

Empowering Higher Education Teaching Reform and Innovation with Digital Technology

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Abstract:

In recent years, emerging technologies such as VR/AR, 5G, and the Internet of Things have developed rapidly, posing new requirements for higher education teaching reform. New digital education technologies, such as automatic numerical control virtual simulation technology, have become an important support for higher education teaching reform. Automatic numerical control virtual simulation technology can verify the correctness of numerical control programs and the feasibility of machine operation before actual machining by simulating the operation, programming, and machining process of numerical control machine tools. Therefore, studying the application of automatic numerical control virtual simulation technology in higher education teaching is of great significance for improving machining efficiency, reducing costs, and reducing machine tool failures.

Keywords:

Digital Technology, Higher Education, Teaching Reform, Innovation

1. Introduction

The innovative application of automatic numerical control virtual simulation technology in higher education teaching is of great significance. Firstly, virtual simulation technology can improve machining efficiency, verify the correctness of CNC programs and the feasibility of machine tool operation through computer simulation, and reduce errors and risks in actual machining processes. Secondly, virtual simulation technology can reduce production costs, avoid scrap rates and equipment damage caused by CNC program errors or machine operation failures. Finally, virtual simulation technology helps to reduce machine tool failures. Through virtual simulation of CNC machine tools, potential fault hazards can be identified and repaired in a timely manner, ensuring the normal operation of the machine tool.

2. Digital Technology Drives the Transformation of Higher Education

2.1. The Integration and Development of Digital Technology and Higher Education

The integration and development of digital technology and higher education is an important trend in the field of contemporary education. The rapid development of digital technology has injected new vitality into higher education and promoted profound changes in teaching modes. Firstly, digital technology provides richer and more diverse teaching resources for higher education, including online courses, teaching videos, digital libraries, etc., enriching teaching content and improving teaching quality. Secondly, digital technology has injected innovative genes into higher education, promoting innovation in teaching methods and updating teaching concepts. Furthermore, digital technology has brought diversified teaching methods to higher education, such as online teaching, mobile learning, etc., meeting the diverse learning needs of students. In short, the integration and development of digital technology and higher education have provided strong support for educational reform, injecting new vitality and momentum into the development of higher education [1].

2.2. The Impact of Digital Technology on Higher Education Teaching

With the rapid development of digital technology, it has had a profound impact on higher education teaching. The transformative role of digital technology in higher education in terms of teaching methods, teaching resources, teaching environment, and learning effectiveness evaluation.

2.2.1. Changes in teaching methods

Digital technology has brought unprecedented innovation to teaching methods. The traditional face-to-face teaching has gradually evolved into a blended learning approach that combines online and offline teaching. Through online education platforms, online courses, virtual laboratories, and other means, teachers can impart knowledge in real-time, and students can participate in learning anytime, anywhere. In addition, digital technology also supports various teaching modes such as personalized teaching, collaborative learning, and project-based learning to meet the learning needs and interests of different students.

2.2.2. Enrichment and sharing of teaching resources

Digital technology greatly enriches teaching resources, enabling convenient access and dissemination of various academic literature, textbooks, cases, videos, and other resources. In addition, digital technology has also promoted the sharing of teaching resources, achieving global sharing of teaching resources through open courses, open-source software, educational cloud platforms, and other means. This not only improves the quality and efficiency of teaching, but also promotes educational equity.

2.2.3. Improvement of teaching environment

Digital technology has created a better teaching environment for higher education. The application of technologies such as virtual reality, augmented reality, and intelligent voice in teaching makes the classroom more lively and interesting. At the same time, the popularization of technologies such as smart classrooms, online live streaming, and remote education has provided students with more flexible and diverse

learning spaces.

2.2.4. Optimization of learning effectiveness evaluation

Digital technology has brought great convenience to the evaluation of learning outcomes. Through online testing, intelligent grading, data analysis and other technical means, teachers can grasp students' learning situation in real time and achieve personalized tutoring. At the same time, digital technology also supports process evaluation and diversified evaluation, making evaluation more fair, reasonable, and effective.

3. Digital Technology Helps Improve the Quality of Higher Education

3.1. Application of Digital Technology in Teaching Evaluation

One of the application areas of digital technology in higher education is teaching evaluation. As an important link in ensuring teaching quality, the application of digital technology has brought many conveniences and possibilities to teaching evaluation. Firstly, digital teaching evaluation tools can collect more comprehensive data on student learning performance, including classroom participation, homework completion, exam scores, etc., thereby helping teachers to have a more accurate understanding of student learning. Secondly, digital technology can also achieve real-time monitoring and analysis of student learning processes, providing timely feedback and guidance to teachers, helping to detect student learning difficulties early and take targeted teaching measures. In addition, digital evaluation tools can also provide data support for teaching management, helping schools and teachers better allocate teaching resources and improve courses. Overall, the application of digital technology in teaching evaluation provides new avenues and possibilities for improving the teaching quality of higher education.

