

# Enhanced Learning and Retention of Course Content among Global Education using Multimedia Aids

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**Abstract:** *Distance education has been very popular in the modern and busy life of students. There are several traditional methods of learning is already in practice including book reading and personal contact programmes (PCPs). The multimedia has played a significant role to blend the distance education system and the modern information boom. It is necessary to rethink afresh how teachers are distributing their course content and experiences locally as well as globally as the input to those students. It is observed that the traditional learning processes in distance education is found less effective in comparison to blended learning and practicing with multimedia tools. The question arises in the present scenario is how often the students are grasping the delivered content in their busy minds and for how long time? There is a large range of multimedia devices are being used by one in daily use from costliest to affordable. Retention of course content can be improved through a variety of blended learning experiences by effective multimedia aids with memorization process. The focus of this paper is to admit effective aspects of methods and strategies in enhancing the learning and retention of the course content among distance education students globally.*

**Keywords:** *Retention, Learning, Multimedia, Blended*

## 1. Introduction

In this fast growing world, it is very difficult to assume that anyone would be able to live without communication technologies (radios, televisions, telephones, and the latest forms of communication such as computers and cell phones). Educational systems are changing at great speed and the technology is changing rapidly. Older technology is replaced by new technological phenomena and the new ones are being adopted and these are affecting the educational systems.

In many countries, many university systems have adopted distance education to solve their educational dilemmas. What higher education systems can do for their societies are to improve and to reinforce the present educational systems, to utilize distance education in the most proper way by applying the advanced communication technologies.

Distance education is distinctively and widely acknowledged for its exhaustive utilization of information and communication technologies for teaching – learning process. A variety of media such as radio, television,

computer and Internet etc are being used to provide the learning materials by many Open and Distance Learning (ODL) Institutions. As a result, course delivery in such institutions is multi-channel and multi-media mix (Kulandai Swamy, 2002). The requirements of the distance education for developing the course material using the multi-media approach has necessitated, apart from print material, embracing of technologies such as radio, television, audio and video cassettes. Last decade has witnessed a virtual explosion in the advancements made in several areas of technology especially those relating to computer, networking and communications, which have a direct bearing on the distance education system.

The purpose of this paper is to measure the learning, memorizing, reproducing and evaluating processes using various systems of distance education and to compare the effectiveness of electronic and multimedia communication to the traditional methods of communication affecting the nature of distance education.

## 1.1 The Cognitive Approach to the Study of Learning

We cannot see good thinking. Nor can we see its content or its processes. As a result, cognitive psychologists use metaphors to describe what they cannot see or touch. Their metaphors are ways of talking about things too abstract to describe literally or precisely. Almost all cognitive approaches to learning are concerned with how everyday experiences are transformed or processed into mental images or sounds and stored for later use. In other words, they are concerned with how information is processed.

Cognitive approaches to learning differ from behavioral approaches in three respects: (1) types of learning examined; (2) research methodology; and (3) extent of human learning examined.

As a teacher, one of the goals will be to help our learners become good thinkers. The question is how to teach good thinking in the classroom and what cognitive psychologists have discovered about the best ways to teach learners to be good thinkers. There are two categories of cognitive instructional methods: the earlier cognitive models of instruction that incorporate notions of discovery learning (Bruner, 1961) and meaningful verbal

learning (Ausubel, 1968), and the most recent models based on social learning theory (Zimmerman, 1990) and social constructivist notions (Brown & Campione, 1986; Vygotsky, 1987).

### 1.2 Dale's Cone of Experience

The figure-1 below shows what students will be able to do at each level of the Cone (the learning outcomes they will be able to achieve) relative to the type of activity they are doing (reading, hearing, viewing images, etc.). The numerical figures on the left side of the image, what people will generally remember, indicate that practical, hands-on experience in a real-life context will allow students to remember best what they do. Again, it is important to remember that this doesn't mean reading and listening are not valuable learning experiences, simply that "doing the real thing" can lead to the retention of the largest amount of information. This is in part because those experiences near the bottom of the Cone, closer to and including real-world experiences, make use of more of our senses; it is believed that the more senses that are used, the greater our ability to learn from and remember an event or experience.



Figure 1: Dale's Cone of Experience

## 2. Learning and Retention Methodology

Learning is defined to be "storage of automated chunks or groups of multiple individual units of memory that are linked into a system of understanding in long-term memory".

