ISSN 2522-6398 Vol. 7, Issue 7: 235-240, DOI: 10.25236/FER.2024.070734

Design and Implementation of Intelligent Accounting Virtual Simulation Practice Course Based on Industry-University-Research Collaboration

Yiqiu Liang[1], Yanni Liang[2]

[1]*Hainan Vocational University of Science and Technology, Haikou, 571137, China*
[2]*Northwest University of Political Science and Law, Xi'an, 710063, China*

Abstract: *With the rapid development of technology in the accounting field, traditional accounting education methods face significant challenges. Intelligent accounting technology, particularly virtual simulation technology, provides new teaching tools and practice platforms for accounting education. This paper explores the design concepts, implementation strategies, and evaluation methods of a virtual simulation course that integrates the latest intelligent accounting technologies and is implemented within the framework of industry-university-research collaboration. The results show that the course significantly improves students' practical accounting skills and technical application levels, while also promoting deep integration between academia and the industry.*

Keywords: *Intelligent Accounting; Virtual Simulation; Industry-University-Research Collaboration; Course Design; Implementation Strategy*

1. Introduction

In today's rapidly evolving accounting industry, technological advancements, particularly the application of artificial intelligence and big data technologies, are profoundly transforming traditional accounting functions. This transformation requires accounting educators to rethink and redesign educational content and methods to cultivate high-skilled accounting professionals who meet future market demands. The intelligent accounting virtual simulation practice course based on the industry-university-research collaboration model not only provides a real-time, dynamic learning environment but also enhances students' practical skills and innovative thinking through industry collaboration. This study aims to fill the research gap in the application of virtual simulation in intelligent accounting education and provide theoretical and practical support for innovation in higher accounting education.

2. Design of Intelligent Accounting Virtual Simulation Practice Course Based on Industry-University-Research Collaboration

In today's rapidly changing financial environment, intelligent accounting has become a key area where the application of virtual simulation technology can greatly enhance education quality and practical outcomes. To adapt to this emerging trend, this course design integrates the latest educational technologies and industry practices to build a comprehensive teaching framework. This framework includes not only the study of intelligent accounting theories but also the practical application of these theories through advanced simulation tools, enabling students to apply accounting knowledge and skills in a simulated real-world environment.

2.1 Course Concept and Setting Teaching Goals

In the conceptual phase of the intelligent accounting virtual simulation course, it is crucial to clearly define the teaching goals to ensure that the course content aligns with the needs of the industry-university-research collaboration model. First, this course aims to equip students with the ability to operate intelligent accounting systems, understand the application of big data analysis in accounting decision-making, and enhance their ability to use automation tools in financial management. Second, the course focuses on developing students' critical thinking skills and their ability to solve complex accounting problems. This is achieved by simulating real-world financial scenarios, providing students with opportunities to apply theoretical knowledge to practical problems[1].

ISSN 2522-6398 Vol. 7, Issue 7: 235-240, DOI: 10.25236/FER.2024.070734

Based on these teaching goals, the course further defines specific learning outcomes, including improving students' understanding of modern accounting technologies, strengthening their ability to practice with virtual simulation tools, and enhancing their interaction with industry experts. These goals aim to comprehensively improve students' professional skills and market adaptability through a combination of theoretical teaching, practical operations, and regular lectures and seminars by industry experts.

2.2 Selection and Application of Virtual Simulation Technology

Selecting appropriate virtual simulation technology is crucial to the success of the intelligent accounting course. This course employs cutting-edge ERP system simulation platforms and AI accounting software. These tools can simulate real accounting environments, providing functions such as ledger management, automated financial statement generation, and tax processing. These technologies not only support students in conducting practical operations in a safe simulated environment but also demonstrate the application of intelligent systems in modern accounting functions through real-time data processing and analysis.

Furthermore, to ensure the effective application of the technology, the course includes technical training modules designed to teach students how to operate these advanced systems. By combining theoretical learning with practical operations, students can acquire the necessary technical skills while mastering basic accounting knowledge, enabling them to handle various technical challenges in their future careers.

2.3 Systematic Integration and Module Division of Teaching Content

The systematic integration of course content is key to ensuring effective teaching outcomes. This course is divided into four major modules in a logical sequence: Basic Accounting Theory, Accounting Information Systems, Intelligent Accounting Technology Applications, and Complex Problem-Solving Strategies. Each module is designed with progressively advanced content, from basic accounting principles to complex financial decision simulations, ensuring that students can systematically acquire the necessary knowledge.

