ENHANCEMENT IN E-LEARNING & M-LEARNING USING 3D

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ABSTRACT:

3D technology is getting much popularity in the recent era of technology this is the technology in which we can see the image from different angles. TVs and iPhones are available in 3D, 3D technology is used in different application and it is increasing day by day. Now a days 3D cameras, 3D webcams, 3D movies available. In 3D seeing images come alive. 3D projection has been seemed a technology long on potential but short on practicality. New prototype appeared a trade shows year after year, and while they were drool-worthy, manufacturers just couldn't pull 3D into the production stage. These days 3D are used in different sectors like, corporate enterprise training, health industries and in teaching learning process. Present study discusses that we can Enhance E-learning and M-Learning with help of 3D.

Keyword: E-learning , M-Learning , 3D imaging , DLP .

تحسين التعلم الالكتروني والتعلم عن طريق اجهزة الموبايل بمساعدة ثلاثي الابعاد 3D

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الخلاصة :

تقنيـة الـ 3D مـن التقنيـات التـي حصلت علـى شـعبية كبيـرة فـي العصـر الحديث هذه التكنلوجيا التـي تمكنـنا ان نـرى الصـورة مـن زوايـا مختلفـة . تتـوفر فـي اجهـزة التلفـاز والـ iPhones , وتسـتخدم فـي تطبيقـات مختلفـة وتأخـذ بالازديـاد يـوم بعد يـوم . ومتـوفرة فـي الات التصـوير ,كـاميرات الانترنـت والافـلام . بحيث تـرى صـورة الـ 3D صـورة حيـة . وقـد بـدأ تقـدير تقنيـة الـ 3D لإمكانياتهـا لمـدة طويلـه لكنهـا قصـيرة علـى التطبيـق العملـي . النمـوذج الجديد بـدأ يظهر بالتعـاملات التجاريـة ويـزداد سنة بعد اخرى . هذه الايـام يستخدم الـ 3D فـي قطاعـات مختلفـة مثل التـدريب للشـركات والصـناعات والصـحة وكـذلك التعلـيم والـتعلم . الدراسـة الحاليـة تنـاقش بأننـا يمكـن ان نحسـن او نعزز التعلم الإلكتروني والتعلم عن طريق اجهزة الموبايل بمساعدة تقنية الـ 3D .

1. INTRODUCTION:

Since there is advancement of Information Technology in these days therefore there is use of computer in learning process where different software and computer system used for learning process that is E-Learning and Using Mobile devices in Learning process is M-Learning. Technically we can say that E-learning (or eLearning) is the use of electronic media and information and communication technologies (ICT) in education. E-learning is broadly inclusive of all forms of educational technology in learning and teaching. E-learning is inclusive of, and is broadly synonymous with multimedia learning, technology-enhanced learning (TEL), computer-based instruction (CBI), computer-based training (CBT), computer-assisted instruction or computer-aided instruction (CAI), internet-based training (IBT), web-based training (WBT), online education, virtual education, virtual learning environments (VLE) (which are also called learning platforms), m-learning, and digital educational collaboration. These alternative names emphasize a particular aspect, component or delivery method [1].

Since there is advancement in mobile devices and the progress is going on day by day therefore people are motivating towards mobile computing and these days people are motivating towards mobile learning as well. The term m-learning ("mobile learning"), has different meanings for different communities, covering a range of use scenarios including e-learning, educational technology and distance education, that focuses on learning with mobile devices. Mobile learning is defined as "learning across multiple contexts, through social and content interactions, using personal electronic devices"[2]. In other words, with the use of mobile devices, learners can learn anywhere and at any time.[3]

Because of advancement in Information Technology and electronic devices there is concept of 3D graphics which is 3D computer graphics (in contrast to 2D computer graphics) are graphics that use a three-dimensional representation of geometric data (often Cartesian) that is stored in the computer for the purposes of performing calculations and rendering 2D images. Such images may be stored for viewing later or displayed in real-time. Using 3D technology we can view the images from different angles.

3D imaging is capable of recording three dimensional visual information or creating an illusion of depth in an image. A 3-D film is a motion picture camera is used to record the images

as seen from two perspectives, and special projection hardware and or eyewear are used to provide the illusion of depth when viewing the film. This technology, when used in visual displayproducts, is useful in creating brilliant images that are used in segments requiring image detailing, such as medical science. Architecture, interior designing, animation, graphics, gaming etc. 3-D films have existed in some form since 1890 but were largely relegated to a niche in the motion picture industry because of the costly hardware and processes required to produce and display a 3-D film and the lack of a standardized format for all segments of the entertainment business. Nonetheless 3-D films were prominently featured in the 1950s and 1980s in American cinema, and are currently experiencing a worldwide resurgence coinciding with the development of computer generated imagery and the introduction of HD video. [4]

The present study discusses the Enhancement of E-learning and M-Learning process by adding 3D technology to improve Learning process.