3.2. Academic research on digital technology promoting higher education

With the rapid development of digital technology, it has become an important force in promoting academic research in higher education. In this section, we will explore how digital technology can assist academic research in higher education, as well as the challenges and opportunities faced in this process.

Firstly, digital technology provides abundant data resources for academic research in higher education. Through online search engines, academic databases, and open access resources, scholars can quickly access massive amounts of academic information. These data resources not only help scholars track the forefront of research, but also provide rich data support for empirical research.

Secondly, digital technology has changed the means and methods of academic research. With the help of computer simulation, data mining, and artificial intelligence technologies, scholars can conduct more complex and in-depth research. In addition, digital technology also promotes interdisciplinary collaborative research. Through online collaborative platforms, scholars can collaborate on research and projects, achieving resource integration and complementary advantages.

In addition, digital technology has had a positive impact on academic communication and exchange. The Internet has accelerated the dissemination speed of academic achievements, and platforms such as academic journals, conferences, and

online seminars provide scholars with opportunities to showcase their research results. These platforms help improve the transparency of academic research and promote exchanges and cooperation in the academic community.

However, digital technology has also brought some challenges in promoting academic research in higher education. Firstly, academic misconduct has become an urgent issue to be addressed. In the online environment, academic plagiarism, falsification of data, and other behaviors are easy to breed. Secondly, the rapid updating and replacement of digital technology may lead to technological dependence in academic research fields, and some important issues are easily overlooked [2]. Finally, the development of digital technology has also brought about issues of data security and privacy protection, which poses new requirements for academic research ethics.

In short, digital technology provides unprecedented opportunities for academic research in higher education. By enriching data resources, changing research methods and approaches, and promoting academic exchanges, digital technology is driving innovative development in academic research. However, we should also pay attention to the challenges that come with it and strive to create a fair and orderly academic environment. In this process, the government, universities, scholars, and all sectors of society should work together to fully leverage the advantages of digital technology and promote academic research in higher education to constantly reach new heights.

4. Digital Technology Promotes Innovation in Higher Education

4.1. Innovation of Digital Technology in Higher Education Curriculum System

The application of digital technology in the curriculum system of higher education has brought new innovative opportunities for education and teaching. Firstly, the introduction of digital technology provides a broader space for curriculum design. Teachers can use digital platforms and multimedia teaching methods to break traditional classroom forms and achieve seamless integration of online and offline teaching resources. Secondly, digital technology can also provide support for personalized learning of courses, providing students with personalized learning paths and resources through data analysis and learning management systems to meet different learning needs. In addition, the interactivity and real-time nature of digital technology have injected new vitality into course teaching, such as using online discussions, virtual experiments, and other methods to stimulate students' enthusiasm for participating in the course and promote deep learning.

With the assistance of digital technology, the higher education curriculum system is also facing some challenges. Firstly, teachers need to continuously improve their digital teaching design and technology application abilities to ensure the quality and effectiveness of course teaching. Secondly, the development and management of course resources also require more comprehensive and systematic support to ensure the high-quality and sustainable development of teaching resources. Therefore, the innovation of digital technology in the higher education curriculum system requires the joint efforts of teachers, schools, and relevant departments to jointly promote the digital transformation of higher education teaching.

4.2. Digital Technology Promotes the Transformation of Higher Education Teaching Models

The development of digital technology has brought profound changes to the teaching mode of higher education. Firstly, digital technology has endowed teaching modes with greater flexibility. For example, using online teaching platforms, students can independently choose learning content and methods based on their own learning progress and schedule, achieving personalized and autonomous learning. Secondly, the innovation of digital technology has also spurred the diversification of teaching methods, such as using virtual experiments, remote teaching, etc., expanding the limitations of traditional teaching models, and improving the fun and effectiveness of teaching. In addition, digital technology provides more possibilities for teaching evaluation and feedback, such as using data analysis and online evaluation systems to achieve real-time monitoring and personalized evaluation of student learning.