Content integration between modules is achieved through cross-module projects and case studies. This design not only enhances the coherence of the course content but also encourages students to comprehensively apply the knowledge learned from different modules to solve practical problems[2]. Additionally, each module concludes with an assessment to evaluate student learning outcomes, ensuring that they fully understand and master the knowledge before moving on to the next module.

2.4 Design of Interaction and Feedback Mechanisms

Effective interaction and feedback mechanisms are crucial for enhancing student learning experiences and teaching quality. The course establishes a multi-channel interaction system through online discussion forums, real-time Q&A sessions, and instant feedback functions of the virtual simulation system. These interaction methods allow students to get timely help when encountering learning obstacles and promote knowledge exchange between students and between students and teachers.

Moreover, the course introduces a performance-based feedback system that provides personalized learning suggestions and improvement recommendations by analyzing students' performance in the virtual simulation environment. This feedback is based not only on students' specific operations but also on the effectiveness of their decision-making processes and results. This comprehensive interaction and feedback mechanism enhances students' learning motivation and deepens their understanding and mastery of intelligent accounting practices[2].

3. Implementation Strategies for Intelligent Accounting Virtual Simulation Practice Course Based on Industry-University-Research Collaboration

Effective strategies are essential for ensuring the quality and learning outcomes of the intelligent accounting virtual simulation practice course based on the industry-university-research collaboration model. These strategies include professional training for teachers, optimizing learning resources, engaging student participation, coordinating the collaboration among all parties, and providing comprehensive technical support.

ISSN 2522-6398 Vol. 7, Issue 7: 235-240, DOI: 10.25236/FER.2024.070734

3.1 Teacher Training and Preparation of Learning Resources

Systematic training for teachers is essential before implementing the intelligent accounting virtual simulation course based on the industry-university-research collaboration model. This training covers the operation of virtual simulation software, the application of intelligent accounting technologies, and online teaching methods. The aim is to ensure that teachers are not only familiar with the course content and technologies but also capable of effectively managing online classrooms and student interactions. Additionally, teachers will receive specialized training on how to assess student performance and provide personalized feedback to enhance the teaching effectiveness of the course.

Equally important as teacher training is the preparation of learning resources. Through the joint efforts of industry partners and academic institutions, the course has prepared a series of learning materials, including case studies, simulated data sets, video tutorials, and interactive learning modules. These resources are designed to provide a rich learning environment that helps students bridge the gap between theoretical learning and practical application. Continuous updating and optimization of these resources ensure that the course content stays aligned with the latest industry developments.

3.2 Student Engagement Mechanisms and Dynamic Adjustments

To maximize student engagement and learning outcomes, the course employs various mechanisms to promote active learning[3]. By implementing achievement-based gamified learning strategies and establishing interactive discussion areas, the course stimulates students' interest and sense of participation. Regular online seminars are also organized, giving students the opportunity to directly interact with industry experts, thereby enhancing the applicability and immediacy of their learning.

Considering student feedback and learning progress, the course adopts a dynamic adjustment strategy during implementation. By continuously monitoring student learning data and feedback, teachers and course administrators can adjust the teaching content and learning activities to better meet the students' needs. This flexible adjustment mechanism ensures that the course can respond to various learning styles and paces, thereby improving the overall teaching effectiveness.

3.3 Coordination and Management of Industry-University-Research Collaboration

Effective coordination and management are key to the success of industry-university-research collaboration. The course establishes a tripartite collaboration platform that includes educational institutions, industry enterprises, and research organizations, jointly participating in the design and implementation of the course. This platform not only facilitates resource sharing but also provides opportunities for internships, project collaborations, and career development, enhancing the practicality and foresight of the course.

Additionally, regular meetings and review mechanisms ensure that all collaborators have clear goals and responsibilities throughout the course implementation process. By regularly evaluating collaboration outcomes and addressing issues that arise during collaboration, the cooperation model and course content are continuously optimized to ensure that the course effectively meets the demands and trends of industry development.

3.4 Technical Support and Contingency Strategies

Technical support is crucial for the smooth operation of online virtual simulation courses. The course has established a comprehensive technical support system, including an online help center, real-time technical support hotline, and user manuals, to help resolve technical issues that students and teachers may encounter when using the virtual simulation platform. This system ensures that users can quickly get answers and support when they encounter operational difficulties, minimizing learning interruptions.

For potential technical failures, the course has detailed contingency strategies and plans. These include regular system maintenance and updates, a rapid response team for handling failures, and the setup of backup systems to ensure continuity of the course and data security[4]. This all-encompassing technical support and contingency strategy effectively guarantee the stability and efficiency of virtual simulation teaching activities.