In a distance education system (DES), teachers and learners are physically separated and the instructional materials are delivered via telecommunication systems. The global application of the DES has proven to be an approach that is both successful and useful in education. Based on technological, structural and financial capabilities, a number of technologies are being applied in higher education systems for distance learning.

**i. print media** (textbooks, study guides, study aids, and newspapers),

**ii. audio media** (Audio-books, audio-cards, records, audio-cassettes, reel-to-reel audiotapes, audio compact-discs, telephones, cell phones, audio-texts, radios),

**iii. video media** (Televisions, satellites, direct broadcast satellites, cable televisions, closed-circuit televisions, Podcasts and vodcasts, DVDs, Blue-ray Discs,

teleconferences, microwaves, interactive videos, teletexts, videotexts, computer internets, blogs, e-mails, chatrooms, discussion boards and multimedia)

They are being used to convey messages in terms of specific educational objectives to deliver and disseminate instructional materials to learners effectively.

### 2.1 Learning Principles

A set of principles related to electronic media and modality are listed below. They are based on the work of Richard Mayer, Roxanne Moreno and other prominent researchers.

1. **Multimedia Principle:** Retention is improved through words and pictures rather than through words alone.

2. **Spatial Contiguity Principle:** Students learn better when the corresponding words and pictures are presented near each other, rather than far from each other on the page or screen.

3. **Temporal Contiguity Principle:** Students learn better when corresponding words and pictures are presented simultaneously rather than successively.

4. **Coherence Principle:** Students learn better when extraneous words, pictures, and sounds are excluded rather than included.

5. **Modality Principle:** Students learn better from animation and narration than from animation and on-screen text.

6. **Redundancy Principle:** Students learn better when information is not represented in more than one modality – redundancy interferes with learning.

7. **Individual Differences Principle:** Design effects are more advantageous for low-knowledge learners than for high-knowledge learners.

8. **Individual Differences Principle:** Design effects are more advantageous for high-spatial learners rather than for low-spatial learners.

9. **Direct Manipulation Principle:** As the complexity of the materials increase, the impact of direct manipulation of the learning materials (animation, pacing) also increases the understanding, memorizing, reproducing and reevaluation.

### 2.2 Retention Strategies

#### Chunking

Perhaps Chunking is the oldest method used in memorization. In this method, the items to be memorized are divided into small and easily memorizable chunks or

groups. This method works best when the order of the items is not important.

This method is found to be particularly well suited for memorizing multi-digit numbers (e.g., ID nos., telephone nos., etc.) and for committing complicated spellings to memory.

#### **Rhyming**

This is also one of the popular and oldest methods in memorization. This technique makes use of the fact that we have a natural tendency to remember rhymes and rhythms.

#### **Mediation/Bridging**

In this method, a bridge is built in between the items given to be memorized. This technique is best suited for learning material involving word pairs or material that can be reduced to word pairs. An example often cited by memory experts is the learning of the capital of Poland. The capital of Poland is Warsaw. World War II started with Germany's attack on Poland. Thus it may be arranged as *Poland SAW War first*.

#### **Bed-time Recital**

In this technique, recital or rote learning is done just before going to bed. The mind in the process of sleeping would then arrange the information in a systematic and effective way learner is sleeping. Psychologists have also found that if learner sleep after thinking about the problems there is a better chance that a solution will arise the next day.

#### **Trying by Not Trying**

Sometimes when students try to recall they may not be able to do it at that time even if they are sure that they know it very well. They experience a blocking that prevents them from recalling it. Normally they tend to try again and again but in vain. If they just keep away from trying to recollect it and do something else; that information automatically pops up into their mind after some time. The information was blocked when they wanted, and mind brings it forward when the blocking is removed.

### **3. Components of Multimedia Instructional Material**

The importance of transmitting *instructional materials* to distant learner through print, audio and video media, and to deliver messages have always been stressed (Chung, 1991). These technologies and media can be applied in both traditional and modern forms of distance educational systems. One may define them as follows:

#### **3.1 Audio Media**

##### **Audio Book**

Anadolu University in Turkey, in a project for 300 blind students, is using audio-books in music and drama classes as infrastructure. This has enabled them to study on their own. The courses are provided with the books that are vocalized radio-phonically. The subjects are distinguished from one another by music and the narration is enriched

via emphasizing on the important sentences in the topic (Ozgur & Kiray, 2007).

