



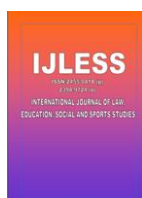
Emerging Advanced Educational Technologies in Classrooms

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ABSTRACT

Advanced educational technologies are considered a means by which a new educational paradigm can be implemented. Trends in the development of educational technologies are directly related to the humanization of education, contributing to self-actualization and self-realization of the individual. Today, it is impossible for any profession to perform without the help of information technology. The computer and the internet give us endless possibilities and resources in improving the quality of work. Even in education, computer skills and additional equipment are needed because they create great opportunities for teachers and inspire curiosity, imagination, and interest in students. The role of technology in the classroom setting continues to be one of many concerns in the educational field. Parents and teachers are open to the positive effects that technology can bring to the teaching-learning process. In the 21st century, students have digital minds and are technology-friendly, so teachers have to incorporate technology into modern classrooms. Effective use of technology in the educational atmosphere and its successful integration enhance the productivity of instructional procedures. Teachers can use different technologies to make the instructional process more interesting and effective. This paper focuses on emerging advanced technologies in classrooms, their advantages for teachers as well as students.

Keywords: Emerging advanced technologies, education, teacher, students.

Introduction

In the field of education, roles like educational technology and instructional technologists are more important than ever before. The technology they choose has a direct effect on the learning process and the quality of student learning. But with so many new learning technology options available, it can be difficult to keep up with the trends. As technology continues to evolve, so do the expectations and opportunities for enhancing the learning experience. The main and secondary task is to improve the efficiency of the assimilation of educational material, aimed at improving the modern quality of education. The 21st-century classroom is very dynamic in nature. Technology has the capability to

develop bonds between teachers and students in the classroom. Advanced educational technology promises to improve teaching and learning. To achieve the posited outcomes, however, teachers must have access to, know how to, have the skills to, and want to use the proposed advanced educational technologies in teaching. Educational technology is the use of both physical hardware and educational theory. Educational technology has brought in a convergence of media along with the possibility of multi-centric participation in the content generation and dissemination process. This has implications not only for the quality of the interchange but also for drastic upheavals of center-dominated mindsets that have inhibited qualitative improvement. Advanced educational technology has its potential in educational institutions, in teaching subjects, in examinations, in research, in systemic reforms, and above all, in teacher education, overcoming conventional problems of scale and reach through online, anytime, anywhere.

Teacher

Teachers have been trained by experts, but the training is mainly focused on the use of the system, and the teachers' information literacy and information teaching ability have not been fundamentally improved. In a true "smart classroom," the teacher should be the guide and recorder of students' learning behavior. "Teacher-student interaction" is an important way for students to fully grasp knowledge in the classroom. "Interaction" requires teacher-student communication instead of mechanized step-by-step teaching (Hutt et al., 2017).

Student

Students learn how to use technology safely, effectively, and responsibly. They also learn how to navigate platforms, use productivity tools, collaborate online, and communicate digitally. Technology helps students develop skills that are important in modern life. Technology can make learning more interactive and enjoyable, which can help students stay engaged and motivated. Multimedia can accommodate different learning styles by exposing students to visual, aural, and kinesthetic stimuli. Thus, technology can help students develop a deeper understanding of the material to be learned.

Necessity of Emerging Advanced Technologies in Classrooms

There are two main purposes of advanced technologies in education. One is the realization of easy-to-understand lessons. In order to develop children's academic ability, it is important to realize lessons that are easier to understand. By effectively using technologies, one can realize immersive learning that appeals to one's eyes and hearing. The other is support for so-called 21st-century skills. Traditional education has focused on how much knowledge can be memorized. However, now that knowledge and information can be obtained on the internet as much as possible, the "information utilization ability" and "creativity" that can proactively select and utilize what is needed from a vast amount of knowledge and information need to be developed (Holthouse, 2013; Merç, 2015).

Educational technology in education is important because it helps today's teachers integrate new technologies and tools into their classrooms. Teachers are able to upgrade and improve the learner-centeredness of their classrooms. It enables teachers to engage their students in unique, innovative, and equitable ways. Teachers are also able to expand their network and connect with other teachers and educators nationally and globally.

