A Critical Analysis of Augmented Learning by Applicability of IT Tools

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Abstract

The content of virtual world can be as rich and diverse as human imagination. The learning activities vary with a broad diversity of learning processes and learner's capability. These can be classified into two categories: Constructive and Analytical. Augmented learning technique creates link for connecting physical makeup experience (from constructive activities) and abstract modeling (from analytical activities) in the context of learning in design. Augmented learning is an on-demand learning techniques where the environment adopts to the learner. By providing remediation on demand learners can gain greater understanding of a topic and stimulate discovery and learning. Technologies incorporating touch-screens, voices and interaction instead focusing, on memorization, the learner experience based upon current context. It focuses on methods of more active and participatory learning method where learners take responsibility of learning and are engaged rather than passive observers. In today's competitive world it is constantly required to learn, unlearn and relearn. Augmented learning tools have been useful for learners to gain an enhanced understanding of words or to understand a foreign language. Most implementations of augmented learning are forms of e-learning. In desktop computing environments, the learner receives supplemental, contextual information through an on-screen, pop-up window, toolbar or sidebar. It can also be deployed on mobile, touch-screen devices including tablets.This paper critically reviews the concept of augmented learning through IT tools and its importance to develop the needed skills for student as compared to traditional means.

Keywords: Augmented learning, constructive activities, analytical activities, e-learning, IT Tools.

1. Introduction

Augmented learning is an on-demand learning technique where the environment adapts to the learner. By providing remediation on-demand, learners can gain greater understanding of a topic and stimulate discovery and learning. [1]Scholars, teachers and students are embracing Technologies incorporating touch-screens, voices and interaction that have demonstrated a great potential in education. Instead of focusing on memorization, the learner experiences an adaptive learning experience based upon thecurrent context. The augmented content can be dynamically tailored to the learner's naturalenvironment by displaying text, images, video or even playing audio (music or speech). This additional information is commonly shown in a pop-up window for computer-based environments. [2]

Most implementations of augmented learning are forms of e-learning. The learner receives supplemental, contextual information through an on-screen, pop-up window, toolbar or sidebarin desktop computing environments. As the user navigates a website, e-mail or document, the learner associates the supplemental information with the key text selected by a mouse or other input device. [3]Augmented learning is closely related to augmented intelligence and intelligence amplification. Augmented intelligence applies information processing capabilities to extend the processing capabilities of the human mind through distributed cognition. Augmented intelligence provides extra support for autonomous intelligence and has a long history of success. Mechanical and electronic devices that function as augmented intelligence range from the abacus, calculator, personal computers and smart phones.

In mobile reality systems, the annotation may appear on the learner's individual "heads-up display" or through headphones for audio instruction. Foreign language educators are also beginning to incorporate augmented learning techniques to traditional paper-and-pen-based exercises. For example, augmented information is presented near the primary subject matter, allowing the learner to learn how to write glyphs while understanding the meaning of the underlying characters.[8]

2. Discussions

Augmented Reality (AR) is a novel way of superimposing digital contents into the real context, is impacting the mobile communications industry by providing a radical shift in human-computer interaction, AR has been foremost applied in the areas of entertainment, retail, travel, advertising, and social communication. [7]Augmented Reality has great potentials in education, and more excitingly, opens a novel realm for, and even redefines, eLearning. AR offers an innovative learning space by merging digital learning materials into the format of media with tools or objects, which are direct parts of the physical space, therefore creating "situated learning." AR-based eLearning can run on normal mobile devices such as iPhones, iPads, smart-phones, PC tablets, etc. using a downloadable application. [4]Augmented Reality has entered into its mobile era through the emergence and advances of geo-tagging. A geo-tag is basically a GPS coordinate that can superimpose any digital information onto a specific location. AR can redefine the way of those geo-tags as information can be displayed into users'

real-world view more cognition-effectively. With the emergence of advanced and affordable head-mounted display such as Google Glass, AR can be made more accessible and effective to the general public.

