

Research on the Impact and Role of Digital Technology on Classroom Revolution

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Abstract: Digital technology has brought tremendous changes to vocational education. This article focuses on the impact and role of digital technology on various aspects such as educational ideology, teaching ecology, curriculum ideology, teaching resources, teaching models, classroom organization, and effect evaluation in the classroom revolution. It conducts in-depth research to explore the value that digital technology brings to the classroom revolution, and summarizes the positive guiding strategies and implementation strategies of digital technology for classroom revolution, leverages the positive guiding role of digital technology for classroom revolution, and assists in talent cultivation.

Keywords: Digitalization; Classroom Revolution; Educational Ecology; Data Integration

1. Introduction

In September 2020, UNESCO, the International Telecommunication Union and UNICEF jointly released the Digital Transformation of Education: School Connectivity, Student Empowerment, focusing on digital connectivity of education. In the same year, the European Union released the Digital Education Action Plan (2021-2027), which defined two Grand strategy issues that need to be promoted in the future: "promoting the development of high-performance digital education ecosystem" and "improving digital skills and capabilities to achieve digital transformation". At present, under the guidance of digital technology represented by artificial intelligence, Big data, 5G and blockchain, countries around the world have taken the opportunity of digitalization to issue national-level education digitalization strategies, internet thinking and methods to deeply integrate modern information technology and education are used, new

models are actively explored, new products are developed, and new technologies to support education and teaching innovation are promoted. It can be seen that using digital technology to promote education development and cultivate digital talents through education has become a global trend. China's education Digital transformation is imminent.

In response to vocational education, the country has released the "National Vocational Education Reform Implementation Plan", which for the first time includes "promoting education digitization" in the report, clarifying the action plan for the future development of education digitization. Accompanying it is the "Action Plan for Improving the Quality and Excellence of Vocational Education" jointly released by nine departments, which clearly proposes to "promote classroom revolution in vocational schools, adapt to the diverse characteristics of student sources, and push classroom teaching reform to depth". The "Two Offices" have issued the "Opinions on Promoting High-Quality Development of Modern Vocational Education", "Opinions on Strengthening the Construction of High Skilled Talents in the New Era", and "Opinions on Deepening the Reform of Modern Vocational Education System Construction". The key words of the documents are high-quality development, high-skilled talent construction, modern vocational education system construction, and deepening reform.

With new changes, new ways and new skills as the theme, the 2022 World Vocational Education Conference discussed issues such as "digital empowerment, transformation and upgrading", "green skills, sustainable development", "general vocational coordination, lifelong learning", "skills to reduce poverty and promote equity", "integration of industry and education, innovative development", "science education, engineering education", etc.

Xing Hui, director of the Vocational Education Research Center of the National Institute of Education Administration, Xing (2021) and Xing (2018) delivered a speech on the theme of "Connotation Construction of Vocational Education in the Digital Background" at the "Third Metaverse Education Frontier Summit"[1,2]. The essence and core of the three education reforms proposed in the "20 Articles of Vocational Education" should be curriculum reform. The main implementation link of the course must be in the classroom. Digital technology is a necessary means, digitization is not just technology and tools, it has indeed brought about changes in the education ecosystem.

Tencent Research Institute has been tracking the development of digital China for 8 years. The 2022 Digital Transformation Index Report was formed based on the Indexation assessment of the digital development scale of 351 cities and more than 10 industries in China. Jia and Guo (2022), Jiang (2023), Kathuria (2021), Xue (2023), Su (2022), Xu and Deng (2022), Zuo (2022), and Zou (2023) have researched a lot about class revolution[3-10]. Digital technology has evolved from an exploratory emerging force to a technological cornerstone for large-scale industrial development. It has updated the technological foundation of modern production and life, and the resources and structure of the original industry have been digitized and reconstructed, forming a new appearance of production and life through methods such as quantity growth, quality improvement, and resilience enhancement. The digital economy, formed on the basis of digital elements, is the main economic form after the agricultural economy and industrial economy, experiencing a gradual progression from emerging to widespread, from consumption to production, and from commerce to society. The development process of industrial digitization is the process of integrating digital technology as a factor into other industries. For education, in the period of economic transformation, human resource requirements are also changing, and talents need lifelong learning to maintain vitality. Traditional offline methods have low efficiency, and online learning is widely accepted by society. AI, big data, cloud computing and other digital technologies have

gradually improved the effect of online learning.