##### **Audio-Card**

Audio-card is a traditional medium which was used in some distance education systems. It is a magnetic medium which helps the learner to listen words and repeat them at the same time as she/he sees the words in print. The learner can record her/his own voice and play it back for comparisons and corrections. This medium is a very appropriate medium in teaching foreign languages, mathematics, and especially, if accompanied by pictorial materials, it can add to the quality of the instructional messages (Lewis, Harclerod, & Brown, 1977; & [Bezard, & Bourguignon](#), 1994).

##### **Record**

The record is another traditional medium that is primarily used for sound effects (Burrows & Wood, 1982) and music (Holmberg, 1995 & Wikipedia, Foundation, I., 2010). It is a medium used in teaching, too (Parker, 1986). Reid and Day (1942) mention that radio and records were popular classroom media in 1940s.

##### **Audio-Cassette & Audio-Tape**

Cassette is also a traditional medium which became much more dominant than reel-to-reel (Jamison, Suppes, & Wells, 1974; & Kemp & Smellie, 1989). Recording tapes requires no special skills or equipment, and a teacher can easily record her/his instructions or lectures on tape. Combinations of sound and sight lead to greater learning (Davies, 1971) and, along with print and radio media, audio cassettes are used widely (Perraton, 1993).

##### **Audio Compact-Disc (Audio CD)**

The newer form of audio media is the audio compact disc which is used as an independent source (Barron, [Orwig, Ivers, & Lilavois](#), 2002) or in conjunction with web or online learning ([Notar, Restauri, Wilson, Friery](#), 2002; & Skylar, 2009). In compact-disc, the audio materials are recorded in a digital format and in play-back mode; sound is heard in a crisp and high-fidelity form (Liu & Chang, 2001).

##### **Compact Disc (CD-ROM)**

Compact disc read-only memory (CD-ROM) is a disc which allows storage of vast amounts of audio and video information and reduces the cost of production, distribution, and storage of printed materials (Bateman, 1986). Hitachi Company has developed on an erasable laser disc with a high capacity and a rapid accessibility (Wedemeyer, 1986). Nowadays many students in the language fields use encyclopedias on CD-ROMs (Tochon, 2009).

##### **Telephone**

An answer to the criticism that education via television and computer carries no human communication touches is the application of telephone. It brings learner and teacher together and to some extent fills the gap between them. Because of the mobility of the cell-phone or mobile, it has the flexibility in terms of space and its function is similar to telephone except that the telephone is cheaper. Poling (1994) explains that at Clemenson University

through a modem, any learner at home is able to dial her/his telephone to the computer system on campus.

#### **Mobile Phone/Palmtop**

Telephone is replaced by mobile phone as a newer form of overcoming the lack of direct contact between the teachers and learners but it may not have been adapted universally (Baggaley, 2008). In Asia cell phone is being used widely and educators have suggested the design and logistical principles for its use in educational systems ([Librero, Ramos, Ranga, Trinona, & Lambert, 2007](#)).

#### **Audio-Text**

Audio-text is a kind of technology in which the dissemination of text, particularly electronic word-processing and hypertext with sound and pictures are possible via the computer and telecommunication networks (Levinson, 1989).

#### **Radio**

Radio is an appropriate medium to present music performances, speeches, and discussions and the learners can record via radio and can develop their skills in their own location. Radio is specifically useful to teach philosophy, literature, history, language, and linguistics (Feasley, 1982; as cited in Gray, 1988). The University of Nairobi has used radio with its correspondence program successfully (Perraton, 1993).

In developing countries, radio is still one of the main media in distance education (Karim et al., 2001; & [Reddi & Mishra, 2005](#)).

### **3.2 Video Media**

In a report from the Task Force on Distance Education and Training in Professional Psychology, The American Psychological Association (2002) mentions the application of varieties of media in distance education are: television and computer in their newest forms (satellite, microwave, cable-television, interactive TV, television, direct broadcast satellite, and computer). In addition to television, film was the common medium in instruction (Jamison, Suppes, & Wells, 1974). Video was also mainly used in therapy teacher education, and in teacher training as self-confrontations in which individuals recorded them and played it back for further studying (Fuller & Manning, 1973).

#### **Television and Satellite**

Television is a complementary learning medium which interacts with learners and influences the structure of mental representations and cognitive processes of the learners (Kozma, 1991). Television courses can be presented in two basic forms: long range transmission (satellite) and short-range transmission (cable) (Eisele & Eisele, 1990). Television transmission is usually a one-way video or a two-way audio interaction by phone.

