

Predominant Learning Using Augmented Reality And Virtual Reality

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Abstract— For education, classroom was regarded as one of significant learning environments which teachers help learners to achieve curriculum objectives. This research aimed to develop an e-future classroom (electronic future classroom) which consists of several elements as follows: electronic innovative technology, education instruction, education environment, and evaluation standard. The e-future classroom was different from general classrooms since it was learning resource combined with AR and VR technology. The person learns higher by perceptive and listening than by merely reading. We are going to treat this specific property of the human mind to accelerate learning. Virtual Reality and Augmented Reality is the next logical step in the evolution of the Education System.

Index Terms— Augmented Reality Technology, Virtual Reality Technology, Augmented Reality In Education, Virtual Reality In Education.

I. INTRODUCTION

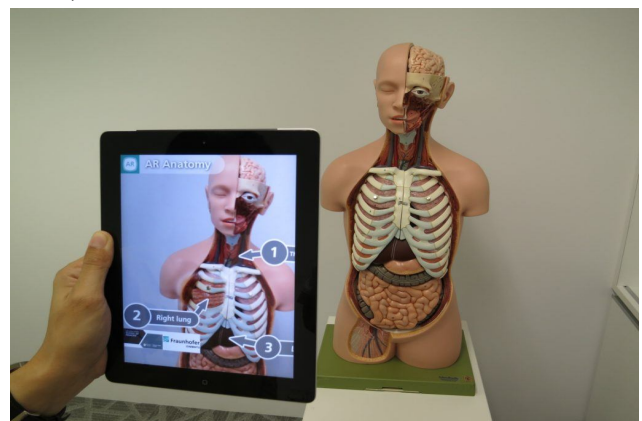
^[1]Humans act with totally different media in numerous ways. Typically, individuals browse a book, they watch a moving picture and they hear music. Individuals have interaction with increased reality, which will charm to serve our senses (although in present it's primarily a visible media). Augmented reality is interactive, but it doesn't add up to watch or hear it. It will be applied in education, medication and more. Every of those totally different application areas and specific applications represent on expertise ^[1]. ^[13]VR environments are designed to make users sense the presence ^[13]. ^[1]Hence, the technology must be able to simulate the real world in terms of visual fidelity, laws of physics, and sometimes even social interactions. In such simulated and highly interactive environments, students are free to experience and explore ^[1].

^[12]In the field of education, we will use this technology to make interactive 3-D books .It is helpful to know totally different angle of observation ^[12]. ^[3] The use of increased reality in class encourages cooperation and permits viewing of three-dimensional models to students within the high potentials. Learning becomes more interactive and interesting in the class. This technology will be applied to a range of learning areas within the academic fields ^[3].

II. AUGMENTED REALITY TECHNOLOGY

^[2]Augmented Reality (AR) is a technology that combines virtual objects into the real world. It has gained popularity because of its wide application uses in various fields such as gaming, entertainment and medical ^[2]. ^[12]The use of Augmented Reality in school promotes teamwork and allows viewing of three-dimensional models to students, which facilitates the task of learning through a fun and

interactive process. Likewise, this system can be applied to a wide variety of learning areas outside the educational field ^[12]. ^[3]Augmented reality has the potential to change paper textbooks, physical models, posters, printed manuals, etc. It provides portable and less expensive learning materials. As a result, education becomes more accessible and mobile ^[3].



^[12]Nowadays, Augmented Reality can be found in research laboratories and academic centers. Regarding the application of Augmented Reality in education, the lesson will be better understood by visualizations of history, geography, anatomy and sciences. In general, AR will make the learning process much easier ^[12]. ^[3]As we can see, augmented reality in education has huge potential, which is still to be uncovered. With the current adoption of mobile technologies and the recent advances in hardware, AR is becoming more accessible and broadly used ^[3]. ^[11]Apart from schooling, professional training can also help greatly from the use of AR ^[11].