Emerging Advanced Technologies for the Classrooms

Technology within the classroom is becoming increasingly important. Over 80% of the population has a smart device, and technology is something we now rely on. The classroom therefore needs to innovate to engage students and support learning. Here we take a look at some of the latest technologies and products that are changing the classroom:

- **Virtual reality:** Virtual reality can be used within all parts of education. Virtual reality is an artificial environment viewed through a headset, allowing students to explore in a way closest

to real life. This technology is being used to allow students to explore different parts of the world from the classroom.

- **Digital pads:** Digital pads are plug-in or wireless devices that allow students and artists to create digital drawings and work. These devices also teach students digital design, which is a growing industry. In addition, the use of the pads takes the need for paper away and reduces waste, as students can use an unlimited amount of digital paper and materials.
- **Game learning:** Over 90% of children in the United States play video games regularly. The gaming industry is now one of the biggest in entertainment. Using gaming in the classroom engages students more than any other method of teaching. As well as using games to teach the curriculum, it also improves children's memory and hand-eye coordination. Teaching students how to create and code games is also a valuable skill, especially with the continued growth of the gaming industry.
- **3D printing:** 3D printing is an important technology within the education industry, especially for design-based courses. Students studying architecture, resistant materials, and engineering can use 3D printing to create prototypes and models for their projects.
- **Ozobot robots:** Ozobot is a company that teaches young children about coding. It offers a range of products and devices that can be used at home or within the classroom. Students can use the Ozobot Evo robot with a tablet application or with paper and markers. The purpose of this product is to get children interested in coding and teach them the basics.
- **Tablets:** Tablets are now commonly used within our daily lives and in the workplace. These are now being introduced into the education industry. Tablets have many uses in schools, the most common being a replacement for notebooks and textbooks. This allows students to store all their work on one device, and schools can cut down on paper use.
- **Smartboards:** Smartboards are large interactive projector screens. They work with a projector that creates an upscaled version of the computer screen, which can then be drawn on and controlled via the screen itself. This is beneficial for schools and classrooms, as students are able to fully interact with the work on the board without using the computer.
- **E-books:** E-books are publications available in a digital form. Books available on eBook devices and platforms are commonly cheaper, as multiple books can be stored on one device. These are especially useful in the education industry, as students are required to read a large amount of books. Once books are no longer in the curriculum or become damaged, they are disposed of, which creates a vast amount of waste. E-books prevent this from happening due to their capabilities and extended lifetime.
- **Document camera:** The document camera is a new technology product that allows teachers to project paper documents onto projectors and smartboards. These cameras are used in science classes to showcase experiments so that students do not have to gather in one area.
- **Remote learning:** Remote learning became essential during the global pandemic. When students were unable to attend school, the education industry adapted by using video conference platforms. Platforms such as Zoom, Teams, and Google Meet allowed students to continue their education during lockdowns.
- **Interactive learning environment:** Traditional lecture-style classrooms are slowly being replaced by interactive learning environments, which feature collaborative technologies like interactive whiteboards, touchscreen displays, and digital projectors. These tools empower instructors and students to engage actively with educational content.

Advantages of Emerging Advanced Technologies in the Classroom

- **Technology unlocks educational boundaries:** Technology supports virtual or online learning, allowing students from different geographical locations and backgrounds to attend the same class without the need for travel.
- **Simplified access to educational resources:** Technology helps students access open educational resources that are freely available online.
- **Motivation:** The use of computer-based instructions helps students take control of their learning and motivates them to learn.
- **Improves reading and writing skills:** The use of technology in the classroom helps students learn to write well-structured sentences and correct their grammar using word processing applications.
- **Promotes individual learning:** Technological tools like smartphones and the internet give students the opportunity to learn independently.
- **Supports differentiated instructions:** Classroom assessment software helps teachers plan based on students' performance, strengths, and weaknesses.
- **Increases cooperation between teachers and students:** Advanced communication technologies enable teachers and students to reach each other easily and quickly.
- **Encourages self-learning:** Technology allows students to learn at their own pace, enabling more personalized instruction.

Conclusion

The use of emerging advanced technologies in classrooms today is crucial, especially in education and teaching, where students benefit from new knowledge. Information technology extends previous knowledge and plays a role in acquiring skills necessary for successful and independent use of technology. The development of the 21st century is marked by the use of information and communication technology, including in education. The future of classroom technology is promising and ever-evolving, and staying updated on these trends is essential for improving the learning process. As technology influences education, adopting innovations can lead to more engaging, inclusive, and effective teaching and learning. The classroom of the future is taking shape now, and these advancements are leading the way in this exciting change!

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