Satellite can be used to transmit any content, including voice, data, and video and can meet rapid expansion of telephone, television, teleconferencing, electronic mail, data communication, and others (Wedemeyer, 1986). In satellite transmission a space station is used to relay signals. A large station dish is placed on the ground to

send and receive signals to and from satellites (Oakey, 1983).

Because of the satellite usage in eleven campuses of Tiffin University, its student population has risen by more than 50 percent between the years 2003 and 2008 ([Blumenstyk, 2008](#)).

#### **Direct Broadcast Satellite**

Direct broadcast satellite is intended to disseminate information directly from the satellite to home receivers, but, at present time, people can receive signals by placing a satellite dish in their backyard or on their specifically designed computers which are utilized as mass storage devices (Meadow, Singleton, & Gordon, 1983).

[Pemberton, Fallah Khair, and Masthoff](#) (2005) developed a project in which they showed interactive television (ITV) and direct broadcast have great potentials in teaching second language.

#### **Cable Television**

Cable television is a form of transmitting content in short distances through coaxial cables which disseminate messages in higher fidelity than regular telephone wires. Local television stations, local radio stations, pay cable services, and basic cable services use wire to transmit their signals. The signals are received from broadcast antenna and from satellite by cable facilities and then these signals are placed on buried cables under the ground (Gross, 1983). Cable television has wide application in education. Japan uses it to disseminate instructional materials (Wedemeyer, 1986).

#### **Closed-Circuit Television**

In closed-circuit television, a limited number of students have access, and it can specifically be appropriate for educational applications, fires, floods, and security systems (Meadow et al., 1983).

Homes have become classrooms for children and adult students and new delivery systems have stimulated the development and use of technological applications for teaching and learning. Foremost among them are wireless devices, such as laptop and handheld computers. Video materials are increasingly being delivered by a variety of distribution systems, such as video streaming on the Web, video conferencing, synchronous teaching and learning by closed circuit broadcasting, and satellite television systems (Ely, 2002).

#### **Podcast, Vodcast and Multicast**

Podcast is a form of technology in which audio, video, text, and other media files can be played on a computer or downloaded to MP3 players ([Sprague & Pixley, 2008](#)), and it is a popular medium specifically for accessing and assimilating audio information ([Copely, 2007](#)).

In a study, the opinions of Aston University students were asked on the (audio) podcasts and the (video) vodcasts and how well they met the requirements and aided learning processes. Overall, students indicated that podcasts and vodcasts were two beneficial resources for learning, particularly when used in conjunction with lecturers' slides and as tools for revisions or assessments ([Parson, Reddy, Wood, & Senior, 2009](#)).

Multicast is a bandwidth-conserving technology that reduces traffic by simultaneously delivering a single stream of information to thousands of corporate recipients and homes. Applications that take advantage of multicast technologies include video conferencing, corporate communications, distance learning, and distribution of software, stock quotes, and news (Cisco Systems, Inc.).

#### **Teleconferencing**

Teleconferencing is an integration of computer with telecommunication systems in which private companies, corporations, or organizations take the advantages of meeting together through electronic equipments. Teleconferencing is used in its two forms: video conferencing and computer conferencing. In video conferencing, meetings, discussions, and distant classes are held across the world by using a microphone, television camera, and television equipment. Satellite dishes and time are rented (Meadow et al., 1983). Teleconferencing is a form of group-based distance education in which some argue it creates the essence of traditional classroom (Bernard, et al., 2006).

After correspondence courses and audio-conferencing computer based training for individualized instruction, computer conference (Kear, 2001) or electronic forum is the newest form of delivering instructional materials in distance education (Patriarcheas & Xenos, 2009).

Videoconferencing enhances collaboration among online learners in an open learning context and encourages collaborative group work ([Tomadaki, Quick, & Scott, 2008](#)).

#### **Microwave**

Microwave transmission is a wireless form of transmission which is very similar to satellite distribution, but it has some limitations in which signals are sent from one microwave dish to another via line-of-sight. And an earth dish is placed on a high tower to avoid obstructions against received and sent signals (Gross, 1983).

A study was done in Boise State University in Idaho, the U.S.A. to explore the delivery methods. Data showed that the distance courses, enrolments, and credits were more than doubled between the years 1995 and 2000.