The construction of a high-quality education system is a requirement for education in the 14th Five-Year Plan for national economic and social development. Without the modernization of vocational education, it is impossible to achieve modernization of education, without a high-quality vocational education system, there cannot be a high-quality education system. The application of cloud computing, internet of things, virtual reality, blockchain, big data, artificial intelligence, information security and other digital technologies not only affects the teaching fields such as majors, courses, textbooks and teaching methods, but also involves the intelligent management of teachers, students, logistics, finance and other aspects.

Chen Baosheng, the Minister of Education, put forward in the article "Running an Education Satisfied by the People" that "the reform of the talent training model of basic education should be deepen, a 'classroom revolution' should be set off, and students' innovative spirit and practical ability should be strived to cultivate." The field of "classroom" is a place where teachers and students engage in interactive teaching practices, and it is the foothold of the "three education" reform in talent cultivation. The "classroom revolution" in vocational education refers to the extensive and in-depth reform of classroom teaching to improve the quality of talent cultivation. Its essence is to integrate new technologies under the guidance of new concepts and carry out a comprehensive, normalized and gradual transformation of classroom teaching. In response to the characteristics of diversified student sources and development goals in vocational education, the concept positioning of "classroom revolution" in vocational education should adhere to student-centered and moral education as the fundamental principle, the theory of multiple full process intelligence should be followed, modern digital technology to reform and innovate teaching models should be fully utilized, and curriculum ideology should be organically integrate into education, cultivating high-quality technical and skilled talents with comprehensive development of morality,

intelligence, physical fitness, aesthetics, and labor.

The classroom revolution means a deep level of classroom teaching reform, and digital technology has accelerated the transformation and upgrading of industries, bringing unprecedented vitality and challenges to the classroom revolution. Its impact and role are enormous. There have been many achievements in the current classroom reform, but there are also some problems: excessive attention to the form and carrier of the curriculum reform, mostly staying at the theoretical level, rigid content, low efficiency, and poor overall educational effect. The reform of learning organization and methods is emphasized, the grasp of learning content and essence is neglected. Group learning is mistakenly equated with cooperative learning and learning community learning. The classroom emphasizes the implantation of new technologies, neglecting the integration of digital thinking and educational concepts. They pay special attention to how teachers change in the classroom, while neglecting the internalization and improvement of students' classroom learning literacy.

A search on CNKI using the keyword "The Impact of Digital Classroom Revolution" only found one article, which mainly elaborates on the necessity of promoting classroom revolution and the content of classroom revolution. Digitalization is only mentioned sporadically. Using the keyword "Digital Classroom Revolution" as the search term, only 21 articles were retrieved, with a focus on classroom revolution. Digitalization has only appeared in the text. Using the keyword "Digital Technology Classroom Revolution" as the search term, only one article was retrieved, which mainly studied the effects of implementing a certain technology in music. Search for 0 articles using the keyword 'The Impact of Digital Technology Classroom Revolution'.

There is no systematic research on the impact and role of digitalization on classroom revolution. Therefore, this paper focuses on the impact and role of digitalization technology on various aspects of classroom revolution, such as educational ideology, teaching ecology, curriculum ideology, teaching resources, teaching models, classroom organization, and effect evaluation. The value of digitalization

technology in classroom revolution is explored, the positive guiding strategies and implementation strategies of digital technology for classroom revolution are summarized, the positive guiding role of digital technology for classroom revolutions leveraged and in talent cultivation is assisted.

2. The Impact and Role of Digital Technology on Classroom Revolution

2.1 Research Subjects

The research objects mainly include 27 classes of electromechanical integration technology. Electronic technology is applied, and intelligent product specialty from 2021 to 2023. After the application of digital technologies such as big data and cloud technology, the impact and role of digital technology in the fields of curriculum and teaching are researched, such as organization and management, evaluation and feedback. The teaching ecology will be reconstructed, learners are provided with diversified participation methods, rich teaching resources are integrated, autonomous learning forms are provided. Timely feedback evaluation channels provide educators with a decision-making basis for constructing classroom education development models, thinking styles, learning styles, and lifestyles from top to bottom, leveraging technological advantages, improving bottom-up feedback mechanisms, and avoiding technological drawbacks. It is conducive to the joint construction, sharing, and governance of vocational education.

