

Technological Advancements in Shaping the Future of Higher Education Institutions

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ABSTRACT

Students are exposed to numerous technological advancements which help them to learn what they want. Teacher as a facilitator must have the knowledge of these technologies to support them in the due course. Smart classroom dominate the traditional ones by engaging the students more than what a lecture class do. Their cognitive skills undergoing advance changes to accommodate what they learn from these e-learning platforms. This paper focus on the recent technologies used in the field of education, like Virtual reality, cloud computing, augmented reality, hologram, 3D printing, online social networking, flexible displays, biometrics-eye tracking, and multi touch LCD screens.

1. Introduction

Quality Education helps in shaping the society in a creative and reflective way. The quality beholds the key to betterment of future generation. Classrooms are the place where students get quality education and teacher paves the way for it. In the digital era, technology no longer be a strange thing in the classroom neither for the students nor for the teacher. Both of them should equip with technological skills required for mastering their learning experience. Technological advancements in the society, directly or indirectly change the shape of classroom in the course of action. Education cannot repel this changes going on in the world. For this our classrooms must be digital friendly, well equipped for accommodating them, and both students and teachers must be in a state of readiness to welcome and practice them. Identifying students' technology proficiency and acceptance is a critical step for designing and/or redefining technology-enhanced courses and programs (Nami, 2018). To make our children for future, to be exact for a global nature, technologically concentrated education is necessary and it is inevitable too. Stroeve (2019) in her study found that new remote technologies are implemented into the system of education each year, which are a basic prototype of smart technologies. The prospective teachers knowledge in innovative technology is very limited (Lukyanova, 2001; Raven, 2002). The pedagogic communications may be improved if training in the professional knowledge of innovative technologies is given.

2. What are the technological advancements?

As technology becomes ubiquitous in society, there is growing momentum to incorporate it into education. Educating the technological savvy generation is not that easy but it does not mean that it is impossible. Careful selection and implementation of the technologies in today's classroom makes everything possible. Firstly identify the technology available for a particular purpose and study them. If it is feasible for the classroom instruction purpose, it can be utilized. Digital integration is possible through the use of technological

advancements. Teachers expressed positive views of technology in general, displaying high technology efficacy and valuing the development of technology skills in their students (Jones, 2017). When there is enough positive attitude towards the use of technology in the classroom the goal not far away. Teachers revealed that technology was positive for students with disabilities, differentiating instruction, and providing twenty-first-century learning opportunities (Regan, 2019). Since there is an increase in access to the technologies finding out the most suitable for learning purpose is little bit tedious task. But incorporating the latest technologies, the effectiveness of teaching and learning process can be raised (Vawn, 2018). Let us see the latest technological advancements in the field of education.

2.1. Virtual reality

Virtual reality is an experience taking place within simulated environment that can be similar to or completely different from the real world. Virtual Reality is a technology in which there is a unique student-friendly interface, gesture controls, embedded educational resources and simple-to-use teacher controls. It helps to raise engagement and increase knowledge retention for students of all ages. VR can have a transformative impact on knowledge retention and student engagement. It is also found that VR will increase permanence by creating active learning environments (Yildirim, 2017). The sense of reality, feeling the ambience presented by the technologies can be listed as participants' preferences in choosing virtual reality in technology directed instruction.



2.2. Cloud computing

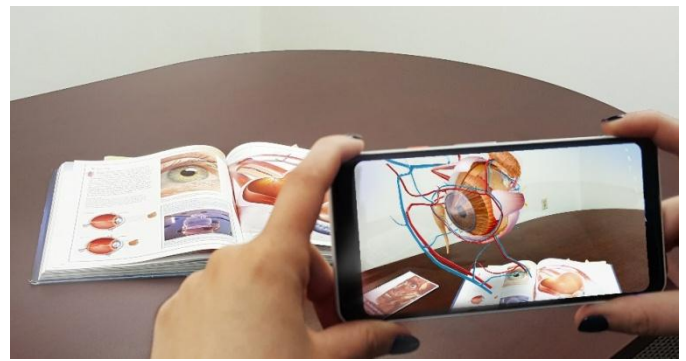
Cloud computing is the on-demand availability of computer system resources without direct active management by the user. The term cloud is generally used to describe data centers available to many users over the Internet. Cloud computing is continue to change many aspects of our society, particularly education. By cloud computing students just need an electronic device to access all their homework and all other learning resources in the Cloud. It is a natural platform to provide support to e-learning systems (EI Mhouti, 2018). No more lugging heavy textbooks to school, and having constant access to your reading materials as long as you are connected to internet. Students can conveniently work on their projects or homework anytime and anywhere. Singh (2019). Conducted study on Factors Affecting Cloud Computing Adoption in the Indian School Education System and found that organizational factors; and competitive pressure, external expertise and attitude towards change representing environmental factors were found to have a positive and significant influence on the adoption of cloud computing services in the Indian school education system. So when educationists try to adopt cloud computing, the above factors will be taken care well.



