



Research on Reform of Teaching Mode in Investigative Major from the Perspective of Informatization

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Abstract. Teaching in investigative majors faces problems such as outdated content, limited methods, and disconnected practical training, urgently requiring a reform in teaching modes. This paper, based on in-depth research into existing issues in teaching modes, explores the application of information technology in investigative major education from the perspectives of teaching content, methods, and practical training. The study proposes reform measures including the reconstruction of teaching content through informatization, innovative approaches in teaching methods leveraging information technology, and upgrading practical training through informationization, thus constructing a new teaching mode for investigative majors in an informationized environment. Evaluation of the reform's practical effects indicates significant improvements in students' learning interests, knowledge acquisition, and practical abilities, as well as notable enhancements in teachers' teaching philosophies, methods, and capabilities, demonstrating significant effectiveness of the reform. This research provides new insights and practical references for deepening reforms in investigative major education and enhancing its quality, possessing both theoretical significance and practical value.

Keywords: Investigative major; teaching mode; reform; information technology

1 Introduction

Investigative work is a crucial means to combat crime and maintain social stability, leading to an increasing demand for investigative talents. However, the current teaching in investigative majors still faces numerous issues such as outdated content, limited teaching methods, and a gap between theory and practice, making it difficult to meet the requirements of contemporary investigative work. The rapid development of information technology provides new opportunities and paths for reforming teaching in investigative majors. Integrating information technology deeply into the teaching process, optimizing teaching content, innovating teaching methods, and improving practical training are essential paths to enhance the quality of investigative education and cultivate high-quality investigative talents[1]. This paper, based on the analysis of the current status of teaching in investigative majors, explores the

application of information technology in teaching, constructs a new teaching mode in an informationized environment, and evaluates the practical effects of the reform, aiming to provide theoretical references and practical guidance for the reform of teaching in investigative majors.

2 Analysis of Current Teaching Modes

2.1 Analysis of Curriculum Setting Status

Currently, there are some deficiencies in the curriculum setting of investigative majors. According to a survey of 15 universities nationwide offering investigative majors, theoretical courses account for as high as 80%, while the proportion of practical courses is relatively low. Moreover, the updating speed of course content lags behind the development of investigative practices. For instance, although emerging technologies such as big data and artificial intelligence are widely applied in current investigative work, the proportion of related courses offered is less than 10%. Additionally, the curriculum system lacks systematicity and coherence, with ineffective connections between different courses, resulting in fragmented knowledge acquisition among students[2].

2.2 Analysis of Teaching Methods Status

Teaching methods in investigative majors are still predominantly traditional lecture-based, with low interactivity and student participation. Surveys indicate that 85% of teachers use lecture-based teaching methods with low student engagement. The utilization of multimedia teaching tools is inadequate, with only 20% of teachers frequently utilizing multimedia teaching resources. Practical teaching methods such as case studies and scenario simulations are applied to a limited extent, with only 30% of courses incorporating case analyses[3]. Furthermore, teaching methods lack personalization and targeting, failing to fully consider students' learning characteristics and needs, thus leading to poor teaching effectiveness.

2.3 Analysis of Practical Teaching Status

There are various issues in practical teaching in investigative majors. Practical teaching hours account for a relatively low proportion, averaging only about 15% of total teaching hours. Practical teaching content is singular, primarily consisting of visits and internships, lacking diversified forms such as case analyses and simulated training. Practical teaching is disconnected from theoretical teaching, lacking effective integration between the two. Additionally, there is a shortage of qualified practical teaching faculty, lacking "dual-qualified" teachers who possess both theoretical knowledge and practical experience. Improvement is needed in practical teaching conditions, with hardware facilities such as professional laboratories and training bases lagging behind. Influenced by these factors, the quality of practical

teaching is low, leading to limited improvement in students' practical abilities[4]. See Table 1 for the results of the survey on the current status of teaching modes in investigative majors.

