

# AR in Education as Crystal Concept

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**Abstract.** Despite the present generation has 3-D, our nation utilizes 2-D media in studies. The mixture of AR tech and study material form a newly type of automation system and actions to improve efficiency and raise interest of giving lesson and gaining knowledge for trainer in real-life situations. Augmented Reality is a new, integrated approach features from computer everywhere, laptop, and the public computer. The center offers unique capabilities, including a virtual world, with and vague manual control of point of view and interaction. The research gives a launch to augmented reality (AR) technology, its educational opportunities. Important technology and ways of communicating in the context of studies.

**Keywords:** Augmented Virtual Reality, Augmented Virtual Reality Technology; Augmented Reality in Education.

## 1 Introduction

Immerse students in the original globe connect to the real life is often not so easy. Despite the real life is in 3-dimensional, we would generally use 2- dimensional medium in studies that is too simple, standard, malleable, movable and Low cost. But this does not change and do-not provide flexible material. Otherwise, a 3-dimensional computerized- generation visual space could be utilized as this glimpse require more efficient laptop Radeon graphics that are costly as other. While many of the world's opportunities can present them for giving lesson and gaining knowledge, it is difficult to give a sufficient level of authenticity. When customer is totally submersed in the area this are separated from the original space. So, it gave us material to model the original life we find. The research has two purposes. First a description of augmented reality (AR) gave regarding the new machine learning and augment space. Augment reality device features provide the technology is segmented to apply to this system. The second is the educational ability in the material.

## 2 Augmented Reality

Today the newly "Augmented Reality" method gave the different purchasing power, which includes reel world and real world. This is a new approach to manage the way, we interact with that land. In addition to transforming the real world you find; this technology enhances visual experience over real world with continuous and vague user manage and interaction. Provides a user-friendly view with a combination of real-user interface and computerized visual glimpse. The realization of the original life by including a space, place, object or situation in a completely unrelated type. We may provide studious material. The newly idea glorify the efficiency and appeal of giving lesson and taking knowledge. The capacity to visualize computerized objects

in the original space is transform the way of interaction and the training enhance more original that can be saw in original space than in superstition.

Augmented Virtual Reality brought practical knowledge or things to any indirect global environment real-time objects or scenes to enhance the user's natural and accurate information in real time. It is a collaborative environment where original world is glorified by material objects in real time. According to Azuma (1996), Augmented Virtual Reality must have three elements: integrating the real and augmented virtual world, and having real-time interaction with the user, and registering in a 3D environment. Augmented Virtual Reality permitted the people to watch the original thing and intends to add reality without totally immerse the people within the production space.

## 2.1 Technologies for Augmented Reality Systems

Augmented Virtual Reality utilize the similar hardware technology and shared many things like computerized visual elements, three-Dimension elements and interactions. The important dissimilarity among them is that the reality is intended to in place of the real space while the real unpopularity of taxpayers we see adds to the respect. The main augmented virtual reality devices are monitors, computers, inputs and track devices. Bona-based and Monitors-based indicators are two mainly types of real and tangible landscapes in addition to the user view of the world displays used in reality are unpopular with the taxpayers we see. Sea-through displays place both -bona based and Optic images systems is two types of visual view.



**Fig 1.** Example of AR

## 2.2 Head Mounted Displays

A headband system is type of view wear on the head or as kind of a protective headband. It had a little picture optics to the fore of one or every eye. Video vision devices are helpful if we require to hear some part remotely or use a picture enhancement device. Visual aids include computer-generated scenes and a "real-world" image through "mirrors". A skewed mirror is usually used to show through. The mirror tech allowed the view of the space to go through the glasses and the knowledge covered by the images to be visible to the eyes of the users.



**Fig 2.** Head Mounted

### **2.3 Handheld Displays**

Little computed device with a view that the people could stay in their hand. Other kind of system that utilize moving picture viewing methods to cover drawings in real-time Mobile Displays. This are little computer devices with a view that people could easily clench with his hands. The important beneficial of the hand-clench Augmented virtual Reality are the flexible environment of foldable devices and the ubiquitous environment. On mobile cameras the downside is the obvious disadvantages of a hand-held device in front of them at all times and the distorted effect on mobile cameras with wide angles comparison to the original space as displayed with a naked eye (Feiner, 2011). Android-phones, Pda's and mobile-Tablets with lens, compass, map routes with their 6-degree autonomous tracing system and fiducial marker devices utilized as hand-held view for additional authentication. Local view is the utilization of moving pictures projectors, optical elements, holographic, radio frequencies markers, and other tracing technologies to view image knowledge directly on elements without needing the customer to wore or handle to view (Bimber, Raskar, & Inami, 2007). Other method utilized to integrate material with computerized information is Projected view. In this 3-dimensional computer models we are expected to create a realistic looking object. A couple of lightweight cotton mitten made up of sensors on every finger that receive contact among the figure of your hand. It is memorable newly device that uses a broad area of control and interdependent functions and interaction with 3D simulations.

