# Research on the Application and Influence of Information Technology in The Education Industry

Wangqin Hu

Jiangxi Vocational College of New Energy Science and Technology, Xinyu 338000, China

## Abstract

This paper explores the application of information technology in the education industry and its far-reaching influence. Through a detailed analysis of the specific application of information technology such as multimedia teaching, network education platform, virtual laboratory and intelligent learning system in the field of education, it reveals how information technology shapes the teaching method, improves the teaching effect, and promotes the sharing and optimization of educational resources. At the same time, this paper also pays attention to the influence of information technology on the change of educational concepts, teachers' role, learning style and environment. In terms of information technology application, this paper shows that multimedia teaching and intelligent classroom enhance the interactivity and interest, the online education platform promotes the sharing of high-quality education resources; the virtual laboratory provides students with a safer and more convenient practice environment, and the intelligent learning system improves students' learning efficiency through the recommendation of personalized learning resources.

## Keywords

Information technology; education industry; online education platform; virtual Lab; and intelligent learning system.

## 1. Introduction

With the rapid development of science and technology, information technology, as the core driving force of contemporary society, has penetrated into all walks of life, and the education industry is no exception[1]. The rapid development of information technology has not only promoted the profound reform of the education industry, but also brought unprecedented challenges and opportunities to the traditional education. In the overview of the development of information technology, we can see that from the early multimedia teaching to the current intelligent classroom, network education platform, virtual laboratory and intelligent learning system, each technological breakthrough has injected new vitality into the education industry. The application of these technologies not only enriches the teaching means, but also improves the teaching effect, making the education more in line with the needs of The Times. However, the change in the education industry has not been smooth sailing. The purpose of the research is not only to sort out and summarize the application status of information technology in the education industry, but also to explore the deep causes and influence mechanism behind it. We hope that through this study, we can have a deep understanding of how information technology changes education style, improves teaching effect, and how to promote the sharing and optimization of educational resources.

## 2. Application of Information Technology in The Education Industry

### 2.1. Multimedia teaching and intelligent classroom

With the rapid development of information technology, multimedia teaching technology has become an important part of the modern classroom[2]. By integrating various media resources such as text, image, audio and video, this technology makes the classroom teaching content more vivid and vivid, and effectively stimulates students' interest and enthusiasm in learning. In practical teaching, teachers can display rich teaching resources through multimedia courseware, electronic whiteboard and other tools, and guide students to think and explore deeply, so as to improve the teaching effect. Smart classroom is a further extension of multimedia teaching technology. It uses advanced technologies such as the Internet of Things, big data, cloud computing and so on to build a highly intelligent teaching environment. In the intelligent classroom, teachers can obtain students 'learning data in real time, understand students' learning progress and difficulties, so as to adjust teaching strategies and realize personalized teaching. At the same time, students can also study anytime and anywhere through intelligent terminal devices, and interact with teachers and students to improve their learning efficiency.

### 2.2. The rise of online education platforms

With the popularization of Internet technology, the network education platform came into being and become a new education mode. From the early online course website to the current comprehensive online education platform, the online education platform continues to develop and improve, providing a more convenient and efficient learning way for the majority of students. Online education platforms usually have online course learning, homework submission and correction, online examination, interactive communication and other functions. Students can choose the courses they are interested in through the platform, communicate and discuss with teachers and classmates online, and solve the questions in learning in time. At the same time, the platform also provides rich learning resources and learning tools to help students better master knowledge and skills.

### 2.3. The construction of the virtual laboratory

Virtual laboratory is a kind of laboratory environment constructed based on virtual reality technology. It uses the computer to generate three-dimensional virtual scenes and experimental equipment, and students can conduct various experimental operations and learning in this virtual environment[3]. The technical basis of virtual laboratory includes 3 D modeling, rendering technology, human-computer interaction technology and so on. Virtual laboratory has a wide range of application scenarios in the educational field. For example, in the natural science fields such as physics and chemistry, virtual laboratories can simulate the real experimental environment and experimental process to help students better understand and master the experimental principles and methods. In the fields of medicine and biology, virtual laboratories can simulate the human body structure and physiological processes, providing medical students with practical operation opportunities. In addition, the virtual laboratory can also be applied to engineering design, simulation training and other fields.