#### **Interactive Video**

Interactive videoconferencing (IVC) consists of live, synchronous audio and video communication through a computer or digital phone network among sites in different physical locations. It provides increased learning opportunities, enhanced student motivation, and a two-way instructor-student communication ([Dal Bello, Knowlton, & Chaffin, 2007](#)).

#### **Desktop/Laptop/Tabloid/Personal Digital Assistant**

The computer as it is known today was developed in the 1940s. As a result of technological developments over the past years, computers have entered student's lives including film and television (Towhidi, 1986). Computer was introduced to the field of education in 1970s and its first applications were programming and later became the tutor or an aid to teachers (Fouts, 2000).

#### **Teletext and Videotext**

Teletext and videotext are two systems of transmitting electronic messages of text and graphic materials. There are two types of transmissions: one-way and two-way delivery systems (Wedemayer, 1986).

One-way delivery is known as teletext which is also called broadcast videotext. In this kind of delivery text and graphics are transmitted over the unused portion of television signals. It is a useful service as an encyclopedia, bibliographic search tool, and bulletin board (Gayeskie, 1989). Two-way delivery of text and graphics is known as videotext/videotext, view data, and interactive videotext (Wedemeyer, 1986) in which the message is sent over telephone lines (Gayeski, 1989).

#### **Electronic Book and Digital Library**

Electronic book or open textbook is an open educational resource (OER) in which printed form is digitized and is available to all distant learners. It is usually supplied by the publisher, along with the printed text (Lo & Dale, 2009; & Matkin, 2009).

An important aspect of a distance education system is having computer networks, multimedia, search engines, electronic libraries, specifically in medical universities (Rokni, 2005 and Tang, 2009).

#### **Web**

Distance education utilizes computer conferencing on the World Wide Web or internet in which teachers and students are able to present text, pictures, audio, and video. File sharing and communications tools like e-mail, chats, and audio and video conferencing are integral to the Internet model. At this time, the British Open University offers a master's degree in the field of "Distance Education" to anyone in the world who has access to the internet. The [American Distance Education Consortium](#) (ADEC), the [Distance Education Clearinghouse](#) Web sites, and many other sites which can be found on routine internet searches, introduce colleges and universities that offer distant degrees (California Distance Learning Project (CDLP), 2005).

#### **Blog**

Distance education systems utilize weblogs(blogs) which empower and motivate teachers and make learners reflective and connected practitioners in new knowledge environments (Farmer & Bartlett-Bragg, 2005; as cited Cameron & Anderson, 2006). Blogs are designed for directed and orchestrated activities. Learner focused tools and their companions (such as multimedia podcast and videocast) allow low cost or free personalized publishing and retrieval of content created by anyone. It is easy to use, customized in terms of look and feel, content, target audience, and hyperlinked to other contents on the internet (Cameron & Anderson, 2006).

#### **e-Mail**

Students' advising, registration questions, scheduling, questions on instructional materials, and personal matters can be done through e-mails (El Mansour, 2006). The National Center for Education Statistics (Parsad & Lewis, 2008), in their statistics for the 2006-2007 years, showed that distance education postsecondary degree granting

institutions used e-mail as a technology or medium for instructional deliveries. E-mail is a medium by which students can send messages and questions to their instructors or their fellow classmates (Edvardsson & Oskarsson, 2008). *Voice mail* is also an effective tool in learner/instructor conferences and parent/teacher communications (Yoakam, 2001).

#### Chatroom

Both Web and Chatrooms can function as supporting technologies to compensate for the relative lack of physical space where the teacher and the class members usually come together to discuss courses of distance learning (Knebel, 2001). Twomey (2002) suggests an open chatroom to be used as one of the virtual teacher training center elements, along with other components within the instructional site (components like: extensive list of resources, tools for students' self-evaluation, teacher's evaluation of students, online grade books, and places for announcements). Chatrooms could be used for foreign language learning (Fabos & Young, 1999).

#### Multimedia

Multimedia is multiple forms of media presentation. Mayer (2001) refers to multimedia as combination of sound, picture, text together; teacher, board, film together; and any computerized software that would combine of audio, video stuff. Maddux, Johnson, & Willis (2001), as cited in Mandernach (2009), say multimedia is a text along with at least one of the followings: sound, music, video, 2D & 3D high resolution photographs and animation. The common thing among these definitions is this issue that all multimedia definitions include, but are not limited to, a text in combination with graphics, audio, music, video and animation.

