

# Digital Futures: How Technologies Shape Today's Education

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**Abstract.** This paper discusses the positive impact of digital technology on education. The application of digital technology in the field of education is analysed, such as mobile applications, MOOCs, and ChatGPT. The paper discovers how digital technology fosters creativity, enhances the distribution of educational information, and offers personalized learning. The use of digital technology in teaching is beneficial. It offers a variety of learning tools, encourages individualised instruction, boosts teaching effectiveness, and fortifies the bond between educators and learners – all of which support educational equity. Simultaneously, it advances the modernisation of education and enhances teaching resources, enables personalised learning, enhances the effectiveness of instruction, etc. Additionally, this paper highlights how digital technology may enhance the effectiveness and calibre of education, assisting students in gaining a deeper understanding of concepts and abilities. However, education practitioners also need to pay attention to the problems in the application of technology to ensure their effective application.

**Keywords:** Digital technology, education, mobile application, massive open online course, artificial intelligence.

## 1. Introduction

The digitisation of education is a continuous evolution process as digital technology triggers and promotes profound changes in the education system and has attracted universal attention from all over the world [1]. Innovation is a key factor in maintaining competitiveness in the process of globalisation. In recent decades, the vigorous development of digital technology has profoundly changed the trajectory of social development and will still bring dramatic changes to social development in the future [2]. In recent years, the obvious improvement of digital technology has brought a lot of positive effects on people's high-quality lives, especially in education. Digital transformation is an important direction of education transformation, and digital technology plays an indispensable and important role in the future development of education. Therefore, the deep integration of digital technology and education has also led to a new educational concept: Digital education [3].

The introduction of digital technology will help accelerate the realisation of the sustainable development goals of education and lay the foundation for strengthening the deeper transformation of education [4]. Digital education is the use of digital technology to promote the paradigm of education development and the remodelling and reengineering of education's own business in the ternary world of the physical world, information world and human society, promoting the whole process of education, the whole business, the whole field and the whole element digitisation process [5]. The Internet, cloud computing, big data, blockchain and other modern information technologies have not only brought about the subversion of production technology, but also brought about changes in education and teaching. In the face of the unstoppable development trend of digitalisation, all countries in the world have tried their best to seize the opportunity and issue a national education digital development strategy. Relying on digitalisation, they deeply integrate modern digital information technology with their own education with the help of digital technology [6]. As an important position for talent training, schools must grasp the opportunities of digital technology applications under the tide of the era of digital development, constantly innovate education and

teaching achievements, rely on the actual needs of teachers and students, build a perfect digital education management system, and realise the humanised, intelligent and high-quality development of the college [7].

## 2. The Importance of Digital Education

In today's era, digitalization has gradually penetrated into people's lives. In July 2021, Shandong Province proposed to strengthen the service of digital technology to the public new supply through education and promote the in-depth integration of new generations of information technology into public services in this way [7]. Building campuses, optimizing enrollment services, improving educational platforms and approaches, and sharing better resources are all included. More teachers carry out a series of courses on various topics, so that students' study and further study can be better guaranteed, and high-quality resources of famous universities can also be shared on campus through Internet digital technology. Whether in the era of epidemic or post-epidemic, online teaching combined with offline teaching improves students' learning quality. This action also enhances the enthusiasm of the faculty team for research, from individual excellence to collective wisdom. In addition, school management is also more convenient, and many schools have created a good educational environment based on the network platform. Therefore, digital technology has realized the promotion of digital campuses in primary and secondary schools throughout the city, and both learning methods and education models have been innovated and improved [7].

Education is the most important sector for achieving the Sustainable Development Goals (SDG), and digital technologies can play a key role in this. To achieve better education for all before 2030, digital technologies must be integrated into education [8]. The use of digital technology is a technical way to transform traditional learning systems into modern and digital learning systems [9]. Digital technologies offer an opportunity to bridge the gap between traditional and modern ways of learning as an inclusive factor underpinning human rights and dignity [10]. The application of digital technology in education generally refers to the mode supported, strengthened and realized by information and communication technology (ICT). At present, the effect of mobile applications, Massive Open Online Courses (MOOCs) and AI in education is the most promising.

## 3. Massive Open Online Courses

Massive Open Online Courses are a new model of online education. Since 2012, Internet companies with online courses as the core have emerged and achieved rapid development. With thousands of online courses on the MOOC platform and millions of people around the world using MOOCs for various reasons, MOOCs have dramatically changed the way the world learns [11]. The positive impact of MOOCs on education is obvious. First of all, MOOCs change the traditional teaching mode. With MOOCs, people no longer have to teach offline courses, and there are no restrictions on the age and status of learning. For example, in the past, only students could study in the classroom, but now more and more people can learn their fields of interest through online courses. Second, MOOCs are characterized by large-scale open classroom network classes. The real former classroom may only accommodate hundreds of people at the same time, but a woodcut can allow tens of thousands of people to learn together. The audience for MOOCs is significantly larger. MOOCs help students review the past and learn new things. Many students may only master some of the theories after listening to the teacher, but after studying and reviewing with MOOCs, they may master all of the knowledge. Third, MOOCs inspire students to learn independently. Fourth, MOOCs save natural space, teachers and education funds, because MOOCs are online education, so only through the network to communicate. This saves human, material and financial resources as well as educational funds for society so that more experts can spend money on scientific research projects [12]. Moreover, MOOC platform is free of charge, facilitates universal education, promotes knowledge dissemination, reduces learning costs, is highly flexible and convenient, and provides

learners with an opportunity to try and explore different disciplines and fields. MOOCs also provide opportunities for career development, enhance learners' competitiveness, increase employment opportunities, bring great benefits to society, and promote social equity and inclusion.