### 2.4. Development and application of intelligent learning system

Intelligent learning system is a learning aid tool developed based on artificial intelligence technology. It provides students with personalized learning resources and learning paths by analyzing students' learning data and habits. The intelligent learning system can intelligently recommend the relevant courses and learning materials according to the students' learning progress and grades, so as to help the students to better master the knowledge points. The intelligent learning system collects and analyzes students 'learning data, and establishes

students' learning models and knowledge maps. Based on these models and maps, the system can accurately recommend learning resources and learning paths suitable for students. At the same time, the system can also constantly adjust the recommendation strategy according to the feedback of students and the performance changes, so as to realize personalized learning tutoring.

## 3. The Impact of Information Technology on The Education Industry

### 3.1. The renewal and transformation of educational concepts

The development of information technology has had a profound impact on the traditional educational concepts. Traditional educational concepts pay attention to knowledge imparting and exam-taking ability, while information technology emphasizes students' subjectivity, innovation ability and practical ability[4]. This difference makes educators need to re-examine and renew their educational concepts to adapt to the needs of the information society. In the information age, knowledge is updated rapidly, and students need to have the ability of independent learning and lifelong learning. Therefore, the educational concept needs to be changed from the past "teaching-oriented" to "learning-based", and pay attention to the comprehensive development and personalized needs of students. With the wide application of information technology, a series of new educational concepts and concepts have gradually emerged. For example, personalized education, quality education, innovative education and other concepts have gradually become the consensus in the field of education. These ideas emphasize respecting students 'personality differences, paying attention to students' all-round development, and cultivating students' innovative spirit and practical ability. At the same time, information technology has also provided a strong support for the realization of these new ideas. Through data analysis, learning path planning and other technical means, educators can more accurately understand students' learning needs and ability level, so as to develop personalized teaching programs. In addition, information technology can also provide students with richer learning resources and interactive platforms to promote students' independent learning and cooperative learning.

### 3.2. Changes and adaptation of teachers' roles

The introduction of information technology has caused significant changes in the role of teachers in teaching. In traditional teaching, teachers are usually the imparting of knowledge and the leader of the classroom[5]. However, in information teaching, teachers need to become guides and promoters of learning, and help students build knowledge system and cultivate learning ability. At the same time, information technology also puts forward higher requirements for teachers' information literacy. Teachers need to master certain information technology knowledge and skills, so that they can use information technology for effective teaching design and implementation. Facing the challenge of information technology, teachers need to actively transform and develop. First, teachers should update their educational concepts and realize the importance and necessity of information technology in teaching. Secondly, teachers need to improve their information literacy and learn to master the basic knowledge and skills of information technology. In addition, teachers also need to constantly explore and practice new teaching methods and strategies to adapt to the needs of information teaching. In the process of transformation, teachers can constantly improve their professional quality and comprehensive ability by participating in training, communication and discussion. At the same time, schools and educational institutions also need to provide the necessary support and guarantee for teachers to create favorable conditions for the transformation of teachers' roles.

### 3.3.   Innovation of teaching methods and methods

Information technology provides a broad space for the innovation of teaching methods and methods. For example, multimedia teaching, online teaching, mixed teaching and other new teaching methods have emerged at the historic moment[6]. These teaching methods break through the time-space limitation of the traditional classroom and make the teaching more flexible and diverse. At the same time, information technology also promotes the innovation of teaching methods. For example, project-based learning, problem-based learning and other problem-based learning emphasize students 'subjectivity and practicality, which helps to cultivate students' innovation ability and problem-solving ability. Information technology plays an important role in improving the teaching effect. First of all, information technology can enrich teaching resources and provide students with more vivid and vivid learning materials. Secondly, information technology can optimize the teaching process and improve the teaching efficiency and quality. For example, through the intelligent analysis of the students 'learning data, teachers can more accurately understand the students' learning situation, so as to adjust their teaching strategies. In addition, information technology can also stimulate students 'interest and enthusiasm in learning, and improve students' learning effect.

### 3.4.   Change of learning style and environment

The development of information technology has greatly changed the way students learn. Traditional learning methods tend to passively accept knowledge, while information technology enables students to actively explore and acquire knowledge[7]. Students can study independently through online learning platforms, online courses and other channels, and interact with teachers and students, so as to realize knowledge sharing and collaborative learning. Furthermore, IT provides students with personalized learning paths and resource recommendations. Based on students' learning data and interest preferences, the intelligent learning system can customize personalized learning programs for students to help students learn more efficiently. Information technology not only changes the learning methods, but also optimizes the learning environment. The emergence of virtual learning environments, such as virtual laboratories and online libraries, has provided students with more convenient and safe learning conditions. Students can study at any time and in any place, breaking the limits of time and space. At the same time, information technology also expands the boundaries of the learning environment. Students can connect to global learning resources through the Internet to communicate and cooperate with people from different countries and cultural backgrounds, so as to broaden their horizons and enhance their cross-cultural communication skills. Information technology has had a profound impact on the education industry. It has updated the educational concept, changed the role of teachers, innovated the teaching methods and methods, and changed the learning methods and environment. These changes have injected new vitality and impetus into the future development of the education industry.