ISSN 2522-6398 Vol. 7, Issue 7: 235-240, DOI: 10.25236/FER.2024.070734

4. Effect Evaluation of Intelligent Accounting Virtual Simulation Practice Course Based on Industry-University-Research Collaboration

Comprehensive evaluation of the course outcomes is crucial to ensure the effectiveness of teaching activities and achieve the predetermined educational goals in the intelligent accounting virtual simulation practice course based on the industry-university-research collaboration model. Through systematic evaluation methods and real-time feedback mechanisms, the course can continuously optimize while ensuring that educational outcomes are closely aligned with industry needs.

4.1 Quantitative Evaluation Methods for Learning Outcomes

In evaluating the effectiveness of the intelligent accounting virtual simulation course, a multidimensional quantitative evaluation method is adopted to ensure the comprehensiveness and objectivity of the evaluation results. First, specific evaluation indicators are designed, such as learning progress, test scores, practical operation skills, and problem-solving techniques, to measure students' learning outcomes. These indicators reflect not only students' grasp of knowledge but also their ability to apply this knowledge to solve real-world problems in a virtual environment.

Secondly, to increase the accuracy of the evaluation, the course introduces an automatic tracking system that records various interactions and activities of students during the course. Through data analysis, it is possible to objectively analyze students' learning behaviors and outcomes, helping teachers and course designers understand which teaching methods are effective and which need adjustments. This quantitative evaluation method ensures the timeliness and accuracy of the evaluation results, contributing to the optimization of course design and teaching strategies.

4.2 Real-Time Feedback and Course Adjustment

The real-time feedback mechanism is a core component of the intelligent accounting virtual simulation course, enabling teachers to instantly adjust teaching content and methods based on student feedback. Through the integrated learning management system, teachers can monitor students' learning progress and outcomes in real-time, quickly identifying learning bottlenecks and challenges. This real-time monitoring not only increases the flexibility of teaching but also enhances the adaptability of the course, allowing it to better meet the learning needs of different students.

Additionally, course adjustments based on student feedback are not limited to updating teaching methods and content but also include optimizing learning resources and support services. For example, based on student feedback, more example demonstrations might be added, or more detailed operation guides might be provided to help students better understand complex accounting operations[5]. Through such dynamic adjustments, the course can continuously improve and offer a more effective and personalized learning experience.

4.3 Integration and Analysis of Industry Feedback

Industry feedback is a key indicator for evaluating the alignment of the virtual simulation course with actual professional needs. By regularly collecting feedback from partner enterprises and professionals, the course can assess the applicability of its content and teaching methods in real work environments. This feedback helps course designers understand the latest industry demands and technological changes, ensuring the timeliness and foresight of the course content.

When analyzing this feedback, special attention is paid to evaluating students' professional skills performance and technical application abilities. By integrating insights and suggestions from industry experts, the course can make necessary adjustments, such as incorporating new emerging technologies or adjusting case studies to better reflect industry needs. This close cooperation and feedback mechanism with the industry enhance the practical and professional nature of the course.

4.4 Long-Term Impact and Continuous Improvement Measures

Evaluating the long-term impact of the intelligent accounting virtual simulation course is essential to ensure its ongoing effectiveness in training accounting professionals. By tracking alumni's career development and achievements, the course can assess its actual impact on students' careers. Additionally, the course conducts regular long-term effect evaluations, including career stability and promotion speed

ISSN 2522-6398 Vol. 7, Issue 7: 235-240, DOI: 10.25236/FER.2024.070734

of students, as well as their contributions within their professional fields.

Based on these evaluation results, the course design team implements continuous improvement measures, regularly updating and upgrading the course content to adapt to changes and technological advancements in the accounting industry. Furthermore, interaction with the industry is strengthened through regular seminars and workshops to maintain close ties between the course and professional practice. These continuous improvement measures not only enhance the quality of teaching but also ensure the long-term educational effectiveness and social value of the course.

5. Innovation in Intelligent Accounting Virtual Simulation Practice Course Based on Industry-University-Research Collaboration

In the intelligent accounting virtual simulation practice course based on the industry-university-research collaboration model, innovative teaching methods and technological applications are crucial to effectively meet the educational needs of modern accounting professionals and enhance students' practical skills. The course incorporates various advanced teaching technologies and strategies to improve teaching quality and enhance students' comprehensive abilities.

5.1 Innovative Teaching Methods and Technological Applications

The intelligent accounting virtual simulation practice course adopts diversified innovative strategies in teaching methods aimed at improving learning efficiency and enhancing students' practical skills. First, the course integrates case-based teaching and project-driven methods, allowing students to directly apply theoretical knowledge by simulating real-world accounting problems. This approach not only improves students' ability to solve complex problems but also enhances their critical thinking and decision-making skills.