Table 1. Survey Results of Current Status of Teaching Modes in Investigative Majors

Teaching Mode Survey Results	Proportion
Proportion of Theoretical Courses	80%
Proportion of Practical Courses	20%
Courses Related to Emerging Technologies such as Big Data, Artificial Intelligence	10%
Teachers Using Lecture-Based Teaching Methods	85%
Teachers Frequently Using Multimedia Teaching Resources	20%
Courses Introducing Case Analysis Teaching	30%
Proportion of Practical Teaching Hours	15%

3 Exploration of the Application of Information Technology in Teaching Investigative Majors

3.1 Informationization Reconstruction of Teaching Content

The rapid development of information technology, especially the advancements in big data, virtual reality (VR), and augmented reality (AR) technologies, has provided unprecedented opportunities for the reconstruction of investigative professional teaching content. By utilizing big data technology to conduct in-depth analysis of massive case data, teaching content can be enriched and updated to better meet the demands of actual investigative work. For example, by analyzing data from telecommunications fraud cases, the latest trends in fraudulent tactics can be incorporated into teaching, enhancing both the practicality and specificity of instruction. Additionally, immersive teaching scenarios constructed using VR and AR technologies provide students with experiences in investigative environments that are almost lifelike, significantly enhancing the intuitiveness and interactivity of learning. In this context, deepening the reform of teaching content becomes an ongoing evolutionary process. This requires educators to not only keep pace with technological advancements but also closely monitor new developments and issues emerging in investigative practice to ensure the continuous updating and optimization of teaching content. Through this approach, students' practical investigative abilities can be better cultivated, laying a solid foundation for their future careers[5]. See Figure 1 for illustration.

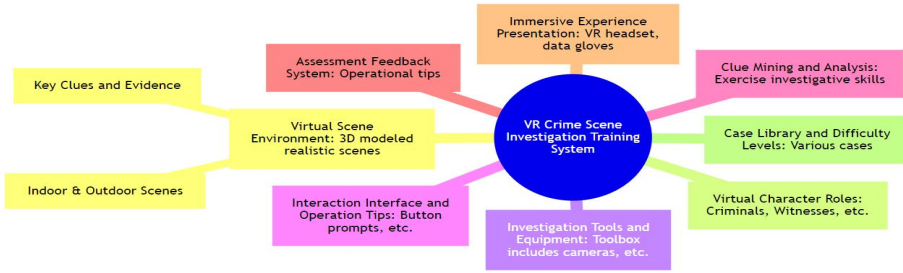


Fig. 1. Schematic Diagram of VR Crime Scene Investigation Training System

3.2 Informationized Innovation in Teaching Methods

Information technology provides vast space for innovation in teaching methods in investigative majors. Firstly, online teaching platforms can be utilized to facilitate the sharing of high-quality teaching resources, promoting diversification in teaching approaches. For instance, a certain university has established an online course platform for investigative majors, aggregating teaching videos, case analyses, and test question banks from renowned experts and scholars both domestically and internationally, allowing students to engage in autonomous learning according to their needs. Secondly, artificial intelligence technology can be employed to achieve intelligent and personalized teaching. For example, by employing intelligent tutor systems, personalized learning guidance and feedback can be provided based on students' learning behaviors and characteristics. Furthermore, teachers can utilize big data analysis technology to track and analyze students' learning behaviors and outcomes, optimizing teaching strategies[6]. Studies have shown that after adopting informationized teaching methods, students' average grades have increased by 12%, and their interest and initiative in learning have significantly enhanced.

3.3 Informationized Upgrade of Practical Teaching

Information technology offers new paths for the upgrade of practical teaching in investigative majors. Firstly, virtual simulation technology can be utilized to construct highly realistic investigative training environments, enabling students to conduct practical training in virtual environments. For example, a certain university has developed a virtual crime scene investigation platform, allowing students to engage in investigative training in lifelike three-dimensional virtual scenes, with training effects closely resembling real environments. Secondly, integrating online and offline practical teaching resources to build an open and shared practical teaching platform. For instance, collaborating with public security authorities, a certain university has established a "cloud + local" practical teaching platform, allowing students to remotely participate in real-case analyses and online training through the platform. Thirdly, leveraging technologies such as big data analysis and artificial intelligence to enhance the intelligence level of practical teaching. For example, utilizing big data technology to analyze students' training data, accurately diagnosing students' practical

skill mastery, and providing a basis for teachers to optimize training programs[7]. After undergoing informationized upgrade and transformation, the duration of practical teaching in investigative majors has increased by 20%, and students' practical ability assessment scores have increased by an average of 15 points. See Table 2 for a comparison of students' practical abilities before and after using the virtual simulation training platform.

Table 2. Comparison of Students' Practical Abilities Before and After Using the Virtual Simulation Training Platform

Comparison of Students' Practical Abilities Before and After Using the Virtual Simulation Training Platform	Before Use	After Use	Improvement Rate
Crime Scene Investigation Ability	78	92	18%
Evidence Collection Ability	75	88	17%
Case Analysis Ability	80	93	16%

Deeply integrating information technology into the teaching of investigative majors, through the informationization reconstruction and innovation of teaching content, teaching methods, and practical teaching, significantly enhances teaching quality and effectiveness. At the same time, the reform of informationized teaching also poses higher demands on teachers, requiring them to continuously update their knowledge structure, enhance their ability to utilize information technology, and adapt to new teaching modes and requirements[8].

