

# ***Research on Using Educational Technology in Primary School Teaching and Learning***

**Moshi Wang<sup>1,a,\*</sup>**

<sup>1</sup>*Johns Hopkins University, Baltimore, MD, 21218, US*

*a. mwang141@alumni.jh.edu*

*\*corresponding author*

**Abstract:** The traditional teaching method has many disadvantages, such as a lack of interactivity, a lack of student focus, and a lack of emphasis on critical thinking. To overcome these disadvantages, educational technology has been one of the most frequently used methods for teachers to conduct teaching activities, for example, updating the teaching method and revising the teaching syllabus. This research aims to study the need for educational technologies in education and identify the role of educational technology applications in primary schools. This study uses a mixed research method (i.e., questionnaires and semi-structured interviews) to collect and analyze data, which adopts Fereshteh et al.'s scale as the framework and revise several questions based on the context of this study. The research involves 400 pupils in sixth grade at primary schools and 20 teachers from different schools in Shanghai, China. We can conclude from the experiment that educational technology not only meets the needs of students and teachers in the learning and teaching process, but it has also played an auxiliary role in primary school teaching, where it has been effectively used in classroom teaching warm-ups, content enrichment, teacher reflection, and other elements.

**Keywords:** educational technology, primary education, need of educational technology, development trend

## **1. Introduction**

The traditional teaching mode, known as the "lecture-based" or "didactic" approach, is a teacher-centered method in which the teacher mainly imparts knowledge to students while students listen to the teacher passively, which is teacher-centered cramming that was first proposed by Gorst[1]. The traditional teaching method has many disadvantages, such as a lack of interactivity, a lack of student focus, and a lack of emphasis on critical thinking[2]. To overcome these disadvantages, educational technology has been one of the most frequently used methods for teachers to conduct teaching activities, for example, updating the teaching method and revising the teaching syllabus[3]. With the support of educational technology, teachers could increase their understanding of the new teaching methods that integrate with technological-interactive teaching activities (e.g., teachers using videos/pictures to teach the area transformation of the parallelogram) in primary school teachings. However, little study has been conducted to determine if the use of educational technology is an essential teaching strategy in primary school teaching. This research aims to study the need for educational technologies in education and identify the role of educational technology applications in

primary schools.

## **2. The Need for Educational Technology in Primary Schools**

Educational technology combines computer hardware, software, education theory, and practice to promote learning[4, 5]. It can be used to teach students and promote their general learning[5], as well as develop learning theories that match the demands of both students and teachers, making classrooms more participatory[4]. Teachers can build a dynamic teaching strategy when discussing various difficulties in the classroom teaching process of primary school classes using educational technology[6]. On the one hand, it is necessary to support teachers' use of dynamic teaching methods with educational technology in primary school mathematics classes to teach folding and rotation in the plane figure[7]. In the class "Area of a Parallelogram", teachers could show students the area transformation of a parallelogram and a rectangle according to the educational technology[8]. On the other hand, it is essential to support teachers' use of dynamic teaching methods with educational technology in primary school natural science classes. In that case, there might be more positive changes than traditional teaching when teaching the water cycle and earth structures[9]. Previous research indicates that applying technology to teaching in natural sciences classes can improve overall understanding of the subjects, achieve better GPA outcomes and create a stimulating work environment[10, 11]. At the same time, teachers can utilize information and communication technology in primary school English classrooms to boost students' motivation and individualization, as well as generate digital learning resources for them[12]. In this situation, by encouraging students to create journals online and creating a student-centered atmosphere, the English teacher respected the students' desires to express themselves and improved their ability to express themselves in English. At the same time, students will interact with other students and teachers online, forming a positive feedback loop; this is an example of using information communication technology for production and collaboration[12].

