

## IMMERSIVE LEARNING WITH AUGMENTED REALITY

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### ABSTRACT

Augmented Reality is the talk of the town. The capabilities of augmented reality are advancing swiftly as the cutting-edge technology sector moves into a world of more complex reality applications and interactive experiences. Via its interactive technology, the augmented reality sector is revolutionising the user experience. In this new tech era, E-learning has been demonstrated to be the innovative and efficient approach to teach students and get them engaged. There are several online courses and classes offered to students, yet as everyone knows, online classes are boring, the concepts taught cannot be learned again, and practical knowledge is crucial for disciplines like science and others that call for actual practise and visualisation. This research paper explores the advantage and scope of augmented reality in the Indian Education System which would help the emerging minds of India to gain abundant knowledge in a fun and interactive way without getting blasé.

**Keywords:** augmented reality, education, learning, technology

### 1. INTRODUCTION

What is Augmented Reality? Augmented Reality is an enhanced version of the real world environment achieved via holographic technology. Augmented reality (AR) is the combination of the physical and digital worlds, real-time interactions, and accurate 3D object recognition and visualization. AR provides fresh ways to interact with knowledge, better ways to visualise facts, and lessened cognitive burden. By using digital content in actual situations, augmented reality provides a more effective method for creating, curating, and delivering educational instructions.. In regard to the investigation and creation of new technologies, this subject has been rapidly expanding over the past few decades. Research on augmented reality as a learning and teaching aid has been ongoing in the education field. The results indicate that the introduction of technology into education has a positive impact on both teaching and learning techniques. Using technology to study will supplement more conventional methods of instruction. The technology known as augmented reality has the immense potential to be used in the field of education. Even though there has been a lot of research on AR, little has been done in the field of education. The usefulness of this technology in recent years has led to an increase in the number of studies on AR. Namely, AR offers a practical method to express a model or concept that needs to be visualised.

This paper aims to provide a general idea about the research on how augmented reality can set to improve the overall learning experience of students.

### 2. THE PROBLEM

Technology has transformed our environment throughout time, and using cutting-edge technologies in any field has led to greater outcomes. The use of cutting-edge technology in the teaching-learning process is altering the role of educators and reshaping learning experiences. The educational sector has new opportunities thanks to augmented reality , a technology that enhances the real world environment with life like virtual information in various forms of multimedia material.

There appears to be an enormous need for qualified workers, instructors, and research scientists in India given the size of the country and the size of this sector. Even while advances in education and technology are closely related to the advancement of society, the attitude towards education is not encouraging.

Many research have been carried out in an effort to find out how to increase students' enthusiasm in studying by learning from students itself. One recommendation from students was that a subject matter expert should be present in the classroom to give them the pertinent background information on the subject and make the lessons more engaging. Instead of the traditional instructional approaches, students favour participatory learning.

Education Courses are frequently perceived by students as abstract, requiring a depth of comprehension and visualisation abilities. Misunderstandings arise when pupils struggle to comprehend an idea fully. It is important to consider student misconceptions because they may obstruct their understanding of scientific concepts and principles. Consequently, choosing the right teaching strategy is crucial to preventing or minimising students' misunderstandings. Technologies for visualisation have tremendous potential to promote comprehension and minimise misunderstandings in the

educational field. By providing a variety of abstract visual representations and letting the students modify and explore them it is possible to improve students' visualising abilities. The visualisation of abstract notions is possible using a broad variety of methods and one of them is augmented reality. These visualisation tools can be utilised to solve the problem of misperception and assist pupils understand better.

### **3. POSSIBLE SOLUTION**

AR is one of the technologies that has a lot of potential for use in education, particularly for visualising abstract ideas. The new technology of augmented reality (AR) is likely to affect schooling. Virtual reality immerses the viewer in a world created by a computer, whereas augmented reality blends the real world with computer images. In place of the conventional approach where teachers use wooden items, augmented reality is a novel way to enhance the learning of three-dimensional shapes. The use of AR technology in teaching has a number of benefits. Because AR enables for rich visualisation and object motion, it can reduce misconceptions that result from students' inability to visualise concepts. Another benefit of AR is that it enables macro or micro viewing of things and ideas that are invisible to the unaided eye. AR presents things and concepts in various ways and from various viewing angles, which aids pupils in understanding the subjects.