2. WORKING OF 3D TECHNOLOGY:

In real life we see the things in 3D, the human being have binocular vision. This enables us to perceive depth and see the world in 3D.This separation causes each eye to see the world from a slightly different perspective. The brain combines these two images into one. It comprehends the spatial differences and uses them to calculate distance. This is how we sense depth and distance. A simple way to understand this principle is to hold your thumb up at arm's length and cover one eye with your hand. Then try putting your hand over the other eye. As you switch between open eyes you should see your thumb "jumping" back and forth against the background.[10]

There is a lot of debate about the first 3D film but "L' arrive du train" filmed in 1903 by the Lumiere brothers. They were the inventors of cinema and it is often referred to as the first stereoscopic movie ever made. When it was released, audiences panicked because they thought the train was about to crash right into them. There are different types, or flavors, of 3D. Some put 3D technology into glasses while others put it into a monitor or tech application. Computers or even the iPhone can handle 3D but require some additional active components, such as software and applications that are just now being created. The first time 3D technology was created it used

the traditional red and blue glasses. This is called anaglyph and is very cheap in both cost and performance. Fortunately, with the rise of technology advancement we have many better ways of displaying 3D media. Polarized glasses are another common type of 3D glasses. There are the 3D glasses that your will get at IMAX or in other movie theaters. Although they work better than the old type red and blue glasses, this method requires two projectors in the theater and additional layers to the monitor for the technology to work properly. The onetime theater set-up expense and additional cost for the polarized glasses may make this method less appealing. 3D screens with no glasses are here today. There are different ways that the 3D screen technology is built. One way is using multiple screen layers like the polarized glasses mentioned above, which is expensive but you do not need specialized glasses to view the 3D on the screen.[5]

3. 3D E-learning:

Some topics are just easier to teach if you can visualize it in 3D. 3D may also be more helpful in engaging students and can create a marketing value proposition for the school. Modeling astrophysics or fluid dynamics or weather systems takes super computers typically at university centers. To output this data with lots of pixels in 3D requires a very high end display system. Desktop and conference room solutions have existed too, but the new wave is a new class of DLP projector that is being aimed at mainstream education markets. To open up the mainstream education markets, we will need a lot more content, which will start to flow. The more obvious ones are anatomy, biology, astronomy, etc. But technical schools for showing simulation of various algorithms, engine design and maintenance are obvious too [6].

3D can be application in modern educational environment. DLP projectors can be upgraded to accommodate 3D, buying a new projector may cost less than paying a technician to travel, install firmware and travel back. Two projector solutions can be crafted using LCD, LCOS, or DLP technology. These can feature polarization methods to separate the two images at the eye or spectral filtering methods. If you want a single projector solution that works by doubling the frame rate to 120Hz (60 Hz/eye), the only solution today is DLP. These require active shutter glasses to open and shut the electronic filter in front of each eye in synchronization with the L/R eye images.[7]

The new imaging system looks exciting that may interest many a technologist into bundling the 3D functionality within their own innovations to add a competitive new dimension to their products. We have already seen 3D applications in motion pictures, outdoor media, television, virtual worlds (video games) etc. But one wonders in which direction the 3D technology is headed. Considering the technological development aspect, we can foresee a lot of convergence happening in the era. We can anticipate a virtual world of 3D images, which could be the next big thing. This would open up various possibilities, including advanced research in space related matters. However, this is just peep into the future and is all in the realm of conjecture.

4. ROAD BLOCKS IN 3D E-LEARNING PROCESS:

3D equipments are quite expensive to use for the consumers until prices come down, rather than homes. But as more and more manufacturers get involved to find new application areas, competition will bring the prices down. It seems, the future belongs to 3D technology. Following are some of the roadblocks in adopting 3D technology in the education field:

a. Lack of content

b. Cost of 3D active shutter glasses

c. We need to educate the education community about the technology

5. PRODUCTS TO ENHANCE E-LEARNING & M- LEARNING:

Some products can be efficiently used to enhance E-learning which are as follows.

a. 3D Monitors:

3D monitors display brilliant graphics which extreme realism. Along with powerful performance, 120 Hz frame rate combined with ultrafast video response up to 1680x1050 resolution and a high contrast ratio, these monitors deliver immaculate blur- free motion and realistic 3D rendering.[12]

Figure 1: 3D Monitor

b. 3D Cameras:

If 3D image is captures it is akin to the way our eye see. A pair of human eyes produces two slightly offset images of the same scene, which the brain combines to perceive depth. To achieve a 3D image, it is necessary to flawlessly layer together two images. Moving into the camera territory which used to lenticular method lets users enjoy 3D images without wearing special 3D glasses. Earlier a 3D image could only be achieved by using two different cameras, as the creation of a 3D image involves shooting two identical pictures from the same perspective with a slight gap between the two cameras. It then required flawlessly layering together these two images. Now, it is possible to capture a 3D image using single camera.[8]

Figure 2: 3D Camera

c. 3D projectors:

3D projection is any method of mapping three-dimensional points to a two-dimensional plane. As most current methods for displaying graphical data are based on planar two-dimensional media, the use of this type of projection is widespread, especially in computer graphics, engineering and drafting [17].