## 4.   Problems and Challenges of The Application of Information Technology in The Education Industry

### 4.1.   Obstacles and difficulties in the application of technology

Despite the significant progress in the application of information technology in education, many regions and schools still face the problem of inadequate technical facilities and equipment[8]. The lack of advanced hardware equipment, stable network environment and necessary teaching software makes the application of information technology in teaching is limited. In addition, the maintenance and update of the equipment is also a problem that cannot be ignored. With the rapid development of technology, the replacement speed of equipment upgrading is

also accelerating, and some schools are difficult to keep up with this pace due to limited funds, resulting in the aging of equipment and performance decline, which affects the teaching effect.

It is a complex and arduous task to effectively integrate information technology and teaching. When many teachers apply information technology to teaching, they are faced with problems such as unskilled technical operation and mismatch between teaching design and technical application. At the same time, how to choose the appropriate information technology tools and resources according to the characteristics of the subject and teaching objectives is also a problem that needs in-depth research and exploration. In addition, the application of information technology in teaching also needs to take into account the students' acceptance ability and learning needs.

## 4.2. Uneven distribution of educational resources

In the education field, there are significant differences in educational resource allocation between different regions. Schools in some developed areas have rich teaching resources and advanced information technology equipment, while schools in some poor areas face the problem of poor resources. This regional resource difference leads to the lack of educational equity, which makes a large gap in the application of information technology for students in different regions. In addition to regional differences, the distribution of educational resources between urban and rural areas is also unbalanced. Urban schools usually have more educational resources and technical support, while rural schools often face the dilemma of poor resources and backward technology.

## 4.3. The need for improving teachers' information technology ability

Many teachers' information technology ability level is uneven, and some teachers lack the necessary information technology knowledge and skills, so it is difficult to effectively apply information technology in teaching. This not only affects the improvement of teaching effect, but also restricts the in-depth application of information technology in the field of education. For the improvement of teachers' information technology ability, there is still a lack of perfect training and promotion mechanism. Although some schools and regions have carried out relevant training activities, the training content is often out of touch with the actual teaching needs, and the training methods are also lack of pertinence and effectiveness[9].

## 4.4. The cultivation and development of students' information literacy

In the current educational environment, the level of students' information literacy also presents a great difference. Due to the lack of necessary information technology knowledge and skills, some students are difficult to effectively use information technology for learning and communication. At the same time, although some students have mastered certain information technology skills, but the lack of information moral awareness and information security awareness, easy to get lost or hurt in the information society. In view of the cultivation and development of students' information literacy, the current education system still lacks a perfect training mechanism and curriculum setting. Although some schools have offered information technology courses, the course content often focuses on technical operation and skill training, ignoring students' information ethics and information security education.

## 5. Countermeasures and Suggestions

Facing the problems and challenges in the application of information technology in the education industry, we need to take effective countermeasures and suggestions to promote the modernization and informatization process of education[10]. The government should introduce relevant policies to encourage and guide schools to increase their investment in information technology and improve the overall level of education informatization. At the same

time, a special fund for education informatization will be established to provide necessary equipment and resource support for poor areas and weak schools to narrow the education gap. Schools should strengthen the information technology training for teachers and improve their information literacy and technology application ability. By holding training courses and carrying out teaching competitions, teachers' enthusiasm of teachers to learn information technology, so that they can better apply information technology to teaching. Through the establishment of educational resource sharing platform, the sharing and exchange of high-quality educational resources can be realized and educational equity can be promoted. At the same time, the supervision and management of educational resources should be strengthened to ensure the effective use and rational allocation of resources.

## 6. Conclusion

With the rapid development of information technology, its application in the education industry has achieved remarkable results. Information technology not only updates the educational concept, changes the role of teachers, but also innovates the teaching methods and methods, and optimizes the learning environment. These changes have greatly improved the teaching effect and stimulated the students' interest and enthusiasm in learning. The profound impact of information technology on the education industry cannot be ignored. It breaks the time and space limitation of traditional education, makes the education more flexible and diverse, and meets the personalized needs of students. At the same time, information technology also promotes the sharing and optimization of educational resources, narrowing the educational gap, and promotes educational equity. In the future, information technology in the education industry. With the continuous progress of artificial intelligence, big data and other technologies, the education industry will usher in more innovation opportunities.

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