The findings show that the multimedia is an effective tool in teaching, learning, memorizing, reproducing, evaluation, improvement & reevaluation, critical thinking and acquiring communication skills.

### 4. Memory Retrieval Factors

So many variables affect memory retrieval, that we can't assign specific percentages of recall without specifying many more of them (Daniel T. Willingham, 2013):

- **what material is recalled** (gazing out the window of a car is an audio-visual experience just like watching an action movie, but our memory for these two audio-visual experiences will not be equivalent).
- **the age of the subjects.**
- **the delay between study and test** (obviously, the percent recalled usually drops with delay).
- **what were subjects instructed to do** as they read, demonstrated, taught, etc. (we can boost memory considerably for a reading task by asking subjects to summarize as they read).
- **how was memory tested** (percent recalled is almost always much higher for recognition tests than recall).

- **what subjects know about the to-be-remembered material** (if we already know something about the subject, memory will be much better).

Certainly, some mental activities are better for learning than others. And the ordering offered here doesn't seem crazy. Most people who have taught agree that long-term contemplation of how to help others understand complicated ideas is a marvelous way to improve one's own understanding of those ideas--certainly better than just reading them--although the estimate of 10% retention of what one reads seems kind of low.

The cone of learning may not be reliable, but that doesn't mean that memory researchers have nothing to offer educators.

### 5. Implementation

As stated above, the Dale's Cone of learning should not be interpreted as indicating that teachers shouldn't make use of reading, listening, viewing experiences and the like. These are all valuable and important parts of learning a second language. What should be taken from reviewing Dale's Cone of Experience is that *experiences at all of the levels described should be used in the second language classroom*. Just as Gardner describes the Multiple Intelligences and appealing to them all, Dale's Cone emphasizes learning experiences that appeal to the different senses and the different ways in which we learn.

Figure-2 (from [Alabama Professional Development Modules](#)) to the right, the first 6 types of experience (from the top of the cone downward) is all part of the getting it and using it. The real-world experiences at the bottom of the Cone relate directly to the Proving It stage; it is at this stage of the model that students are encouraged to use what they have learned in new, real-life contexts.

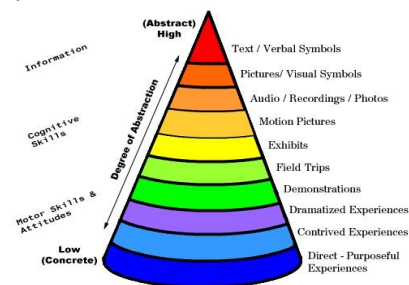


Figure 2: Graphic Courtesy of Edward L. Counts, Jr.

### 6. Building Smart Classrooms as Learning Enhancement and Retention Tool

Smart Classroom recognizes the demand for seamless movement between schools, work, home and play. Educators and students can work digitally in ways that pervade and impact every aspect of teaching and learning. It will deal with variety of practical teaching tools and materials for university teachers including teaching games and simulations. Smart Teaching materials include 'for example' exercises and examples that teachers can

apply to their courses. A collection of practical tools can be used in teaching situations to support delivery of rich teaching content, student engagement and interaction. The teaching games and simulations are categorized by disciplines.

### 6.1 Features of Smart Classrooms

#### Spaces for group work

There are spaces with 'greenboards', movable chairs and tables allow for discussions, project work, and collaborative learning activities.

#### Multimedia learning

Video and audio enhance learners in acquiring concepts and ideas. Students can also present their screens using VGA connections in the room.

#### Smart Boards

Arguably the first technology designed explicitly for classroom environments, this technology allows for many new and unique learning activities. It is also excellent for capturing notes, ideas and student input.

#### Clickers

Clickers are wireless personal response systems that can be used in a classroom to anonymously and rapidly collect an answer to a question from every student; an answer for which they are individually accountable. This allows rapid reliable feedback to both the instructor and the students.

#### Lecture Capturing Software

The computer is configured to capture the screen or a PowerPoint presentation, a video of the presenter, and the audio from an instructor or a small group of learners. The video recording can then be edited and saved for rebroadcast for online learners. Mobile USB microphones and HD web cameras need to be configured.

### 7. Conclusion

Distance Learning programmes are increasingly being delivered through computer based technologies but the traditional media is not totally obsolete as it helps in effective learning. Due to the connectivity of the internet, distance education is often called *online learning* because the Internet-connected computers bring the teacher and learner face to face, that replaces classroom learning. Moreover, the Internet has also facilitated the students to study online from any location and at any convenient time.