III. VIRTUAL REALITY TECHNOLOGY

^[10]Virtual Reality (VR) is a realistic three-dimensional image or artificial background that is

created with a mixture of interactive hardware and software and presented to the user in such a way that any doubts are suspended and it is accepted as a real environment in which it is interacted with a seemingly real or physical way. We have found that running the program on a tablet is more effectual than using flashcards, we imagine that running it in a VR HMD will lead to a greater level of effectiveness. A head-mounted display (also called HMD) is a type of device that contains a display mounted in front of a user's eyes. This display usually covers the user's full field of view and displays VR content. Some VR HMD utilizes Smartphone displays. Head-mounted displays (HMD) are often also accompanied with a headset to provide for audio stimulation^[10].^[14] The goal is to give the user a feeling that the virtual environment is a real place, and the interactions are possible^[14].



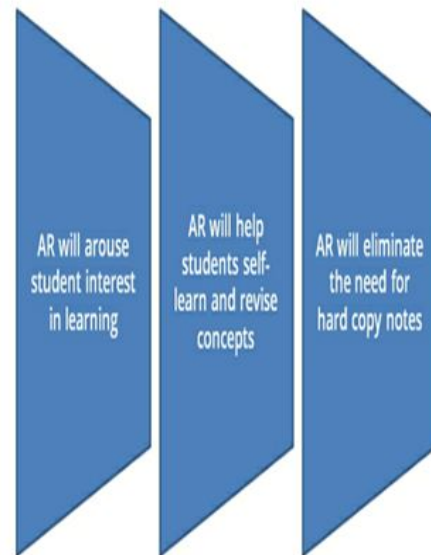
Head Mounted Display (HMD)

^[10]Virtual reality immersion is the perception of being physically present in a non-physical environment. It encompasses the sense of presence, which is the point where the human brain believes that it is really not, and is accomplished through purely mental and/or physical means. The state of total immersion exists when enough senses are activated to create the perception of being present in a non-physical environment^[10].^[9] Total immersion means that the sensory experience feels so real, that we forget it is a virtual-artificial environment and begin to intermingle with it as we would naturally in the real world environment. In a virtual reality environment, a completely synthetic world may or may not imitate the properties of a real world environment^[9].^[10] It provide very realistic user experiences by delivering a wide field of view, high resolutions, increased update rates (also called refresh rate), and high levels of contrast into a user's head-mounted display (HMD)^[10].

IV. AUGMENTED REALITY IN EDUCATION

^[12]In the field of education, we are able to use this technology to make interactive 3-D books .It is helpful to grasp the complete different angle of observation^[12].^[14] The

use of increased Reality in class encourages cooperation and permits viewing of three-dimensional models to students within the high potentials. Learning through a fun and interactive method in simple approach is much easier than just relying solely on books. This technology is applied to a range of learning areas within the academic fields^[4].



A. Accessible learning materials anytime, anywhere

^[3]Students will access models from any device at any time. Increased reality has the potential to interchange paper and books, physical models, posters and written manuals, etc into visual media. It can be transported at ease and can provide the effective learning materials. As a result, education becomes additional accessible and fascinating.

B. No special equipment is required

Augmented reality does not need any valuable hardware. Today 73% of teenagers have their own Smart phones so, it becomes straightforward to use for academic functions. In pedagogy, it's used as Interactive and sorcerous reading in square measure and learning will have a big positive vibes on students. It keeps their presence of mind throughout the category hours and makes learning fun, fascinating and easy. By viewing increased models, the scholars will gain a more robust understanding of the ideas.



C. Improved collaboration capabilities

Augmented reality provides fascinating and knowledgeable categories which has Interactive lessons, wherever all students are concerned within the learning method at the identical time, it helps to enhance cooperation skills. Area unit in education helps students to realize higher understanding through visual image and full immersion within the subjects. Your students can retain a lot of information for an extended amount.

D. Higher student engagement and interest

Interactive, AR learning can have a significant positive impact on students. It keeps them engaged throughout the lesson and makes learning fun and effortless.