#### **4. Mobile Applications in Education**

With the rapid advancement of mobile technology, there has been a growing concern regarding the use of mobile applications (apps) in education. According to Apple, over 80,000 apps are categorized as educational and learning-based. Many schools nationwide have integrated tablet usage into their curriculum [13]. Notably, 47% of the top 100 apps for iPhone and iPod touch devices are specifically designed for preschoolers or elementary school children, with foreign languages and literacy being the most popular app category. However, anecdotal reports suggest that teachers and parents primarily search for apps suitable for young children within the "education" section without considering a systematic analysis of course content and instructional design [14]. These apps provide students with flexible learning opportunities anytime and anywhere. Unlike traditional education which is often constrained by time and space limitations, mobile apps have overcome these barriers. Students can now access educational resources through their smartphones or tablets to engage in independent learning. This convenience not only enhances learning efficiency but also fosters students' enthusiasm towards acquiring knowledge.

#### **5. ChatGPT and AI+ Education**

Since the introduction of ChatGPT by OpenAI, it has been rapidly spreading all over the Internet, with more than one million monthly active users in just five days, and its powerful functions have made ChatGPT perform well in many professional exams, such as ChatGPT and its cognate products can basically pass the Google L3 Software Engineer Proficiency Test, the U.S. Medical Practitioner's Licensing Examination, the Evidence and Tort Test of U.S. Judicial Examination, and the MBA Operations Management Course Examination of the Wharton School of the University of Pennsylvania [15]. In many aspects of human life, ChatGPT is integrating and changing human life and is performing well in assisting humans in a range of tasks. As AI has a powerful text and image generation function, in education, this powerful function enables students to search for information and independent learning, and also promotes good interaction between students and AI, which can significantly improve the quality and efficiency of teaching and learning, as well as multiply the sense of experience. Zhou Feng, CEO of NetEase Yudao, has said that the biggest opportunity that the emergence of big models can bring to education is to help teach students according to their aptitude [16]. While benefiting students, ChatGPT can assist teachers, and improve the efficiency of teaching and learning, such as intelligent teaching assistants, intelligent learning partners, assistance with management and decision-making, and assessment of student outcomes and abilities [17]. For education itself, it can help change the mode of educational knowledge production, integrate different educational research paradigms, build innovative models, and promote the return of educational knowledge to practice, as well as enhance the integration and mutual understanding between educational research subjects, accelerate the integration of diversified research methods, and help get rid of utilitarianism, make education return to the true nature, and greatly promote the integration of educational diversification [18]. AI has great potential and value and can be used for the education of students and teachers. It can also bring many positive impacts on education teaching, although currently facing the uneven popularity of technology, data security and privacy protection, teacher training and technical application capabilities and other issues. However, with the continuous development of AI technology, ChatGPT in the field of education will be more diversified and intelligent, and hopefully provide strong technical support for the reform and development of education [19]. Applying ChatGPT to urban education is a challenge and innovative change to the traditional education model.

## 6. Conclusion

The advent of the digital era has revolutionised education, established a new coordination mechanism, and ensured the coordinated development of education, talents, and science and technology. Education practitioners should formulate new standards according to local conditions, improve teaching methods, provide multilingual support and cross-cultural education, strengthen the construction of the digital technology cloud, and cultivate a good educational ecology. At the same time, people should pay attention to data security and privacy protection to ensure that educational platforms and applications have reliable security mechanisms. It is also essential to strengthen the grasp of regional advantages and strive to change the development path of higher vocational education in developed regions or abroad. With the help of excellent network digital technology platforms and software, learners can use AI technology to achieve personalised learning and obtain intelligent coaching and feedback. In the development of mobile applications, the investment in specialised education applications can be increased. The MOOC platform can be further optimised, the quality and interactivity of the curriculum can be improved, more experimental projects and group cooperation elements can be added, and the interaction and cooperation between students can be promoted. In addition, AI+ education can generate a large amount of data and can use data analysis technology to understand all aspects of the situation, so as to improve teaching strategies and provide personalised support. Make full use of its characteristics, people give full play to its strengths, and complement each other to make education socialised and gamified. Today's digital technology affects human beings all the time. Education is one of the most important undertakings in human society. Integrating digital into education is a great change.

## Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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