Secondly, interactive learning technologies, such as synchronous online discussions and collaboration platforms, are introduced to enable students to communicate instantly with peers and instructors in a virtual environment, providing a richer and more dynamic learning experience. The use of these technologies makes the teaching process more flexible and aligns better with modern students' learning habits.

Finally, to further enhance teaching effectiveness, the course adopts microlearning and flipped classroom concepts. Through short videos, online quizzes, and self-study tasks, students can engage in self-directed learning outside the classroom, while in-class time is used for in-depth discussions and practical operations. This model effectively combines theory with practice, increasing the depth and breadth of learning.

5.2 Interdisciplinary Integration and Exploration of Emerging Technologies

The course emphasizes interdisciplinary integration in its design and implementation, merging accounting, computer science, and data analysis to meet the complex demands of the modern intelligent accounting field. Through this integration, students not only learn accounting knowledge but also acquire essential technical skills such as data mining and programming, which are crucial for handling big data and conducting financial analysis[6].

Furthermore, the course explores emerging technologies such as blockchain and cloud computing, examining how these technologies can provide new solutions and advantages in accounting practice. For instance, through case studies, students can learn how to use blockchain technology for asset tracking and risk management and how cloud computing can improve financial data storage and analysis.

Additionally, the course continuously updates teaching content and practical tools through collaborations with technology providers and industry leaders, ensuring that students can learn and apply the most cutting-edge technologies. This ongoing technological update and practical application ensure the course's advanced nature and practicality.

5.3 Integration of Augmented Reality and Artificial Intelligence

A significant innovation in the course is the integration of Augmented Reality (AR) and Artificial Intelligence (AI) technologies. This integration brings unprecedented visual and interactive experiences to accounting education. For example, with AR technology, students can view complex financial

ISSN 2522-6398 Vol. 7, Issue 7: 235-240, DOI: 10.25236/FER.2024.070734

statements and transaction data in a virtual environment, enhancing the intuitiveness and interactivity of learning.

AI is applied in the intelligent accounting virtual simulation course primarily in automated data processing and intelligent decision support systems. AI algorithms help students analyze large amounts of data, identify potential financial issues and trends, enabling higher-level analysis and evaluation in learning.

Combining AR and AI technologies, the course provides an immersive learning platform where students can perform practical operations in a simulated accounting environment. At the same time, the intelligent analysis and feedback mechanisms enhance the effectiveness and efficiency of learning. This comprehensive application of technology represents a significant innovation in intelligent accounting education, offering students a comprehensive and efficient learning environment.

6. Conclusion

This study showcases the design and implementation process of the intelligent accounting virtual simulation course based on the industry-university-research collaboration model, confirming the course's effectiveness in enhancing students' professional skills and innovation abilities. By optimizing implementation strategies and fully utilizing teaching resources, the course has achieved the expected educational outcomes and received widespread recognition from students and the industry. Future research could explore how to integrate other high-tech elements, such as blockchain and cloud computing, into accounting education courses and how to promote such course models in a broader geographical scope to meet the needs of globalized accounting education. Additionally, research should focus on evaluating the long-term impact of the course and the sustainable development strategies of the industry-university-research collaboration model.

Acknowledgement

2024 Hainan Vocational University of Science and Technology Education and Teaching Reform Research Project

Project Title

Research on the Construction of Intelligent Accounting Virtual Simulation Practice Course Based on "Dual Characteristics and One Degree" in Industry-University-Research-Application Integration

Project Number

HKJG2023-21

References

[1] Zhang Hanyi. (2021). Application of Virtual Simulation Technology in Accounting Education. Modern Educational Technology, 31(2), 88-93.
[2] Li Qingquan, & Liu Yu. (2022). Analysis of Intelligent Accounting Talent Training Model under the Industry-University-Research Collaboration Model. Accounting Friend, (4), 102-106.
[3] Han Liping. (2023). Practice and Reflection on Virtual Simulation Experiment Teaching in Accounting under the Background of Artificial Intelligence. Accountant, (1), 89-94.
[4] Chen Daming. (2020). Exploration of Industry-University-Research Collaboration Model and Its Practical Application in Accounting Education. Educational Theory and Practice, 40(15), 58-62.
[5] Zhao Hongmei. (2022). Construction of Virtual Simulation Practice Teaching System from the Perspective of Intelligent Accounting. Finance and Accounting Communication, (17), 46-50.
[6] Liu Simin. (2024). Research on the Reform of Accounting Virtual Simulation Practice Teaching. China Accounting Review, (3), 112-117.