2.3. Augmented reality

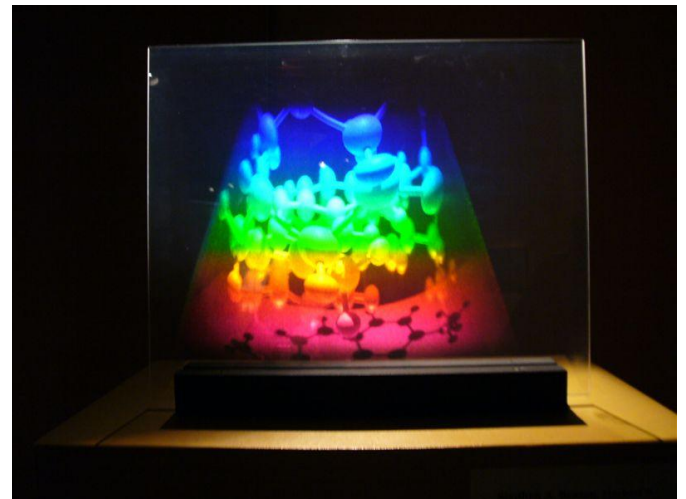
Augmented reality is a technology provides a composite view of user's the real world by superimposing a computer-generated image. It adds digital elements to a live view using the camera on a smartphone. It allow us to see the real-life environment right in front of us with a digital augmentation overlaid on it. Augmented reality is one of the biggest technology that is trending. AR ready smartphones and other devices are on a developing stage and when it became more accessible around the world AR will become a bigger technological development.

In education, it helps the students easily acquire, process, and remember the information. Thus makes learning itself more engaging and fun. Students are very excited of using augmented reality for the first time in their learning (Sural, 2018). By the use of augmented reality in the classroom can turn an ordinary class into an engaging experience. It makes the class become more interactive and helps students better remember the information they've just learned.



2.4. Hologram

Technological developments are playing a significant role in improving the educational process especially the integration of holographic presentation in the area (2015). Hologram is a three-dimensional image created by recording the actual image of an object and presenting it with light beams using laser technology, which can be seen with the naked eye. Typically, a hologram is a photographic recording of a light field, rather than an image formed by a lens (like the human eye). The hologram is usually unintelligible when viewed under diffuse ambient light. The images created are also static, but they are refreshed every two seconds, creating a strobe-like effect of movement. This gives visual and interactive learning experience to students. It makes the process of learning clearer, more interactive, and more interesting; thus makes learning more effective.



2.5. 3D printing

Nowadays a 3D printer should really be a must-have in classrooms. Removing the restriction that what they can play with, students in the future classroom can print out 3D models for various purposes, including for their presentation purpose. Subjects that require some form of visualization make use of this 3D printing technology. By the use of 3D printers teachers will be able to reconstruct complex concept models to teach theoretical concepts. Students who learned using the 3D printing technology understood abstract scientific concepts better than those who learned using the traditional hands-on tools (Hsiao, 2019).



2.8. Biometrics-eye tracking

One of the recent technology that's been gaining recognition is biometrics. Basically biometrics are associated with the security, as it uses what is unique to each one of us to authenticate our identity. The identity by using fingerprints, facial recognition, iris patterns and voice. In the field education, some schools are using fingerprinting to prevent truancy and in school library to keep record of books issue and return. Eye-tracking is found to be helpful for instance, in providing invaluable feedback for teachers to understand how students absorb and understand the learning content.



2.6. Online social networking

Social media, an attractive product of Computer and Internet technologies has a growing usage level day by day. Increasing social media usage level gives opportunity for new software developments (Tezci, 2017). Online social networking sites allow the teachers and students to share their ideas in an open platform. Many universities have already into this and registered themselves with the online virtual world to provide larger access to the learners. This also allows them to socialize with each other. This is a very permitting notion because it will instil learners with a new perception that learning is a personal responsibility and not that of the teacher's.



2.9. Multi touch LCD screens

There is a transition from blackboard to whiteboard, then overhead projector to video projector in the education field. As technology is running ahead, the next "board" is likely to be a giant touchscreen LCD screen which allows a greater amount of interactivity for the users. The major feature with this new "board" is that it will be capable of detecting multiple touch inputs from many students simultaneously. This enables users to perform multiple finger gestures such as free rotate, pinch and spread in the elementary level (Razali, 2017). In Higher Education scenario, multi touch screens play a significant role in exchanging the ideas in an interactive roundtable platform.

2.7. Flexible displays

Taking notes is a very basic feature usually seen during lectures, though there is a shift from paper to laptops, netbooks or tablets. In this digitalized era how will the future classroom is quite interesting. Johnson (2010) revealed through his research that flexible displays are in the far term horizon of technology for effective teaching. But now there is flexible OLED available to serve the purpose. Just like regular paper, these displays will be lightweight, flexible and extremely thin. And this can roll them up into tubes or fold them like newspapers.



3. Conclusion

Today's children is having very short attention spans as researches shows. They are revolving around 24 hours' updates in YouTube, Facebook in smartphones and internet. They find solutions for their every problem through Google and Wikipedia. So to cater to such generation, we can fast paced generation, traditional teaching methods have no role.

Willingness to use the technology by the teacher in their instruction and response of the students towards technology both influences the extent of technology integration in the classroom. Attitude of both of these stakeholders has a direct

effect on using these technology. The purpose of technological integration will be realized and optimum utilization will be confirmed.

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