

Education Needs Augmented Reality

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Abstract

Augmented reality, or AR for short, is the integration of information in digital format, including the real image of a particular user. Many universities now use virtual reality. Using technology for education can create smart universities and Colleges. Thus, this essay will go over the different areas in which augmented reality can be applied. In education, augmented reality (AR) has become a game-changing tool that combines digital content with the actual world—including the user’s perspective. Although virtual reality (VR) has become popular in many academic institutions, AR presents a special opportunity for innovative teaching. By utilizing technology in the classroom, traditional teaching methods can be revolutionized, and smart institutions and colleges can be established. This article examines the various uses of augmented reality in a range of academic fields, including the humanities and STEM. Institutions can promote immersive visualizations, interactive learning experiences, and individualized training catered to the needs of each individual student by using augmented reality (AR) into their instructional procedures. Furthermore, augmented reality (AR) creates collaborative settings that let students participate in cooperative learning despite distance constraints. This essay presents a thorough analysis and argues for the broad use of augmented reality in higher education, emphasizing how it may create innovative, forward-thinking academic institutions and change the face of learning in the future.

Keywords: Information and Communication Technology (ICT), Augmented reality (AR), Digital Object Identifier (DOI), Organization for Economic Cooperation and Development (OECD), multi-user virtual environment (MUVE), Project for International Student Assessment (PISA), Mobile Augmented Reality Learning (MARLA).

INTRODUCTION

Augmented Reality, or AR for short, is the integration of information in digital format, including real-time video, in the user’s immediate environment [1, 2]. In real-time video development, integrating video images into the digital environment involves identifying objects to be captured in any format that is copied from the physical world and considered a video image; this means improving the response of the rendered video image. Verifying that an item is in the desired condition. Only with the use of media like mobile phone cameras can the physical world be seen in augmented reality with integrated digital information, not in the actual world [3].

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This digital data can be represented as groups of virtual cubes or in different manipulated formats. An immaterial object can be made in many ways [4, 5].

Another common feature that is often described as real is the ability to display more information to the user. This additional information is considered optional and does not affect actual users of the system. The techniques that augmented reality systems use to provide this additional information

are as follows: tracking the user's perspective, capturing the camera's field of view, and obtaining additional information in the domain to see at least one object. Perfect example deals with points of interest [6].

AUGMENTED REALITY FOR EDUCATION

Augmented reality (AR) applications have begun to attract increasing attention in the last two years. AR was first used in applications related to pilot training and military training in the 1990s. AR creates a new world experience by layering data in 3D space. Within the next two to three years, the AR recommendation should be approved in order to open up new avenues for research, teaching, learning, and creative inquiry. AR creates hybrids by superimposing virtual objects or data on top of real-world settings or things. In actuality, real settings and virtual technologies interact meaningfully to improve learning. that virtual objects refer to co-location integration with real-world objects [7].

AR is now a widely used tool in the educational environment [8].

AR has also become an important research project in recent years. The fact that augmented reality (AR) technology does not require costly equipment or sophisticated systems like head-mounted displays is one of the main reasons for its widespread use.

According to Chiang, Yang, and Hwang, augmented reality is now widely used in education. According to Ferrer-Torregrosa et al. (2015), numerous nations are now using augmented reality.

Using this technology in education can make schools smart. Smart universities, Colleges and school aims to benefit teachers and students through related services, manage available resources and improve user experience [9, 10]. Remember during COVID-19 crises.

Smart universities, Colleges and school are generally designed for smart cities. A smart city is one with technology integrated into its infrastructure to address societal issues.

From information to transportation technology in smart cities, libraries, hospitals and schools as well as other community services were sampled. One of these community services is introducing environmental awareness to the students.

Augmented reality (AR) offers great benefits for deeper understanding of reality enables students to learn to live in the environment by integrating environmental awareness and social culture with environmental circulation through electronic products [11].

Augmented reality, or AR, is regarded as a major innovation in higher education and education technology, as the Horizon report highlights. Augmented reality is a new technology that is being used more and more in inclusive education.

Everyone can learn equally through research and experience. Johnson (quoted in Saltan 2017) said AR should be widely used in higher areas. The search process begins with selecting the topic to be examined. In this case, the topic is Augmented Reality for Education. Selected topics will explore a variety of topics that use reality as a teaching tool [12]. According to the Horizon research, augmented reality, or AR, is considered a significant advancement in higher education and educational technology. A new technology called augmented reality is being utilized in inclusive education more and more. Another filter is the year of publication. It's safe to say that the five-year gap still makes some ads still relevant. After you've reviewed the research and gathered the highlights, it's time to write your review.

Once the source and content of the discussion paper is understood, the DOI will be used to obtain the full copy. With the research done, it is time to review all the information. What data should be filtered

to support the selected topic during analysis? Type and get all the important information about the text. It's time to compose your review after you've gathered the highlights and gone over the research [13].