2.2 Overall Framework

Digitalization is the vanguard of the world's technological revolution and industrial transformation, and an important force for countries around the world to seize the commanding heights of future development and shape new advantages in international competition. As the education type most closely connected with the market, vocational education should seize the strategic opportunity of digitalization to enhance its adaptability and transformation.

As an endogenous variable of the overall and systematic transformation of vocational education, digital thinking systems will be used to plan and promote the development of classroom reform, a modern paradigm of

classroom education will be formed, making it a participant in industrial progress and an important force in technological change, a systematic transformation from large-scale standardized training to large-scale personalized training will be achieved, the rapidly developing market demand will be adapted to and talent growth needs will be diversified.

2.3 Research on the Impact of Digital Technology on Classroom Revolution

In the "reshaping teaching" movement launched in the digital era, digital technology has had many impacts on the classroom revolution, including the exchange of status between teachers and students, the unbounded extension of bounded classrooms, the dynamic implementation of static knowledge in books, fixed time flow and use, limited selection of unlimited resources, and the interconnection between actual classrooms and online platforms.

The adverse effects include a lack of solid learning attitudes and methods that can easily lead to students' eagerness for quick success and instant benefits, as well as deficiencies in platform data and the attraction of the internet, which can easily cause students to be in the classroom but have already fled the classroom, resulting in ineffective classrooms. The massive, multi-source, and multi-form data collection, storage, and correlation analysis algorithms directly affect the correct evaluation of students' grades.

This paper aims to create a "12345" digital research paradigm, as shown in Figure 1. From the perspectives of digital thinking, educational laws, data aggregation, curriculum and teaching, organization and management, evaluation and feedback, application statistics, data mining, feedback control, and evaluation optimization, as well as five dimensions of educational ideology, teaching ecology, curriculum ideology, teaching resources, and teaching models, this study investigates the fundamental changes of digital technology in the spatiotemporal scene and supply level of classroom education, the digital development of the classroom will be evaluated, information sharing, data integration, business collaboration, and intelligent services, will be achieved, and changes in the overall operational process of education will be

promoted, making personalized and diversified education possible under the premise of scale, thereby constructing a new flexible, open, and lifelong personalized education ecosystem.

2.4 Research on the Role of Digital Technology in Classroom Revolution

Digital technology can "diagnose and pulse" traditional teaching methods, it can utilize technology to improve educational effectiveness, and it can make personalized learning, remote learning, interaction, and participation possible. Virtual reality, adaptive learning software, online resources, personalized assessment and other tools and methods can help improve students' learning effect.

By investing in hardware and software, including network infrastructure, teaching platforms, multimedia teaching resources, etc., optimized allocation and efficient dissemination of educational resources have been achieved. Educational content, process, and evaluation are presented in digital form to achieve digitalization, networking, intelligence, and personalization of educational resources. The application of digital technology in the field of education includes digital textbooks, digital resources, digital platforms, etc. It can filter out the necessary and meaningful data from a massive amount of data information, and achieve interactive queries and analysis. It can better meet the personalized learning needs of students, and improve educational efficiency and learning effectiveness. Empowering education practitioners and learners, utilizing the deep integration of education and technology to jointly promote the rapid development of the entire society. It can improve the quality of education and promote the comprehensive development of students.

3. Main Objectives

The difficulty of this paper lies in issues such as the digital divide, network security, and technological dependence. Digital platforms, digital resources, and online interactions all rely excessively on intelligent devices and networks, which may lead to students neglecting traditional learning methods and basic skills. Finding solutions to ensure that technology applications are more inclusive and effective is a thorny challenge. The solution is

to choose a universal platform or interface as much as possible, link it to an effective campus network, and balance the combination of technology and traditional education with digital and paper resources to cultivate

students' comprehensive development ability. Through the rational application of technology, education will usher in greater development and progress, creating better learning experiences and outcomes for students.