However, the transformation of higher education teaching models driven by digital technology also faces some challenges. Firstly, teachers need to actively explore and apply digital technology, improve teaching design and implementation levels, and ensure teaching quality and effectiveness. Secondly, schools need to provide more comprehensive technical support and teaching resources to ensure the smooth application of digital technology in the transformation of teaching modes. Therefore, the transformation of higher education teaching models promoted by digital technology requires the joint efforts of teachers and schools to promote innovation and upgrading of teaching models [3].

5. The Challenges and Prospects of Digital Technology in Higher Education Teaching

5.1. Challenges and Issues of Digital Technology in Higher Education

The application of digital technology in higher education has brought many positive impacts, but it also faces some challenges and problems. This section will explore the challenges and problems of digital technology in higher education from different perspectives, and propose corresponding solutions.

The development of teaching resources using digital technology in higher education is facing challenges. With the continuous updating and diversification of course content, teachers need to constantly develop teaching resources that adapt to digital teaching, which puts higher demands on their professional abilities and time management. Meanwhile, how to ensure the quality and effectiveness of teaching resources is also an urgent issue that needs to be addressed.

The innovation of teaching methods using digital technology in higher education also poses certain challenges. Traditional teaching methods often struggle to fully utilize the advantages brought by digital technology. Teachers need to constantly learn and adapt to new teaching methods, while also overcoming the difficulties and obstacles brought about by the transformation of teaching methods.

In addition, the use of digital technology in teacher training in higher education is also a noteworthy issue. Teachers need to constantly improve their digital technology application abilities, but in reality, there is often a shortage of training resources and opportunities. This requires joint efforts from universities and relevant departments to provide more training opportunities and support for teachers.

The challenges and problems of digital technology in higher education require us to seriously consider and solve them. Only by effectively addressing these challenges

can we better promote the application and development of digital technology in higher education. Next, this article will focus on exploring the future development trends of higher education teaching under the empowerment of digital technology.

5.2. Future Development Trends of Higher Education Teaching Empowered by Digital Technology

With the continuous application and development of digital technology in higher education, the future development trend of higher education teaching will also face new challenges and opportunities. This section will analyze and prospect the future development trends of higher education teaching under the empowerment of digital technology from multiple aspects.

Digital technology will further empower the personalization and customization of higher education teaching. Based on individual differences among learners, digital technology can better support the customization of personalized learning paths and teaching content, thereby better meeting the learning needs of students and improving the pertinence and effectiveness of education and teaching.

Digital technology will drive innovation and transformation in higher education teaching. By introducing new technologies such as virtual reality and augmented reality, teaching content and methods will become more diverse and vivid, stimulating students' interest in learning, improving teaching effectiveness, and promoting innovation and change in teaching methods.

In addition, digital technology will promote the internationalization and globalization of higher education teaching. Through digital teaching platforms and resources, students and teachers can more conveniently cross the limitations of time, space, and geography, engage in international teaching and learning exchanges, promote the sharing of educational resources, and promote the development of global education.

The future development trend of higher education teaching empowered by digital technology is full of opportunities and challenges. Only by fully understanding and grasping these trends can we better guide and promote the development direction of higher education teaching. Next, this article will focus on exploring the application strategies and suggestions of digital technology in higher education teaching [4].

5.3. Application Strategies and Suggestions of Digital Technology in Higher Education Teaching

In response to the application challenges and future development trends of digital technology in higher education teaching, this section will propose some application strategies and suggestions, in order to better promote the application and development of digital technology in higher education teaching.

Universities should strengthen digital technology training and support for teachers. Establish a comprehensive teacher training mechanism, provide diverse training courses and resources, help teachers comprehensively enhance their digital technology application abilities, and better adapt to the needs of digital teaching.

Universities should increase investment and support in the development of teaching resources. Encourage teachers to participate in the development of teaching resources, provide corresponding technical and financial support, ensure the richness and quality of teaching resources, and meet the needs of digital teaching.

In addition, universities should actively explore the application of digital technology in personalized and customized teaching. By utilizing intelligent technology, personalized learning paths and customized teaching content can be achieved to better meet the learning needs of students.

6. Conclusions

This article starts with the basic principle of automatic numerical control virtual simulation technology and analyzes its innovative application in higher education teaching. However, the application of automatic numerical control virtual simulation technology in higher education still faces some challenges, such as technological maturity, teacher training, and teaching resources. In the future, with the continuous development of digital technology, the application of automatic numerical control virtual simulation technology in higher education teaching will be more extensive, laying a solid foundation for cultivating high-quality talents with innovative spirit and practical ability [5]. On this basis, further exploring the application prospects of digital technology in higher education teaching reform and innovation is of great significance for promoting the development of China's education industry.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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