This medium of education converts the traditional static resources into interactive and interesting learning

modules like e-learning and m-learning for the learners and give new concept of *flipped teaching*, *hybrid course*, *networked learning*, *virtual classrooms* and *virtual university*. Now-a-days, many universities have come up these new learning concepts.

Learning is more fun and interactive in online distance courses. It is possible to incorporate charts, maps & graphs, moving images, slides, video clippings and even audio recordings with the course material. It helps to understand the entire syllabus without the help of a teacher. The students are able to interact with their peers through online class projects, e-mails and also with the help of online conferencing. This interaction with the help of media using e-mail, conference calls and chat makes learning easier and entertaining. It substitutes the face-to-face experiences of traditional learning. The availability of online libraries with their huge collection of e-books has also made the learning process easier and worthwhile. The media-related online distance learning is relatively economical than the traditional class-room learning. Nevertheless, keeping in mind its positive effects on individuals, these computer-based distance education continues to grow and with the help of these modern electronic and digital technologies and learning tools helps to enhance students learning and retaining of the course content in Open & Distance Education.

### References

- [1] Saiprasad, A., Using Electronic Media and Information Technology, March 2001, EMRC Report, Hyderabad.
- [2] Rowntree, D. (1994). Teaching with Audio in Open and Distance Learning. London, UK: Kogan page.
- [3] Resta, P. (Ed.) (2002). Information and Communication Technologies in Teacher Education: A Planning Guide. Paris: Unesco.
- [4] Reddi, U.V., (1994) Electronic Media in Education: An Indian Scenario; Osmania University Journal of Higher Education.
- [5] Kulik and Kulik (1991), 'Effectiveness of computer based instruction: An updated analysis', Computer in Human Behavior, 7, 7594.
- [6] Mason, R. (1994). Using Communications Media in Open and Flexible Learning. London: Kogan Page.
- [7] McLeish, R. (1999). Radio Production: A Manual for Broadcasters. Fourth Edition. Oxford: Planta Tree.
- [8] Mohanty, J. & Rath, A., (1990) Country wide classroom TV programmes, An Appraisal study, University News.
- [9] Moore, P. E. & Tait, A. (Eds) (2002). Open and Distance Learning: Trends, Policy and Strategy Considerations. Paris: Unesco.
- [10] Kulandai Swamy, V.C. (2002). Development of Open Distance Education, Education for Knowledge Era: Open and Flexible Learning, New Delhi: Kogan Page, pp: 25-49.

- [11]Means, Barbara; Blando, John; Olson, Kerry; Middleton, Teresa; Morocco, Catherine Cobb; Remz, Arlene R; Zorfass, Judith. (1993). Using Technology to Support Education Reform, Office of Research, U.S. Department of Education, Washington, DC.
- [12]Khan, A. (1996). Utilization of communication technologies for distance education in Murli Manohar, K. (ed.) Distance Education Theory and Practice: Media and communication technology, Hyderabad, Prof. G. Ram Reddy Memorial Endowment committee and Indian Distance Education Association.
- [13]Heinze, A. (2008). "Blended learning: an interpretive action research study". University of Salford.
- [14]Lee, J. (1999). Effectiveness of Computer-Based Instructional Simulation: A Meta Analysis. International Journal of Instructional Media, 26(1), 71-72.
- [15]Mayer, R. E. (2003). Elements of a Science of e-Learning. Journal of Educational Computing Research, 29(3), 297-313.
- [16]McKay, E. (1999). An Investigation of Text-based Instructional Materials enhanced with Graphics. Educational Psychology, 19(3), 323-335.
- [17]Moreno, R., & Valdez, A. (2005). Cognitive load and learning effects of having students organize pictures and words in multimedia environments: The role of student interactivity and feedback. Educational Technology Research and Development, 53(3), 35-45.
- [18]Miyake, A., & Shah, P. (Eds.) (1999). Models of working memory: Mechanisms of active
- [19]Maintenance and Executive control. Cambridge University Press: New York.
- [20]Baddeley, A. D. (1997). Human Memory: Theory and Practice: Psychology Press.
- [21]Dale, E. (1946, 1954, 1969). Audio-visual methods in teaching. New York: Dryden.
- [22]Dale, E. (1954). Audio-visual methods in teaching. New York: Dryden. p. 42.
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