Construction of Smart Learning Spaces in Private Universities' Accounting Programs under the Dual Perspective of Digital Intelligence and Industry-education Integration

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Abstract: This study explores the construction model of smart learning spaces in private universities' accounting programs within the dual context of digital intelligence and industry-education integration. Utilizing literature review and theoretical analysis, the research systematically examines the current applications of digital intelligence in education and the impact of industry-education integration on educational reform. Initially, the concept of smart learning spaces is defined, and their application value in accounting programs is analyzed. Subsequently, the study investigates how digital intelligence enhances the smart, personalized, and interactive aspects of learning spaces, and how industry-education integration effectively aligns educational content with industrial needs. Finally, based on constructivist and ecosystem theories, a theoretical model of smart learning spaces is constructed, along with implementation strategies. The findings indicate that the construction of smart learning spaces effectively improves the teaching quality and students' professional abilities in accounting programs, providing new insights and methods for the reform and development of private universities' accounting programs.

Keywords: Digital Intelligence; Industry-Education Integration; Smart Learning Spaces; Accounting Programs; Educational Reform

1. Introduction

1.1 Research Background and Significance

In the context of rapid development, digital intelligence has become a crucial force in driving educational innovation. Particularly in private universities' accounting programs, the application of digital intelligence not only enhances teaching efficiency but also strengthens students' practical abilities and innovative thinking. Industry-Education-Research integration, as an emerging educational model, emphasizes the close alignment of industrial needs with educational content, aiding in the cultivation of professionals who meet market demands. Therefore, exploring the application of digital intelligence and Industry-Education-Research integration in private universities' accounting programs is of significant importance for improving educational quality and promoting student employment.

1.2 Review of Domestic and International Research Status

With the deepening development of the concepts of "digital intelligence" and "Industry-Education-Research integration," the construction of smart learning spaces in private universities' accounting programs has become a crucial direction for educational reform. This paper aims to review relevant domestic and international research, combining the spirit of the Two Sessions and current social hotspots, to discuss the status and trends of smart learning space construction.

Domestic research primarily focuses on the connotation construction and path exploration of digital intelligence-driven smart learning factories in accounting. For example, Zeng Liping (2021) discussed the connotation construction of digital intelligence-driven smart learning factories based on constructivist theory, emphasizing learner-centered teaching models and practice-oriented learning environments. Tang Li (2024) studied the construction paths of smart learning factories from the perspective of vocational finance and commerce majors, proposing strategies that

integrate industrial needs and educational objectives. Guo Liting (2024) in her research on personalized learning models in smart learning environments, suggested strategies for supporting learners' personalized development using digital intelligence technology, emphasizing the deep integration of technology and teaching [1-3]. These studies provide theoretical and practical references for the construction of smart learning spaces in private universities' accounting programs. Li Ping and Xue Ying (2023) investigated the construction paths of smart educational ecosystems in universities empowered by digital transformation, emphasizing collaborative development and resource sharing in the ecosystem. This research offers a macro perspective and strategies for the construction of smart learning spaces. [4-12]

International research primarily focuses on the application of digital intelligence technologies in education and their impact on learning outcomes. For instance, researchers have explored the use of AI, big data, and other technologies in personalized learning, teaching management, and how these technologies optimize resource allocation and enhance learning efficiency. International research also addresses the practices and challenges of Industry-Education-Research integration, discussing how to achieve deep integration between education and industry through school-enterprise cooperation and project-driven methods, as well as potential obstacles and solutions in this process.

In line with the spirit of the Two Sessions, which emphasizes innovation-driven and high-quality development, the construction of smart learning spaces embodies this concept. Through digital intelligence technologies and Industry-Education-Research integration, educational quality can be effectively enhanced, cultivating high-quality talents that meet the demands of future society. Current social hotspots such as digital transformation and rural revitalization also pose new requirements for education. The construction of smart learning spaces needs to consider these social hotspots, promoting educational equity and quality improvement through technology empowerment and educational innovation.

In summary, domestic and international research has made progress in areas such as digital intelligence-driven smart learning factories, smart learning environments and personalized learning, digital transformation, and smart educational ecosystems. In line with the spirit of the Two Sessions and social hotspots, the construction of smart learning spaces in private universities' accounting programs should further deepen the application of digital intelligence technologies, strengthen Industry-Education-Research integration, to achieve high-quality educational development.

1.3 Research Objectives and Content

This study aims to explore the application models of digital intelligence and Industry-Education-Research integration in private universities' accounting programs, particularly the construction of smart learning spaces. The research content includes the theoretical foundations of digital intelligence, implementation strategies for Industry-Education-Research integration, design principles, and implementation paths for smart learning spaces. Through in-depth analysis, this research expects to provide theoretical support and practical guidance for educational reform in private universities' accounting programs.