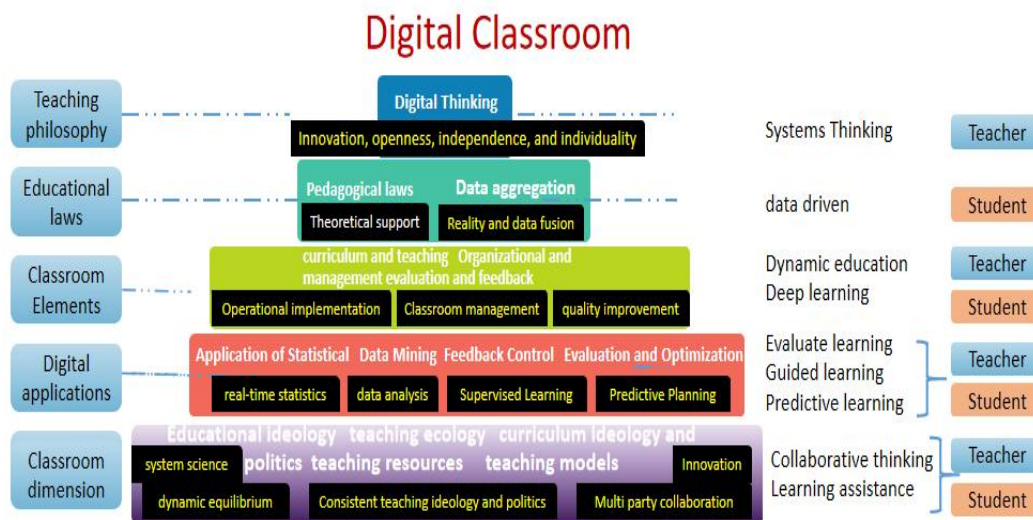


Figure 1. "12345" Digital Research Paradigm

Digital technology is of great significance for achieving "true" classroom flipping, as shown in Figure 2. This paper explores the depth of educational and teaching reform through the demonstration application of digital classroom scenarios. By promoting the New Infrastructure of digital classroom, the creation of a new environment for the development of digital education will be explored. The progress of digitizing classroom assessment through data-driven comprehensive evaluation of education will be explored. The satisfaction level of diversified digital education needs through innovative classroom digital resource construction models will be explored. Exploring the soundness of the digital literacy training system for teachers and students through the implementation of the digital literacy improvement project will be explored. The process of improving educational governance service capabilities by promoting digital classroom management organizational process reengineering will be explored. Through the implementation of digital classroom ideological and political education, the level of integrating teaching and ideological education to cultivate morality and cultivate people will be explored. The level of industry education integration through feedback control through digital evaluation and

guidance will be explored. Digital technology has promoted the crossing of educational boundaries, connecting with markets, industries, enterprises, and vocational education and training institutions, committed to building a lifelong learning society, and striving to create favorable conditions to provide lifelong education and learning opportunities for the whole population.

4. Methodology

4.1 Basic Idea

This paper intends to follow the overall approach of "problem posing - data analysis - system deconstruction - policy recommendations - implementation and application - feedback evaluation - summary and optimization". By comparing classroom teaching before and after digitization, a scientific and feasible evaluation system is constructed to carry out evaluation, diagnosis, prediction, and intervention, forming a logical and intelligent research paradigm. The establishment of an intelligent and interactive digital education information supply platform, a normalized digital classroom and a big data-based digital education ecosystem provides a basis for the development of emerging

economy to support high-tech and intelligent talents.

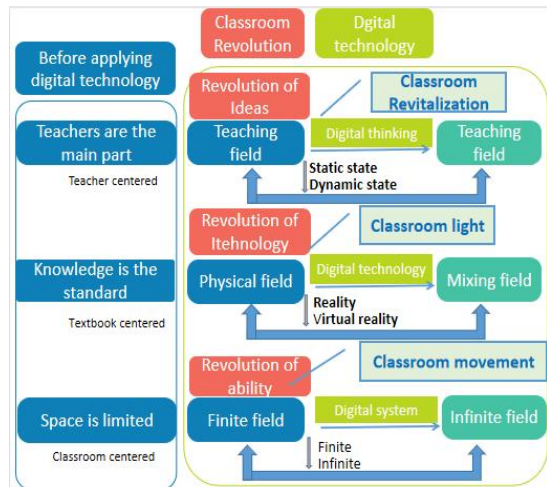


Figure 2. Influence of Digital Technology on Classroom Revolution

4.2 Research Methods

4.2.1 Data research method

We will select the main courses of each major, analyze the relevant data of digital technology applications in various aspects such as digital resources, teaching platforms, cooperative enterprises, and teaching evaluation, extract useful information, and analyze its impact and role.

4.2.2 Systems science method

Based on system theory, cybernetics and information theory, human-computer integration and human-computer network integration are used to realize the comprehensive integration of information, knowledge and intelligence, the path method and implementation plan of the whole process of classroom teaching will be deeply analyzed, and reference for decision-making support of governments, enterprises, schools, teaching and training institutions, etc. will be provided.

