

# Recent Trends of Research in Educational Technology

**Research were Conducted in Educational Technology on following Technology:**

- ✓ Cloud
- ✓ Telepresence
- ✓ Mobile learning
- ✓ E-books
- ✓ Augmented reality
- ✓ Gesture-based learning
- ✓ Visual data analysis
- ✓ Student Response Systems
- ✓ Learning Record Stores
- ✓ Game based learning

## **Cloud Mobile Learning:**

Cloud computing is a model for enabling network access to a shared pool of configurable computing resources (Mell & Grance, 2009). In its initial stage it was used mainly for storage. Mobile cloud learning is an amalgamation between cloud computing and mobile learning(Hirsch & Ng, 2011). It integrates the cloud computing into the mobile environment and overcomes obstacles related to mobile computing (Dinh, Lee, Niyato, & Wang, 2011).



- Cloud technology is expected to play a greater part in learning, especially in the way people can contribute to a document together.(Calvo et al, n.d)
- Cloud learning is in the initial stages of being used by many educational institutions as a replacement or supplement to their traditional teaching practices. One of the main reasons is as a means of reducing expensive IT costs while providing a service that is easily accessible from any kind of device.

### **Telepresence:**

The use of virtual reality technology, especially for remote control of machinery or for participation in distant events. It provides a sensation of being elsewhere, created by virtual reality technology (Educause, 2009).

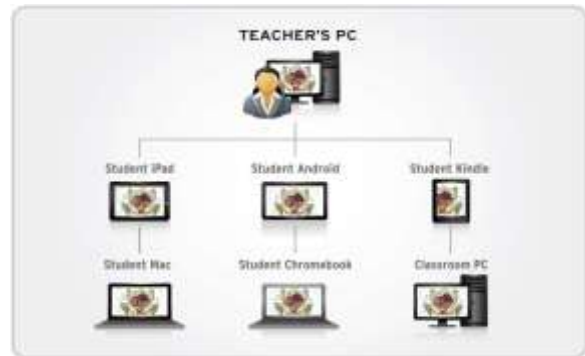


Telepresence refers to the application of complex video technologies to give geographically separated participants a sense of being together in the same location. The technology uses high-definition cameras, localize sound to image. Telepresence rooms contain furniture and displays which are arranged in ways that further enhance the simulation (Educause, 2009). The participants sit at a conference table and see high-resolution video of participants in remote locations at similar tables. This allows them to imagine they are sharing a single table. This technology will play a greater part in learning (Cisco, nd)

## Mobile learning:

Mobile devices such as tablet computers and wireless touch-screen readers will be significantly more affordable and accessible in the year 2030 (Shuler et al, 2013). They are trending to be more easily portable, and are affordable by individuals.

Their ability to access the internet and networks, and the fact that they are multi-media capable makes them ideally suitable for mobile learning. With the advent of more 'apps' (applications) to support mobile devices, it will be possible for mobile devices to be used seamlessly to support online and distance learning (Education World, 2014)



## E-books:

E-books or electronic books have been replacing traditional books in the classroom. In the words of Roberts (2012) "The tide of e-ink is rising". The introduction of eBooks facilitate learning on devices at home, on the bus, in the hallways, but more importantly at any location.

When students want to know how to do something on their own, they rely on Internet research and communication with their friends. They are comfortable with the digital environment, and they look to it for instruction and for fun(Miller, 2013).



EBooks engages reluctant readers and busy students who are looking for an exciting way to access reading material 24/7 (Miller, 2013). They are now able to highlight, define and/or take notes within the eBook itself (Miller, 2013). Ebooks foster a learning environment and creates a more interactive reading experience for the

students (Miller, 2013). The author emphasizes the benefit to the learner of being able to adjust font size on-screen helps students with dyslexia and visual impairments to read more easily.

### **Augmented Reality:**

Augmented reality (AR) is a live direct or indirect view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data (Wikipedia). The process involves superimposing digitally rendered images onto our real-world surroundings. This provides a sense of an illusion or virtual reality. This technology is now accessible using a smartphone.



With Augmented Reality students manipulate and combine elements from their Android or iOS devices, rather than just reading about them in a textbook (Edutopia 2013). Two examples of apps which use this technology are Google Sky Map which automatically identifies stars and constellations which appear on a camera lens and GeoGoogle which allows the learner to calculate altitude and the distance between two points using a 3D compass. Augmented Reality is gathering pace in education (Bloxham, 2013).

### **Gesture-Based learning:**

Gesture-based computing refers to interfaces where the human body interacts with digital resources without using common input devices, such as a keyboard, mouse, game controller, or voice-entry mechanism. Gesture-based



computing enables three-dimensional input that involves users in the computing activity. These interfaces could enable a more active and intuitive learning style that often seems more like play, and one particularly promising area is the combination of gesture-based computing with augmented reality.

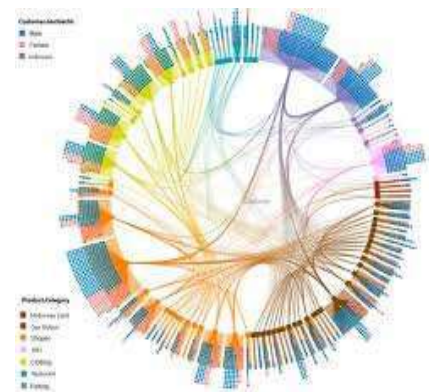
Gesture-based systems may offer new ways to interact with immersive 3D content and to investigate immersive scenarios. This allows students to interact with the content. The technology is already in use with games and exercise equipment such as the Nintendo Wii and Xbox games. Osborne (2012) indicates that with a rise in gesture-based devices such as iPads this trend can only increase.