E. A faster and more effective learning process

Augmented Reality in education helps students achieve better results through visualization and full immersion in the subject matter. A picture is worth a thousand words. So, instead of reading theory about something, students can see it with their own eyes, in action.

F. Practical learning

Apart from schooling, professional training can also benefit greatly from the use of AR. For example, accurate reproduction of in-field conditions can help master the practical skills essential for a certain job ^[3].

V. VIRTUAL REALITY IN EDUCATION

^[5]Virtual Reality has entered the world of education through the big door creating new resources to teach and learn. Students absorb information much better if they enter a 3D world that makes everything more fun, exciting and

enjoyable. VR allows you to explore, travel without leaving the classroom, visit what you want to learn without moving, have a greater professional orientation and much more ^[5]. ^[15]ClassVR allows your students to do so much more than passively consume virtual and augmented reality experiences. Keen to get students by a 360 camera to capture their own 360 images and videos. Our portal makes easy for teachers to upload student-created content, just drag and drop to share with the whole class. Look out for upcoming features that allow students to build their own 3D virtual worlds ^[15].



^[7]Virtual Reality can transform the way educational content is delivered; it works on the premise of creating a virtual world real or imagined and allows users to interact with it. Being immersed in what you're learning motivates you to fully understand it. It'll require less cognitive load to process the information.

Here are just a few properties that make VR so powerful for education.

i. Better sense of place:

When students read about something, they often wish to experience it. With Virtual Reality, they aren't limited to word descriptions or book illustrations; they can explore the topic and see how things are put together. Virtual Reality provides, students can learn about a subject by living it. It's easy to forget that Virtual Reality experiences aren't real a body actually believes it's in a new place. This feeling engages the mind in a way that is remarkable.

ii. Learn by doing:

It's a well-known fact that people learn best by doing. However, if you inspect modern education, you'll see how little learning actually happens by doing. Students are attentive on reading instructions rather than using them in practice. Virtual Reality provides an experience anchor to the instruction. With VR, learners are inspired to discover for themselves. Students have an opportunity to learn by doing things rather by reading a book.

iii. High tech training:

VR is a great solution for highly technical training fields like the military or the medical industry. For example, the

most significant challenge for medical students in learning anatomy, which understands the body in three dimensions and how different systems fit together. VR can help overcome this problem^[7].

How VR and AR Is Being Used to Help Children with Learning Disabilities, Autism?

^[14]Education is betting on VR and AR to help students with high-functioning autism and learning disabilities in schools^[14].^[8] By creating environments that simulate a person's physical presence in worlds real or imagined, VR and AR can help learners with disabilities expand their knowledge, skills, and attitudes in ways that wouldn't have been possible or else enabling them to engage in learning activities relatively free from the limitations imposed by their disability, and in complete safety. VR and AR also helps create empathy or expand knowledge about people with disabilities in others by helping them experience disabilities through simulated environments^[8].^[6] Our idea is to use VR and AR to explicitly teach students these social competency skills and how to generalize them in their natural environments. Likewise, we want to engage teachers with ways to implement VR and AR by supporting students with generalized skill inside the classroom^[6].^[8] Virtual reality and augmented reality has the potential to improve learning, and even the quality of life, of people with disabilities. But, for them to use Virtual Reality effectively, the hardware and software technologies need to be accessible and compatible with assistive technologies used by some people with disabilities. For people learning how to deal with new physical or sensory disabilities, difficult or risky learning experiences can be had safely through VR and AR^[8].

CONCLUSION

^[7]Virtual Reality and Augmented Reality is on the doorstep of education, and without a doubt, it'll change the world as we know it. 21st-century classrooms will be technologically advanced places of learning with VR and AR technology significantly increasing students' engagement and learning. VR and AR will inspire a whole new generation of young and bright students, who are ready to innovate and change the world^[7].^[8] It could be the tool that levels the playing field when it comes to making learning experiences accessible to people with disabilities. It is imperative that existing and emerging VR and AR technologies be made accessible to a wide range of users^[8].

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