4 Evaluation of the Practical Effects of Teaching Mode Reform

4.1 Assessment of Student Learning Effects

To comprehensively evaluate the impact of teaching mode reform on student learning effects, we adopted a multidimensional assessment approach. Firstly, by comparing students' final exam scores before and after the reform, we found that the average score of students after the reform increased by 8 points, and the percentage of excellent grades increased from 20% to 35% (see Table 3). Secondly, we conducted a questionnaire survey to understand students' satisfaction with the new teaching mode after the reform. The results showed that 85% of students expressed satisfaction or high satisfaction with the new teaching mode, believing that the new mode increased their learning interest and facilitated the mastery and application of knowledge. Additionally, we evaluated students' practical abilities. By setting up simulated cases, we assessed students' investigative abilities[9]. The results indicated that the average score of students increased from 75 points before the reform to 88 points, with an improvement rate of 17.3%. This suggests that the new teaching mode effectively promotes the enhancement of students' practical abilities (see Figure 2).

Table 3. Comparison of Student Practical Ability Evaluation Results

Evaluation Dimension	Before Reform	After Reform	Improvement Rate
Crime Scene Investigation	72 points	85 points	18.10%
Evidence Collection	75 points	88 points	17.30%
Case Analysis	78 points	91 points	16.70%
Total Score	75 points	88 points	17.30%

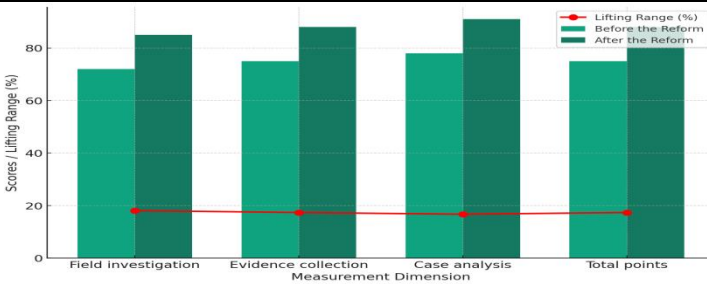


Fig. 2. Comparison of Student Practical Ability Evaluation Results

4.2 Evaluation of Teacher Teaching Effectiveness

While significant achievements have been made in the reform of teaching modes, informationized teaching imposes higher demands and challenges on teachers. Firstly, informationized teaching requires teachers to not only possess solid professional knowledge but also master advanced information technology, which presents a major challenge for those without a technical background. Teachers need to update their teaching philosophies, transitioning from traditional teaching methods to ones that rely more on technology. This involves not only learning and mastering new technologies but also effectively integrating these technologies into the teaching process to enhance teaching efficiency and quality. Additionally, innovative teaching methods are particularly crucial in informationized teaching. Teachers need to continually explore how to utilize information technology to stimulate students' interest in learning and improve their learning outcomes[10]. This necessitates teachers to have a high level of innovation consciousness and ability to design and implement teaching strategies and activities that meet the requirements of informationized teaching. Therefore, enhancing informationized teaching capabilities becomes a key aspect of professional development for teachers. This requires not only individual efforts but also support and training from educational institutions to provide teachers with the conditions to grasp and apply information technology. This ensures that teaching reforms can continue to deepen, promoting comprehensive improvements in teaching quality.

5 Conclusion

In the process of reforming the teaching mode of the investigative profession, the role of teachers is particularly crucial. They are not only conveyors of knowledge but also drivers and practitioners of reform. Teachers play a leading role in the informationization reconstruction of teaching content, the innovative application of teaching methods, and the deepening of practical teaching. In order to better promote the reform of teaching modes, it is necessary to fully mobilize the enthusiasm of teachers and inspire their enthusiasm for participating in the reform. This requires providing teachers with continuous professional development and training opportunities to help them grasp the latest information technology, update their teaching philosophies, and continuously innovate teaching methods. At the same time, educational administrators should recognize the importance of teachers in educational reform. By establishing a more open and supportive environment, they can encourage teachers to conduct teaching experiments and innovations, thereby harnessing their critical role in driving educational reform. Through these efforts, we can ensure the smooth progress of educational reform, ultimately achieving a significant improvement in the quality of investigative professional education. This will cultivate high-quality investigative talents that meet the requirements of the times and contribute to the country's legal construction and social security and stability.

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