1.4 Research Methods and Technical Route

This research adopts a combination of literature analysis, case studies, and theoretical construction. Through literature analysis, relevant theories of digital intelligence and Industry-Education-Research integration are reviewed; typical cases are selected for in-depth study to analyze their successful experiences and existing problems in the construction of smart learning spaces; based on the integration of theory and practice, a smart learning space model suitable for private universities' accounting programs is constructed.

2. Theoretical Foundations of Digital Intelligence and Industry-Education-Research Integration

2.1 Concept and Characteristics of Digital Intelligence

Digital intelligence refers to the process of using modern information technologies such as big data, cloud computing, and artificial intelligence to intelligently process and apply

educational resources. Its characteristics include: data-driven, where big data analysis optimizes teaching content and methods; intelligent interaction, utilizing AI technology for intelligent interaction between teachers and students; and personalized learning, providing customized learning plans based on students' learning habits and abilities.

2.2 Theoretical Framework of Industry-Education-Research Integration

Industry-Education-Research integration refers to the close cooperation between the industrial, educational, and research sectors, sharing resources and information to effectively align educational content with industrial needs. The core of this model is: demand-oriented, where the design and update of educational content should closely revolve around industrial needs; practice-based, emphasizing the enhancement of students' practical abilities through actual projects and case-based teaching; and collaborative innovation, encouraging the joint development of new technologies and products by the educational and industrial sectors.

2.3 Conceptual Definition of Smart Learning Spaces

Smart learning spaces refer to intelligent learning environments that integrate learning, communication, and practice using advanced information technologies. The characteristics of this space include: technology integration, consolidating various information technology tools such as virtual reality and smart terminals; environment intelligence, achieving adaptive adjustments of the learning environment through intelligent perception and analysis technologies; and resource sharing, constructing an open learning resource platform to promote the sharing and dissemination of knowledge.

It is evident that the application of digital intelligence and Industry-Education-Research integration in private universities' accounting programs holds significant theoretical and practical value. Next, this paper will further explore how to construct smart learning spaces in actual teaching to achieve innovation and optimization of the educational model.

3. Analysis of the Current Educational Status of Accounting Programs in Private Universities

3.1 Educational Characteristics of Accounting Programs

Accounting programs, as a crucial branch of business education, are characterized by: (1) a balance between theory and practice, requiring students to grasp solid theoretical knowledge while possessing practical skills; (2) high specialization, covering areas such as accounting, auditing, and financial management; (3) rapid content updates due to changes in the economic environment and accounting standards.

3.2 Current Application of Digital Intelligence in Accounting Education

The application of digital intelligence in accounting education has become widespread, manifested in: (1) digitalization of teaching content, offering rich learning resources through e-textbooks and online courses; (2) intelligent teaching methods, leveraging smart teaching systems and virtual simulations to enhance teaching efficiency and student engagement; (3) precise learning assessment, using big data analytics to provide personalized guidance and accurate evaluation of students' learning progress.

3.3 Practical Exploration of Industry-Education-Research Integration in Accounting Education

Practical exploration of Industry-Education-Research integration in accounting education includes: (1) aligning course content with industry, introducing real-world accounting cases and financial management issues to enhance relevance and practicality; (2) industry cooperation in practice teaching, establishing partnerships with accounting firms and corporate finance departments to provide internships and practical training opportunities; (3) industrial transformation of research outcomes, encouraging faculty and students to participate in industry-related research projects to facilitate the application and transformation of research findings.

4. Principles and Elements of Constructing Smart Learning Spaces

4.1 Principles for Constructing Smart Learning Spaces

The construction of smart learning spaces

should adhere to: (1) user-centered principles, focusing on students' learning needs to design flexible and dynamic learning environments; (2) technology integration principles, incorporating diverse information technologies for intelligent management and services of teaching resources; (3) open sharing principles, building open platforms to promote resource sharing and communication; (4) sustainable development principles, ensuring continuous technological updates and functional upgrades to meet educational development needs.

4.2 Core Elements of Smart Learning Spaces

Core elements of smart learning spaces include: (1) intelligent teaching tools such as smart boards and interactive projections, offering diverse teaching methods; (2) abundant learning resources, including e-textbooks, online courses, and virtual simulations to meet different learning needs; (3) efficient learning management systems for tracking, evaluating, and providing feedback on learning processes; (4) conducive learning environments comprising both physical and network environments, ensuring comfortable and convenient learning conditions.