3D projectors come with flexible, eco-friendly features and enhanced 3D display capabilities. These projectors come equipped with advanced network management capabilities, multiple inputs and 120hz refresh compatibility for immersive 3D experience, these projectors are ideal for classroom, corporate and gaming purpose.

Figure 3: 3D Projector

d. 3D movies:

Images are widely adopted by the Hollywood film industry. 3D movies from Walt Disey, Sony Pictures and Dream Works have been great this at the box office. Many movies studio are preparing 3D versions of their forthcoming and past movie releases. Viewers have to wear 3D glasses but these are stereoscopic glasses not the old anaglyphs with rend and green plastic lenses.[11]

e. 3D webcams:

3D webcam allow users to appear in 3D over Skype or any instant messaging service, as long as the person watching the user is wearing 3D glasses. The Minoru 3D Webcam is a stereoscopic webcam produced by Promotion and Display Technology of Salford, Greater Manchester [14],[15]. Released in the January of 2009, it won the "Fans' Favorite" award at the Consumer Electronics Show, in Las Vegas [16]. According to the company, it is the "world's first consumer 3D-webcam."

Figure 4: 3D Webcame

f. 3D mobile phones:

The 3D mobile phones are upcoming 3D display mobile phone. The new LG Optimus 3D is one of the 3D mobile phone. It is rumored to be the 3D version of the LG Optimus 2X.The new LG Optimus 3D is expected to be powered by the Nvidia Tegra 2 platform. It will be the first 3D mobile phone and also the world's first 3D smart phone. It will feature 3D Recording-Viewing-Sharing of Life's Precious Moments Anytime, Anywhere [13]. Many other companies are also launching 3D smart phones.

Figure 5: 3D Mobile Phones

6. FUTURE OF 3D IN E-LEARNING & M-LEARNING:

In the latest era of technology the term second life has evolved In Second Life, the Michelin Group, for example, has an "extremely successful complex training program and interactive simulations for training worldwide employees in Enterprise Architecture. Second Life is that there's something really compelling about conducting meetings and events in virtual worlds. You really feel like you are more there. I also think there are some incredible opportunities to use things like Second Life to create virtual learning experiences very much like the experience of visiting the actual places without travel or cost of the venue. Forms of this are happening already.

So to answer the question directly:

- Virtual worlds offer the possibility of creating some incredible learning experiences, however,
- Current technical and learning curve adoption hurdles make it a niche technology, thus
- If I'm creating a new company, product, etc., I'm pretty skeptical about basing it on these technologies.

My belief is that true 3D virtual worlds like Second Life will remain a bit more of a niche. But I think there's something that will come in from the back door that could cause significant adoption by 2015

We've reached a tipping point for web conferencing where it's equivalent too and often preferable to face-to-face. It can be predicated that a for a few years that we would see adoption by mainstream web conferencing / video conferencing tools of something I would call a 2.5D environment. Give people an avatar or picture. Allow something along the lines of conference seating and break out rooms with separate voice streams in each. But I've yet to see this materialize. I think this changes the adoption dynamic entirely.

7. CONCLUSION:

Day by day 3D Technology enabled products are increasing as well as 3D films indicates how consumer's interest is being revived in the 3D technology. The most engaging 3D learning, training and education infrastructure is now available to enterprise and educators. 3D technology platform providers had already announced compatibility with online learning management systems. This is most exciting breakthrough and has massive implications for 3D training, learning and collaboration for enterprise.

The framework and method for understanding the new generation of learners - Practicing collaboration skills through role-play activities in a 3d virtual, the effects of new technologies on education, future learning content, which aims to gather the newest concepts, research and best practices on the frontiers of technology enhanced learning from the aspects of learning, pedagogies, and technologies in learning in order to draw a picture of technology enhanced learning in the near future. Some issues like E-learning. The most engaging 3D learning, training and education infrastructure is now available to enterprise and educators, thanks to 3D technology platform provider. With the integration of Blackboard to the 3D web, virtual learning and training in genuine 3D is now available within a structure 3D Learning management system. Universities can now deliver their entire campus from their website, providing immersive 3D education outcomes using existing learning management systems.

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