AUGMENTED REALITY FOR EDUCATION: A REVIEW

Augmented Reality in English Education

Due to the impact of the Project for International Student Assessment (PISA), which revealed that just 8% of OECD students were proficient in reading comprehension, there has been a recent global focus on reading comprehension.

Countries are high readers with digital technologies such as augmented reality Technology in the classroom is an important tool that can meet needs and support learning in two to three years or four to five years. If this is the current use of AR in education, it is important to explore how teachers and researchers can integrate AR into the teaching process and education. MUVE and AR began to emerge in the early 2000s, and their effectiveness was quickly recognized by academic research. The result is the experience of students participating in learning as well as reading. A good understanding of writing and speaking is very important for students in language learning, because the use of animation, audio, video, and images increases the impact and long-term and learning becomes enjoyable for these students. In this context, AR technology offers many ways in language teaching. An augmented reality game called Chronos was used to test language learners' behavior. A research study on language learners.

Augmented Reality in Indian and Foreign Language Learning

Initially, the teaching of Indian and foreign languages could not be based on traditional subjects such as writing and teaching; As Zainuddin and Sahrir (2016) argue, this is still the first choice of Indian and foreign teachers. The researcher's initial evaluations and observations show that digital developments are not used in education and training. When Indian and foreign languages are taught in the classroom, it affects the memory process of Indian and foreign languages. (told) Sahir 2016) suggested and stated that such needs that arise in the teaching of Indian languages and foreign countries, such as Hindi and foreign courses, should be reflected in education.

Teachers and skilled trainers must complement their success with comprehensive knowledge and understanding of students' internal and external motivations, thus having a good personal space. In fact, it is not possible to increase learning ability Ability to help students connect seamlessly in a natural environment. According to Radu (as cited in Zainuddin, Sahrir 2016), augmented reality is an e-learning tool that can improve understanding of content, learning of spatial patterns, communication, long-term memory, improved coordination, and motivation. A learning tool called Explorerz was developed in France. Explorerz enables learning outside the classroom to deliver educational content that is a positive experience for students that is relevant and practical.

Augmented Reality for ICT Education

The use of computer technology in the teaching environment makes learning easier and more understandable. Among these technologies, Augmented Reality (AR) has attracted the attention of the government as it offers a new method of teaching and learning that enables people to learn better. Visualize spatial relationships and abstract concepts. Research shows that many non-academic Malaysian students are not very motivated to take ICT courses due to many reasons such as lack of instruction and effective teaching methods. In response to this question, the research team conducted a quasi-experimental study to evaluate the effectiveness of the new application of Mobile Augmented Reality Learning (MARLA) on student support willing to learn ICT subjects at university.

A recent global focus on reading comprehension can be attributed to the results of the Project for International Student Assessment (PISA), which showed that just 8% of OECD pupils were proficient in the skill.

Work study tools may be used to help nontechnical students actively learn more, but their success will depend on the completion of appropriate planning and action that includes the student's demographic background.

The aim of another study in the ICT Education sector is to investigate how the integration of AR approaches can facilitate the implementation of changes and examine the specific benefits of teaching people to learn using a combination of online and classroom-based learning.

AR. The study found that educational researchers need to carefully consider the nature of learning objectives, the size of information displayed on a mobile phone, and the configuration of teachers' and schools' systems when incorporating AR applications into the classroom. To receive appropriate education.

Augmented Reality for Science Education

Educational professionals must address the many problems that exist in science education, such as expensive or inadequate equipment for physics experiments, faulty equipment, and difficulty in simulating some experimental areas. Augmented reality (AR) can: The method solves these problems effectively. Research on magnetic field commands has been done in response to the aforementioned issues.

Experimental results show that AR-based motion detection software can improve students' behavior and learning. An example of using augmented reality (AR) technology in secondary school physics education is given by this study.

Using augmented reality as a learning tool can also be useful in healthcare, physical therapy, and neurosurgery. It is best to use this skill in an environment where the structure must be examined from every angle shown. Augmented reality is one of the best tools for presenting angles because developers can easily control how augmented objects are rotated and presented. VR and AR can improve the learning environment in comparison to conventional teaching techniques.

3D learning environment can increase student motivation/engagement and enhance learning spatial words to contextualize learning and create superior skills. Over the past few centuries, neurosurgery has experienced a technological revolution, from trepanation to image-guided navigation. Developments in Virtual Reality (VR) and Augmented Reality (AR) is among the most cutting-edge approaches to be included into in-home mental health teaching and treatment.

Research shows that AR technology can improve learning outcomes. For example, AR allows students to participate in real-world research that is not possible for everyone, such as marine life research. Maritime education covers rich and diverse subjects. Increasing knowledge of the marine environment and the need to develop new teaching materials.