4.3 Application of Digital Intelligence Technology in Smart Learning Spaces

Applications of digital intelligence in smart learning spaces include: (1) big data analytics for personalized teaching and precise evaluation through analysis of student learning data; (2) artificial intelligence with smart teaching systems and intelligent tutoring robots to increase teaching efficiency and student participation; (3) cloud computing offering robust computing and storage capacities to support large-scale online learning and resource sharing; (4) the Internet of Things (IoT) enabling intelligent perception and adaptive adjustments of learning environments to enhance learning experiences.

5. Design of Smart Learning Space Construction Models

5.1 Theoretical Basis for Model Design

The design of smart learning space construction models is based on: (1) constructivist learning theory, emphasizing active construction and practical exploration by students; (2) technology acceptance model, analyzing students' acceptance and willingness to use new technologies; (3) systems theory, viewing learning spaces as complex systems and considering the interactions and overall optimization of various elements.

5.2 Steps and Methods for Model Construction

Steps for constructing smart learning spaces include: (1) needs analysis, understanding learning needs of students and teaching needs of faculty through surveys and interviews; (2) scheme design, creating the overall structure and functional modules of smart learning spaces based on needs analysis; (3) technological implementation, selecting appropriate technological platforms and tools to realize the designed functions; (4) evaluation and optimization, continually improving and adjusting the learning space design based on feedback and real-world operation.

5.3 Strategies and Guarantees for Model Implementation

Strategies for implementing smart learning space models include: (1) policy support, securing funding and resources from school and government policies; (2) faculty training, enhancing teachers' skills in digital intelligence technologies and teaching methods; (3) student guidance, promoting and educating students to adapt to and utilize smart learning spaces; (4) continuous improvement, establishing feedback mechanisms to regularly evaluate and optimize the functionality and services of learning spaces.

6. Application Effects and Evaluation of Smart Learning Spaces

6.1 Expected Goals of Application Effects

The application of smart learning spaces aims to achieve: (1) enhanced teaching quality through intelligent tools and abundant resources; (2) improved practical abilities of students via virtual simulations and real-case analysis; (3) promoted professional development of teachers through the application of digital intelligence technologies; (4) optimized allocation of educational resources via open and shared learning platforms.

6.2 Construction of Evaluation Index System

To comprehensively evaluate the application effects of smart learning spaces, a multi-dimensional evaluation index system is needed, including: (1) teaching effectiveness indicators, such as student performance improvements and learning satisfaction; (2) student capability indicators, like practical operation skills and innovative thinking abilities; (3) teacher development indicators, such as instructional design and technology application abilities; (4) resource utilization indicators, like the degree of resource sharing and platform usage efficiency. Comprehensive evaluation through these indicators will reflect the application effects of smart learning spaces accurately.

6.3 Evaluation Methods and Implementation Paths

Evaluation methods for smart learning spaces can include: (1) quantitative analysis, gathering and analyzing data through surveys and statistical methods; (2) qualitative analysis, understanding user experiences and subjective perceptions through interviews and observations; (3) case studies, deeply analyzing typical cases to summarize successful experiences and identify existing problems. Implementation paths consist of: (1) developing an evaluation plan with clear objectives, methods, and timelines; (2) data collection using multiple channels to gather necessary evaluation data and information; (3) result analysis, organizing and analyzing collected data to derive evaluation conclusions; (4) feedback and improvement, proposing improvement suggestions based on evaluation results to optimize the design and application of smart learning spaces.

7. Conclusion

This study has constructed a theoretical model and implementation path for smart learning spaces by deeply analyzing the application of digital intelligence and Industry-Education-Research integration in private universities' accounting programs. The findings demonstrate that constructing smart learning spaces can effectively enhance teaching quality, strengthen students' practical abilities, promote teachers' professional development, and optimize the allocation of educational resources. Additionally, a multi-dimensional evaluation index system and scientific evaluation methods can comprehensively assess the application effects of smart learning spaces, providing robust support for educational reform.

Based on the findings, the following policy recommendations are proposed: (1) increase investment in digital intelligence education, providing necessary funding and technical support to promote the construction and application of smart learning spaces; (2) strengthen faculty training to improve teachers' mastery of digital intelligence technologies and teaching methods, fostering educational innovation; (3) optimize the allocation of educational resources, building open and shared learning platforms for the rational distribution and efficient utilization of educational resources; (4) establish a long-term evaluation mechanism to regularly assess the application effects of smart learning spaces, timely adjusting and optimizing design and implementation plans.

Future research can further explore: (1) in-depth study of application models of digital intelligence technologies in education, discovering more innovative educational methods and techniques; (2) strengthened practical exploration of Industry-Education-Research integration, promoting deep integration of education and industry to enhance the social service functions of education; (3) sustainable development of smart learning spaces, researching how to adapt to changes in technology development and educational needs to maintain the advancement and practicality of learning spaces; (4) expanding international perspectives, learning from advanced educational concepts and technological applications abroad to propel the international development of our country's education sector.

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