### Visual data analysis:

Visual Analytics is the science of analytical reasoning supported by interactive visual interfaces. The complex nature of many problems makes it indispensable to include human intelligence at an early stage in the data analysis process.

Visual Analytics methods allow decision makers to combine their human flexibility, creativity, and background knowledge with the storage and processing capacities of today's computers to gain insight into complex problems. Borner (2012) indicates the increased use of this technology due to its ability to process and analyze large chunks of data.



Using advanced visual interfaces, students may directly interact with the data analysis capabilities of today's computer, allowing them to make well-informed decisions in complex situations.

## Student Response Systems:

Student Response System - This is a system whereby an SRS is a wireless response system that allows faculty to request information and for students to respond by using a “clicker” or hand-held response pad to send his or her information to a receiver. The use of SRS is where there is massive enrollment in courses (A Teaching with Technology White Paper <http://www.cmu.edu/teaching>)



Students can be kept engaged in class with student response systems.. They ask a question and track immediate responses. With detailed reports, educators will know more about learner comprehension and progress around curriculum. SRS facilitate greater interaction in the classroom and encourages discussion and participation -

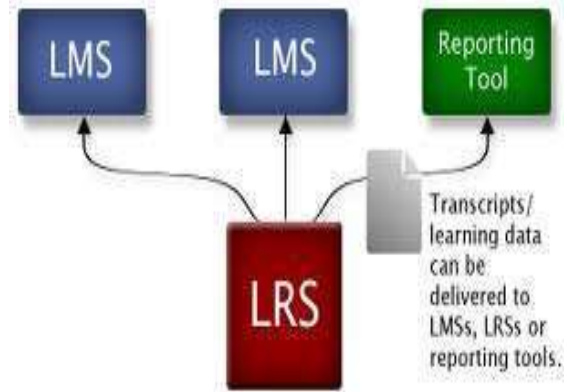


(SRS) consists of individual student transmitter/input devices (keypad, remote, PDA or laptop), receivers, a master/central/host system with software used to electronically gather and tabulate student response, and infrastructure (sensors, wire, conduit) to support the system. Administration is

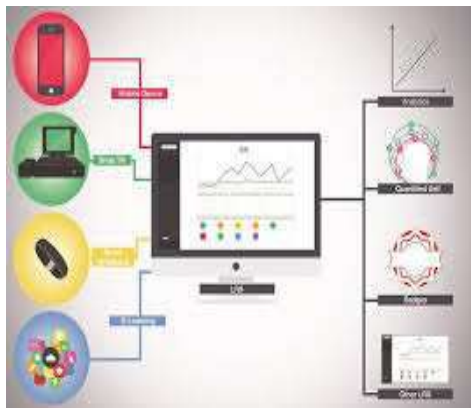
required to manage the assignment, registration, inventory and control of the student input devices, as well as resources for operations and maintenance of the system over its life cycle.

## Learning Record Stores:

A Learning Record Store (LRS) = a place to store learning records. The LRS is a new system that goes hand in hand with the Tin Can API. As Tin Can enabled activities generate statements, they're sent to an LRS. The LRS is simply a repository for learning records that can be accessed by an LMS or a reporting tool. An LRS can live inside an LMS, or it can stand on its own.



The data stored in an LRS can be accessed by LMSs, reporting tools, or other LRSs, and can be stored as individual learning records and/or entire transcripts. An LRS can limit who can read and write learning records, but doesn't have to.



SCORM and other e-learning standards only store a certain amount of learning data. Tin Can allows for the LRS to store nearly everything, which means better reporting and a much more accurate picture of learners. An LRS can use the LMS's reporting tools to make meaning of the LRS's data, or it can live on its own with its own reporting tools.

LRSs can share data amongst themselves, so learners and data can be transferred from one organization to another. Statements can also be sent to multiple LRSs (personal and employer's LRS.”)

## Game based learning:

Game based learning describes an approach to teaching, where students explore relevant aspect of games in a learning context designed by teachers (EdTech, Review, 2013). Teachers and students collaborate to add depth and perspective to the experience of playing the game.

Game-based learning applications can draw the learner into virtual environments. These environments work toward a specific goal. The learners choose actions and experiencing the consequences of those actions along the way. They take chances and make mistakes in a risk-free



setting They can experiment and actively learn and practice the right way to do things. Game based learning keeps the learners highly engaged in practicing behaviors and thought processes that can be transferred from the simulated environment to real life.

“Gamification” and “Game Based Learning” are not the same. Gamification refers to game like principles in the classroom. GBL helps students with collaboration, experimentation; improve problem solving skills, raise IQ levels and application of the concepts in math or science (Roche, 2014). Roche believes that GBL can 'fix' what is wrong with the 'broken' education system. This type of learning is being supported by the Microsoft Educator Network.



In Global Demand for Game-Based Learning, Simulations on the Rise by Sean Cavanagh (2013) explains that revenues in 2012 were \$1.5 billion, in U.S. dollars, and will grow to \$2.3 billion by 2017, an 8 percent increase based on the five-year

compound annual growth rate.