To this end, we developed a digital game-based learning program for primary school students and created a new ocean education program combined with augmented reality (AR) technology. The benefits of using this technology are as follows: (1) the learner feels confident and satisfied in the learning process; (2) the student gains objective understanding; and (3) new curriculum is specifically designed to help young people achieve academic success and improve their academic performance. Another great application of augmented reality in science is AR-based simulation solutions for collaborative inquiry-based teaching activities in science classes and found that AR-based simulations can allow students to engage in research activities more than traditional simulations.

Augmented Reality for Social Sciences and History Education

Field Day Lab (2016) suggests that a field trip leader is comparable to one of the various tasks that teachers play.

Teachers take their students on a journey of discovery, expanding their understanding of the world around them and helping them become more knowledgeable, curious, and approachable than the world's population. Simulation, immersive learning, and cultural studies attract researchers from diverse fields such as anthropology, psychology, collaboration, and education.

Cultural education is particularly relevant to language education, because language is the main element of cultural history and students can only learn the language they really need if they understand the cultural background. In culture and language teaching, Virtual body immersion and communication now play an important role. With augmented reality (AR) technology, one can create a sense of perception by fusing virtual things with real-world imagery.

Adding augmented reality to remote interactions allows people to Communicate without body with another person or thing. We leave behind the images of prehistoric caves, panorama painters, photographers and cameramen, and finally “join the picture”. If we follow the evolution of material representation, we can see that we have entered an era of “images without images” that pushes us back to the status quo.

Augmented Reality for SPED Training

The number of students with disabilities is increasing worldwide, but distance education does not meet their specific needs and cannot provide a complete education. Augmented mobile reality and its own capabilities offer the opportunity to correct this problem. A study explores a new way to incorporate video technology into teaching programs for children with disabilities. Create a free, interactive, portable augmented reality (AR) app to support teaching and learning Geometry. 21 students participated in the research. The results of the study show that augmented reality programs will help college students complete game tasks regardless of teacher support.

Participants demonstrated greater ability to complete assembly tasks using AR technology compared to traditional filing equipment. As stated in the literature, the use of augmented reality applications in disabled children Special needs may increase motivation to learn and tolerate stress. “Fancy Fruits” is the name of another augmented reality software made especially for educational purposes.

It is used to teach disabled children the composition of local vegetables: With local fruits. The app includes icons based on AR elements that connect virtual data to real life. A field survey was conducted to evaluate the proposal. 11 children with mental illness participated in this study. Research shows that participants reported happiness.

Augmented Reality in Training Courses

Establishing a connection between real life and a computer-generated environment, providing dialogue and displaying 3D objects. everyone said Real components help develop the psychomotor skills of students working through simulation. By using simulators, students can easily repeat some of their business education. Teachers in TVET institutions face serious problems Education Due to availability of many SPED Learners A sticker-based augmented reality application called Paint-cAR was developed to assist in the maintenance of car paint in the automotive maintenance program. This Application was developed using UDL methods and principles to assist or further assist in the development of user-friendly information for teaching collaboration design objectives. A cross-sectional study was conducted to validate the Paint-cAR application in a real situation.

Augmented Reality for Learning Math

STEM (science, technology, engineering, and mathematics) integrated courses need to be interesting and spark real student engagement.

There is very little STEM content although it has always been integrated into the global STEM scene Taught by school teachers. One of the hardest things in the classroom is math. An example of a

mathematical subject is geometry. In order to provide students with a better three-dimensional geometry learning experience, we investigated the integration of augmented reality (AR) technology into teaching activities and developed a plan to help high school students learn sound geometry. one. According to the research results, AR really makes great progress in geometry education. Another study involves the use of AR in teaching mathematics, using all tools to provide an interactive experience with students. Revolutionary Products. At the end of this study, it was found that augmented reality was useful in understanding the calculation of body volume changes. AR technology is about computing power and computing throughput, so this The evolution is related to the development of the personal computer. For this reason, first of all, it is necessary to mention some projects created using this technology in the world and in the country, especially in education and training.

It is not difficult to conclude from here that Since its inception, augmented reality and mathematics have been linked. Because AR offers improved interactivity and visuals, arithmetic ideas become simpler to learn. Consequently, the example can be seen as a three-dimensional process. want AR to improve the way mathematics is taught and learned

At the same time, there is an urgent need in many countries to better understand the use of mobile devices to learn mathematics, and there is a political need to strengthen teaching and learning. development. There is potential in the future. workers in the market of the future.

CONCLUSION

Research shows that AR is more effective in supporting instruction than other technological advances. If the content is represented in 3D, the learner can communicate with each other about objects and process information

The advancement of technology has altered the nature of education, particularly when it is integrated with a solid educational foundation. This combination opens up new avenues for enhancing learning and teaching results. The results show that augmented reality (AR) is a technical idea that offers applications that let pupils use virtual information and games to interact with the actual world. Based on Learning (GBL) is a teaching strategy that encourages the use of learning games to record all previous discussions. Combining these two projects will have a significant impact on the education sector.

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