3. Application of Augmented Reality in Education

Augmented reality can be used in education with the help of various applications like project glass, Google maps, quizzes, games with which student can interact and learn through visual imaging.Some of the applications which demonstrate the use of augmented learning in education are:

3.1 Project Glass

The most famous AR project is being, of course, led by the folks at Google. A lot of new ways to integrate Google Glass into the classroom over the past few months have been seen. Few of them have even been showcased. One of the biggest ways is, however, is the idea that students can use Glass whilst on field trips and outside the classroom. They can do digital scavenger hunts, find classmates, or simply learn more about their surroundings using their handy pair of AR glasses.

3.2 Google Sky Map

This is an augmented reality app which makes learning about astronomy interesting and fun. Instead of looking at descriptions of constellations in a book and then attempting to identify them in the sky, you can use Google Sky Map to directly identify stars and constellations using the camera on your smartphone. Simply hold your smartphone up in the direction of the sky to receive automatic identification of stars and constellations. No more guessing if that wonder in the sky is a planet, a star or a satellite.

3.3 MITAR Games

The MIT Teacher Education Program, in conjunction with The Education Arcade, has been working on creating "Augmented Reality" simulations to engage people in simulation games that combine real world experiences with additional information supplied to them by handheld computers. The first of these games, Environmental Detectives (ED), is an outdoor game in which players using GPS guided handheld computers try to uncover the source of a toxic spill by interviewing virtual characters and conducting large scale simulated environmental measurements and analyzing data.[5]

3.4 GeoGoggle

GeoGoggle is a great helper when it comes to acquiring geography skills and judging distances to specific destinations. Students can learn geographical measurement such as latitude and longitude by applying GeoGoggle to real-world surroundings. The app also allows you to calculate altitude and the distance between two points using a 3D

compass. Like other augmented reality apps the app uses overlay graphics combined with real-world surroundings to help you learn the fundamentals of geography.

3.5 Acrossair

Acrossair is a browser which can be used in real-world surroundings and in the classroom for learning and discussion. The browser can carry apps that push the boundaries of the uses of augmented reality. You can find locations near you and share your locations with friends. Students can also create interactive classroom projects, and participate in interactive photo walls displaying wiki and multimedia on a classroom topic.

4. Importance of Augmented Learning

4.1 It helps in Just-in-time understanding and learning

Augmentation tools can help learners understand issues, acquire relevant information and solve complex issues by presenting supplementary information at the time of need or "on demand."

4.2 It helps inunderstanding the language

Augmented learning tools have been useful for learners to gain an enhanced understanding of words or to understand a foreign language. The interactive, dynamic nature of these on-demand language assistants can provide definitions, sample sentences and even audible pronunciations.[6]

4.3 It makes learning fun

Handheld devices like cell phones and portable game machines (Game Boy, PlayStation Portable) can make an impact on learning. These mobile devices excel in their portability, context sensitivity, connectivity and ubiquity. By incorporating social dynamics in a real-world context, learning games can create compelling environments for learners.

4.4 No Costs

There are no costs for making mistakes and errors, as they are not real. This is particularly promising in the training of laparoscopic surgery, heavy equipment operation, high-rise area operation, and firefighting.

5. Conclusions

Augmented Reality (AR) has great potentials in education, more specifically in e-Learning. Augmented Reality can create a new era for situated learning by integrating itself with mobile learning and other concepts and technologies. With AR, there would be no need to define the learning contexts and environments, as the real-world circumstances we are grounded define them. Critics may see learning augmentation as a crutch that precludes memorization; similar arguments have been made about using

calculators in the past. Just as rote learning is also not a substitute for understanding, augmented learning is simply another faculty for helping learners recall, present and process information. These are only a few of the new augmented reality apps for education which can change the face of learning in our classroom. Augmented reality is a trend that is worth following. New apps and technologies should develop to make learning innovative, practical and fun like development of *AR 3d lab*. It is a concept that makes virtual, 3D objects appear in the real world, attached to real objects. Users will look through a Virtual Reality POV Viewing Device or at a monitor to see virtual objects like planets, volcanoes, the human heart or dinosaurs. These can be attached to cards, the pages of a book, interactive white board or even on the floor or wall to provide a 3D animated replica that fills the room.

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