### **3 Augmented Virtual Reality in Studies.**

The utility of AR education is closed link of how it created, applied, collaborated to official and unofficial learn space [5]. Mandatory considering how Augmented Reality tech accompany and pays for meaning useful knowledge [5]. Taking AR as a method instead a specific kind of tech will be teacher productivity [4]. Teacher indulgence is essential too ease of formation of

effective AR teaching system, which gain the ability for AR to be included in studies [18]. AR system had made for many educational institutions [2]. Some of AR system had utilized in last study [8, 1, 2]. Gopalan et al. [8] examined the effect of advanced AR notebooks on Malaysian elementary schools' child. Chiang et al. [11] experimented the utilize of an AR dependent phone education management for inbuilt tech research activities for fourth graders in Taiwan. The program guides children to eco-focused areas and identifies related learning activities or materials [11]. Akc, ayrir et al. [21] evaluated the utilization of an advanced Augmented virtual reality lab manual for science lab for 1st year children in Turkey. The research examined the effect of survey of 4- Dimension phone apps on promoting the knowledge gain of healthcare science graduates at UCT.

### **3.1 Upside of Utilizing Augmented Virtual Reality in Studies.**

Augmented Reality gave newly type of communication to the original space, and could made experiences that would not be easy in the original world or in the physical world [3, 24]. AR is the especial capacity to make interactive learning space that add reality & reel element [3]. Augmented Virtual Reality technology allows customer to discover scientific events i.e., is impossible to the original space, such as some chemically reactions, make a not access to the subject availability to children [3, 5, 23]. This deception of materialism and the perception of elements that are not easy to see in the original space could be easily mitigated with AR [5]. Development gaining knowledge experience could stimulate critical thinking and expand concepts grasping and understanding of events that may be not visible or difficulty to detect and correct any misconceptions [5]. invisible events [5]. Learners' skills and knowledge develop advanced technological learning environments can be created most effective with AR tech [5]. The workload of the brain can be deduced by combining many sources of knowledge [3, 18]. The immersed features and interactive characteristics provided by AR may motivate children to participate in knowledge venture and can improve the learner's enhancement for learning [4, 8, 18]. AR gives a highly interchanged experience, may produce real student work, collaboration, and a higher stage of authenticity [18]. Collaborating with space is essential to the knowledge procedure, and, without a doubt, AR is best ways to make the interaction [18].

### **3.2 Difficulties in the Utility of Augmented Virtual Reality in Studies.**

Customers of Augmented virtual Reality tech can have problems with usage and technically issues, and few children can find this tech difficult [3]. One of the difficulties of AR applications is usage; it's easy of utility is also marked as a benefit [3]. There are no proof to suggest that operational difficulties are corelated to AR technology and they may instead be caused by lack of technical knowledge, visual device design faults, technical glitches, or wrong attitudes [3]. The fusion of real and imagined objects can be confusing for readers. They may face the difficulty of navigating within myth and fact [5]. The usage of AR technology in the educational surroundings requires a lot of practice, as learners need to busy with a huge amount of knowledge and multiple tech devices to complete complex works [5]. This can lead to mental retardation and feelings of frustration or confusion [13, 15]. Turmoil reflects the originality of the Augmented virtual Reality management; however, this might not fruitful in the knowledge gaining surrounding as children might lost path of the original surrounding [5]. Few research states that Augmented Virtual Reality reduces analytic burden, whereas others state analytic

impairment [3, 5]. Schools could restrict the usage of Augmented Virtual Reality tech, and teachers might hesitate to utilize Augmented Virtual Reality as these technologies mostly require new knowledge methods to be used [5]. Material found in Augmented Virtual Reality apps is generally flexible, limiting teacher content and restricting flexibility to meet students' requirement [5]. The accessibility of authorization tools might solve the problem from providing client to review & build Augmented Virtual Reality contents [5]. The other difficulties is perhaps the firmness of Augmented Virtual Reality in mobile devices was most stable, & problems can occur if the technology is not properly designed. Client might require time to get acquainted with the comfort of Augmented Virtual Reality tech [8].

#### **4 Problem faced in Education**

Increasing in class also increase in our syllabus which lead student difficulty in understanding the concepts and they start cramming instead of understanding concept and lead to weak knowledge. We all know that visualization is the best learning process and also experiencing the situation give us good lesson. Therefore, AR and VR helps in good practicing of our concept while visualizing the concept in 3D. AR in education will ARCS concept.

