtual simulation presentation for risk assessment and risk rating)	Risk assessment for students, so that students know that they must conduct a risk assessment before investing and invest rationally according to their risk tolerance ability
4	Securities account opening module (3D virtual simulation form presenting securities account opening, simulating the process of opening a securities company account)	Letting students simulate the real securities account opening process, know the account opening process identity authentication risk control, etc.
5	Sector analysis module (Sector analysis for stock selection through Porter's Five Forces Model)	Familiarizing with the process of industry analysis, using Porter's Five Forces model for industry analysis, through the industry analysis to lock a few want to invest in the industry
6	Fundamental analysis module (fundamental analysis, SWOT models, listed company research reports)	Conducting fundamental analysis of the company, familiarizing with the content of fundamental analysis, using SWOT model, and finally output a listed company research report
7	Financial analysis module (calculation and analysis of financial indicators of listed companies)	Familiarizing with the process of calculating the financial indicators of listed companies and the meaning of the indicators, able to judge the financial status of the company through the financial indicators, and lock the stocks of listed companies that one wants to invest in
8	Technical analysis module (3D virtual simulation form to explain the technical path, technical analysis of stock selection, K-line, technical indicators calculation application and evaluation)	Conducting technical analyses and calculating technical indicators based on market data of listed companies, and using technical indicators to predict the rise and fall of stocks
9	Big data stock picking (multi-factor quantitative stock picking strategy based on big data, selecting multiple stocks to construct a portfolio and portfolio analysis)	Constructing portfolios, performing regression analyses on portfolios, VAR analyses, etc.
10	Intelligent trading, placing orders to buy and sell stocks, supporting manual order trading and system intelligent automatic trading	Placing stock orders based on constructed portfolios
11	Revenue tracking module, post-order revenue tracking, performance analysis	Tracking of portfolio returns and performance analysis
12	Investment reporting module, return ranking and step-by-step achievement details	Viewing earnings rankings and performance details, submitting investment reports
13	Evaluation improvement module, intelligent evaluation improvement suggestions, Q&A interaction	Students can ask the teacher questions and interact with him/her in a Q&A session

4.3. Strengthening the construction of the teaching team

Teachers of securities investment courses should constantly improve their professional skills and technical levels, and understand the emerging technology and industry dynamics, as well as the latest securities investment theory and practice, to provide students with more valuable teaching guidance^[8]. Teachers should participate in the construction of the virtual simulation securities investment experimental course system and establish close cooperation with the securities investment industry and financial institutions through enterprise practice, industry exchanges, etc., so that they keep abreast of the industry forefront, and enhance the knowledge updating and practical skills of the teaching team.

5. Conclusion

With the rapid changes in the financial market and the advancement of information technology, the teaching reform of the securities investment course in universities is imperative. As a new type of teaching mode, virtual simulation experimental teaching, with its unique advantages, has shown great potential and value in the securities investment course. This paper discussed the application of virtual simulation experimental teaching in the course of securities investment and found that it can not only effectively make up for the shortcomings of traditional teaching and improve the teaching effect, but also cultivate students' practical skills and innovative thinking. In the virtual simulation experimental environment, students can personally participate in simulated transactions, understand the market fluctuations, deepen their understanding of investment theory, and learn to apply theoretical knowledge in the actual investment. However, there are some challenges and problems in the application of virtual simulation experimental teaching, such as high equipment and technical requirements, teaching difficulty, and so on. However, as long as we further strengthen the equipment and technical support, improve the teaching ability of teachers, and enhance the experimental teaching system, we can give full play to the advantages of virtual simulation experimental teaching^[9]. Looking to the future, with the continuous progress of technology and innovation of teaching methods, the application of virtual simulation experimental teaching in the securities investment course will be more extensive and in-depth^[10]. We can foresee that the future securities investment course will pay more attention to practical teaching and the cultivation of innovation ability, providing students with a more high-quality, efficient, and comprehensive learning experience. In conclusion, the application of virtual simulation experimental teaching in the securities investment course is a research and practice of great significance. We need to continuously explore and improve this teaching mode to adapt to the changes in the financial market and the learning needs of students and make greater contributions to the cultivation of high-quality securities investment talents.

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