5. Innovation

5.1 The Innovation of Classroom Revolutionary Ideas Based on Educational Ecology and Systems Science Methods.

Digital technology continues to be upgraded iteratively. From the perspective of education ecology, the original state is reformed, a new idea of "digital governance classroom" governance is formed with systems science method, the strength, depth and effectiveness of vocational education data analysis and

application are increased, intelligent recommendations and services of personalized and accurate resource information are realized. Timely, comprehensive and accurate data support is provided for managers and decision-makers, and the problem of multiple management departments the problem of long work chains and fast information decay. In the digital era, it is necessary to break through the limitations of traditional "walls" and become a "digital learning center" that is more diverse in form, diverse in mode, flexible in time, customized in content, and logically more reasonable, providing students with an intelligent open teaching and training environment to achieve ubiquitous learning. By integrating high-quality digital resources from various sectors such as enterprises and teaching, and regularly updating them, we aim to promote the balance of high-quality vocational education resources between cities, regions, schools, and industries, and promote the orderly operation of the education ecosystem.

5.2 Innovation of Digital Mode Based on Human-Machine Collaborative Classroom Teaching

Integrating education and ideology, helping to achieve digital ideological and political education and skill enhancement. Taking patriotism (responsibility for the country and the world) - to action to strengthen the country (pursuit of outstanding craftsmanship spirit) - to the aspiration to serve the country (fearless of hardship and unremitting struggle) as the main line, digital penetration, information integration, and network collaboration. "Using innovative thinking to increase vitality, digital thinking to improve effectiveness, scientific thinking to increase wisdom, systems thinking to converge, and strategic thinking to seek the long-term", learning tasks "increase in difficulty", and through the setting of teaching knowledge points of extreme detail, students can get timely results every time they complete a link, constantly achieve "circular feedback", and constantly get "goal motivation" in order to obtain a joyful "flow of mind harvest", stimulate students to upgrade their skills, and then autonomously enter the infinite mode of learning. Ability building, personality development, and value guidance are all completed in one stop. Parallel education

online and offline are promoted in order to promote domestic development and technological innovation as the mission pursuit. Students' ability to think from multiple perspectives and perspectives are cultivated, as well as the spirit of fearlessness, perseverance, and innovation. Technical skills are skilled with expensive spiritual nourishment. The curriculum and ideological and political integration are interdependent and closely intertwined.

5.3 Innovation of Digital Mode Based on Human-Machine Collaborative Classroom Teaching.

The core of education is curriculum, and the key to curriculum lies in teaching. Digital technology will promote the deep integration of big data, artificial intelligence and other digital technologies into classroom teaching. The multi-end learning platform provides 24-hour online global synchronous learning resources, covering the flexible configuration of multiple technology modules in the whole process of teaching, question answering, interaction, examination, etc., realizing the full scene application, which is suitable for the learning needs of different individuals and enterprises.

Digital technology terminal systems excel at logical and repetitive tasks, while humans are more suitable for emotional, creative, and social tasks. Due to the iterative level of digital technology, intelligent machines are not fully capable of knowledge dissemination, data processing, and other tasks. Therefore, they cannot rely solely on the internet and devices. They require human-machine collaboration, relying on data, precise positioning through learning analysis, job evaluation through data dashboards, personalized guidance and evaluation through intelligent push. Predictive learning and guided learning are achieved, and efficient classroom teaching are collaborated to complete. Traditional teaching methods are transformed into innovative classroom teaching methods that are systematic, real-time, and open.

6. Conclusions

Digital technology, as the core engine of the new round of the global industrial revolution, is injecting a continuous driving force into the development of the global digital economy. A

fertile ground for digital talent will be cultivated, the digital divide will be bridged, and sustainable development will be promoted. It will be applied to equipment manufacturing majors, then it will be extend to all majors. A ubiquitous learning environment will be created actively by using internet, big data, artificial intelligence and other advanced educational technologies. The world's best educational resources to everyone who needs them in an efficient and low-cost manner will be provided, data and reality in an all-round way will be integrated, and comprehensively the teaching ecology will be reformed, which is suitable for promotion and application in brother vocational colleges.

The construction and improvement of classroom digitalization is undoubtedly the key to the application of digitalization, which can gradually break the boundaries of educational regions and classrooms, practical educational practices for personalized learning and lifelong learning will be provided, strong support for educational decision-making and deployment will be provided, the digital era will be enabled, and economic and social development will be led.

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