#### **5 The Intrinsic Motivation Theory.**

The intrinsic motivation theory describes how AR can be used into the field of knowledge gaining [21]. The important point that influences inner encouragement are difficulties, interest, command, & dream [19]. Determination and positive mind are essential in order to maintain the motivation to learn [24]. Self-confidence can encourage children to take active participation in academic activities with no any force or expect additional awards [19]. Indulgence in activities is according to wish, to find happiness, problems, and diversity of educational work [16]. Research have resulted that Augmented virtual reality could have a positive impact on children motivation [14, 18, 21,3]. There is research which showed that augmented virtual reality could significantly gain children encouragement to study science [8]. Increase in student's encouragement might be greatly due to interest, dream, and command presented utilizing Augmented virtual Reality tech [6], as children's encouragement can be directly affected through an attractive stimulating object or gaining knowledge object [2].

##### **5.1 ARCS Model.**

Attention, Relevance, Confidence, and Satisfaction model (ARCS) stimulus created to utilized to understand the effect of AR tech in encouraging the students to learn [4, 9, 21, 23]. According to the ARCS models, the system of Augmented virtual Reality tech should grab the consciousness of students, should be pertinent to children, children should gain technical confidence, and students should be satisfied after use of the tech [21]. According to the ARCS model, the survey questions (RQ) 2.1,2.2, 2.3, and 2.4 were developed to determine the impact of using the Augmented virtual Reality phone system on every component of the ARCS.[4, 8, 11, 13].

**5.1.1 Attention.** Attention can be gained by arising question [17, 10]. The awakening of the mind can be achieved through the use of novels, strange, and uncertain events that capture attention. Question- raising can be achieved through challenging questions or curious issues [14, 7].

Consciousness can draw in a variety of ways involving interaction, humour, disagreement, variety, and original-space cases [15]. This aspect of consciousness is very mandatory as we begin to motivate children [20]. Once curiosity had been started creating in students, children are generally wish to invest their time in studies [12].

**5.1.2 Relevance.** Relevance could be achieved utilising language and instances common to children [7,17]. Techniques for achieving consistency involve aim direction, motivation matching, & familiar [5]. Objective guidance could be gained by informing learners know how the information will benefit the learner today and, in the future, [7, 17]. Comparing motivation includes judging student's performance needs and learning cause to make informed decisions. Familiarity involves providing instances that are relevant to the learner's knowledge and that is relevant to the subject [1]. Papers discusses links to past experiences, current perceived value, observe future utilisation, models, and selection according to innovative strategies. Research have suggested that the advantage of Augmented virtual reality tech is the facility to give rapid and accurate knowledge and leadership [8, 11].

**5.1.3 Confidence.** Self-motivation includes providing positive belief in order to achieve success [7]. Self-confidence is associated with motivation; hence, it is necessary the structure of the lesson provides learners with a way to gauge their chances of achievement [6,16]. Instances involve a syllabus with a marking approach, courses, or timings frame activities [21]. Motivation can be built on a time basis and appropriate response that provides a positive augmentation of self-success [21]. Papers [15] talks about improving confidence, communication goals, providing reviews, and providing student control to build self-confidence.

**5.1.4 Satisfaction.** Children should receive any form of achievement gifts from the learning experience [12]. Satisfaction may be in the form of success, praise, or entertainment [3]. Response and augmentation too mandatory factors [12]. Satisfaction is on impulse, and, to stay children satisfied, they shall be given the chance to utilize it (or use) the new talent sooner in the right environment [21]. Pappas lists [6] appraisal or awards and sooner utilized as type to enhance satisfaction. The inherit impulse theory were utilised to mean the accelerate in the learning content [24]. The ARCS model of encouraging design was utilised to mean the effect of AR tech at children impulse. [4, 18, 1, 14]. The effect on children gaining knowledge encouragement was measured by comparing children gaining knowledge encouragement before and after utilising the Augmented Virtual Reality phone system, utilising a list of pre-use and post-use questions.



**Fig 6.** Augmented reality

## 6 Conclusion

In last research the Augmented virtual reality study tools are specifically created for studies [4, 8, 11, 13, 23]. Augmented virtual reality phone app utilized in the research is not specifically created for the study; instead, the DAQRI Analysis 4 Dimension cell phone program was utilized, as an Augmented virtual Reality instruction tool [17, 21]. The compatibility of the phone app for 2nd year children MBChB children were certified from a study facilitator at the UCT Faculties of Health care Science before this research.

Analysis of 4Dimension is a freely app that can utilized AR to access interact with images of people. App utilized a selected picture, displayed in Fig 3, and lens on the cell phone to view the AR study the people physical [16].

A picture of the Analysis 4Dimension phone app was shown into Figure 4 [16]. The Anatomy 4D mobile app has been selected on its enable. Every selected utilized both analysis data and AR mobile study app.

The motive of developing the app is to motivate the students to gain knowledge and develop a fun gaining knowledge process. Parents at house or teachers at school could utilize the program to brought the letter of the alphabet and to provide them with the basics of concepts they indeed for their smooth mental development. Here, we could conclude by saying, A R are flexible tech this we could use to achieve great heights. Undoubtedly, it has the potential to take the education system to a whole new level [12]. Our app is just part of what AR has to offer the new generation.

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