Also, the majority of the study on AR that has been done so far demonstrates that kids are enthusiastic and interested in learning with this technology. Due to the interactive nature of its applications, AR also fosters student participation in the learning process. This enhances students' experiences and comprehension by fostering critical and creative thinking.

### **4. ADVANTAGES OF AUGMENTED REALITY IN EDUCATION**

**Increased interest and engagement of students** AR learning that is interactive can greatly benefit students. Students are engaged throughout the entire session since it makes studying fun and easy.

**Practical learning** Aside from education, the usage of AR in professional training can be quite advantageous. For instance, a precise recreation of field conditions can assist in developing the practical skills necessary for a particular task.

**Learning resources that are available whenever and wherever** Physical models, posters, written manuals, and paper textbooks could all be replaced by augmented reality. It provides portable, less expensive educational resources. As a result education becomes more available and portable.

**No specialised tools are needed** Unlike virtual reality, augmented reality doesn't need any pricey equipment. The majority of the target population can use AR technologies right away using a smartphone.

**Increased capacity for collaboration** Apps that use augmented reality provide a wealth of chances to spice up and diversify dry lessons. Teamwork skills are enhanced by interactive lessons that include all students in the learning process simultaneously.

**A learning process that is quicker and more efficient** With full absorption in the subject content and imagery, augmented reality in education helps students perform better. After all, a picture speaks a thousand words. Students can thus observe something with their own eyes, in action, rather than reading about it in theory.

**Universally applicable to all degrees of training and education** AR is not restricted to a single use case or area of application, whether it is educational games for young children or on-the-job training.

**It ensures a secure atmosphere for learning** While maintaining a secure learning environment, AR provides students with a wide range of cognitive opportunities. As a result, the student is free to take calculated risks and base his or her choices on the information available to him or her at the time.

### **5. LITERATURE SURVEY**

**A Review of Research on Augmented Reality in Education: Advantages and Applications** **Nor Farhah Saidin, Noor Dayana Abd Halim, Noraffandy Yahaya** The research conducted shows that AR technology has the potential to be further developed in education. This is due to the fact that AR features' is advantageous and helpful in reality applications and can involve pupils in educational processes and foster the development of their visualisation abilities.

**Learning Strategies Using Augmented Reality Technology in Education: Meta- Analysis** **Mohd Fadzil Abdul Hanid, Mohd Nihra Haruzuan Bin Mohamad S** The paper shows that selection of appropriate learning strategies can influence the success and effectiveness of the technology support used, such as Augmented Reality in education.

**Augmented Reality Research and Applications in Education** **Ezgi Pelin Yildiz** In this research paper, a detailed analysis of the augmented reality environments and applications that are frequently used in the designing learning and teaching environments with the digitization process is covered in the education industry.

**Augmented reality (AR) for visualizing solar system motion** **Surya Gumilar** The research paper concludes that

learning tools and resources Augmented reality technology can be used as an alternate learning medium in the classroom, particularly for physics lessons on the idea of solar system motion.

**An Augmented Reality System for Learning the Interior of the Human Body M.Carmen Juan, Francesca Beatrice, Juan Cano** The research paper has presented an AR system for learning the interior of the human body.

**Web based Augmented Reality for Human Body Anatomy Learning Rita Layona, BudiYulianto, YovitaTunardi**

The application in the research paper provides solutions for student who has difficulty in visualizing the anatomy of a two-dimensional body shape into a three-dimensional practice form.

## **6. CONCLUSION**

The research paper study demonstrates the possibility for further integrating augmented reality technology into the Indian educational system. This is due to the fact that AR features' advantages and helpful applications can involve pupils in educational processes and foster the development of their visualization abilities. The features can also assist teachers in clearly explaining concepts and ensuring that pupils comprehend what is being taught.

## **7. REFERENCES**

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