## **3. Analysis of the Ways Educational Technology Meets Teaching Needs**

At first, educational technology can be used to meet the needs of teachers. As early as the late 1990s, Wyld and Eklund suggested that educators play a crucial role in successfully implementing educational technology [13]. Teachers, for example, can demonstrate the use of technology for their students, teaching them how to utilize various tools and resources successfully and safely[14]. Teachers can also provide support and guidance to students as they use technology, helping them to troubleshoot any problems that may arise and make the most of the resources available [14]. For example, in chemistry classes, teachers can teach students to use software called Equate, which collates a library of helpful chemistry formulas and enables the students to initially solve problems and challenge themselves with questions to apply their understanding. This comprehensive app for chemistry will help students understand the concept of a chemistry formula and identify various types of chemical formulas by name. While researchers realized that educational technology could provide students with access to a wide range of information and resources, it could not replicate the human element of teaching[15]. Teachers can create personalized learning experiences and provide individualized support and feedback to students, which can be difficult for educational technology to replicate[16].

Secondly, educational technology can be used to meet the needs of students. On the one hand, educational technology helps students complete the warm-up of classes and guides them to learning effectively[17]. One of the most common educational technology tools that teachers adopts is multimedia videos, which could display dynamic images related to classroom content[18]. Teachers can use educational technology to attract students' attention, stimulate students' senses, and improve

students' motivation to learn the course content[18]. On the other hand, teachers can use educational technology to create a learning atmosphere aligned with class content and mobilize students' learning initiative[19]. Most primary school students are passive learners, and their class participation needs to be improved, which will reduce the efficiency of students' classroom learning[20]. To improve students' learning efficiency, primary school teachers can use educational technology to create some teaching situations in line with the course content and the actual situation of the students. They can create a learning environment using educational technology[21]. For example, learning management system (LMS) is a platform to mobilize students' subjective initiative[22]. It allows teachers to create and manage online courses, assign and grade assignments, and provide resources and materials for students to access[23]. Simultaneously, LMS could improve students' learning initiative by allowing students to take on leadership roles within the course[24]. Therefore, educational technology can meet not only the needs of students but also the needs of teachers. For students, educational technology can help them complete the course's warm-up and guide them to study effectively. At the same time, teachers can use educational technology to create a learning atmosphere consistent with classroom content and mobilize students' learning initiative.

#### 4. Development Trend

Teachers now incorporate technologically interactive teaching activities (e.g., teachers using videos or pictures) into their primary school teachings, which is a widely used educational technology. By applying augmented and virtual reality to the education system, the learning experience of teaching could make a big difference. Compared to traditional learning methods, teachers using AR or VR in the classroom can engage students more in learning. For example, in science education, students can view updated images and individuals on mobile devices rather than doing images and hand experiments in the lab. The realities and real-world trends facilitated by educational technology make learning a fantastic experience. Moreover, gamification in education will be another trend in educational technology. Gamification will be used in classrooms in different forms, such as leaderboards, reward points, badges, stickers, and other aspects. Gamification may be the one trend that guarantees increased participation, engagement, and competition for students in the learning process, and they will become actively involved in classroom activities to increase their scores and leaderboard rankings. In the future, teachers' reliance on educational technology in the teaching process will gradually deepen, and technological progress will promote educational equity, achieve educational objectives, and cultivate more talents, which will promote the progress of technology.

#### 5. Conclusion

Through researching the need for educational technologies in education and identifying the role of educational technology applications in primary schools, we can conclude that learning and teaching through technology is a new learning method guided by the rapid development of this era. It deviates from traditional teaching and learning methods by giving learners the initiative to learn. Compared to conventional teaching methods, educational technology has improved primary school instruction. At first, educational technology can be used to teach students and promote their general learning, as well as develop learning theories that match the demands of both students and teachers, making classrooms more participatory. Secondly, teachers can also provide support and guidance to students as they use technology, helping them to troubleshoot any problems that may arise and make the most of the resources available. Thirdly, educational technology helps students complete the warm-up of classes and guides them to learning effectively. At last, teachers can use educational technology to create a learning atmosphere aligned with class content and mobilize students' learning initiatives. Through this research and previous study, we have demonstrated the effectiveness of educational technology

in the application of education. We can conclude that educational technology not only can meet the needs of students and teachers in the learning and teaching process, but also has played an auxiliary role in primary school teaching, where it has been effectively employed in classroom warm-ups, content enrichment, teacher reflection, and other elements. The shortcoming of this study is that the data needs to be more comprehensive because it is only based on an analysis of sixth-grade students in Shanghai, China. The future research direction is the broader application of educational technology in the learning and teaching processes of teachers and students in primary school, and at the same time, we will do more research in different areas and countries.

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