

# Effective use of ICT Tools in Open and Distance Learning

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## ABSTRACT

Information and Communication Technology (ICT) promotes quality education which plays a vital role in transforming the society and an individual. In this paper we will discuss the benefits of ICT to acquire quality education, various tools and techniques that can be used for ICT in open and distance learning. It is true that education is considered as the major source for transforming an individual for development of Nation. A developed nation possesses citizens who had quality education. Quality education includes healthy learners who are nourished well and are ready to participate and learn in addition to the supportive learning acquired from their families and other related communities.

**Keywords:** *ICT, quality education, moodle, OER, Flipped class room.*

## 1. INTRODUCTION

ICT is utilized to allude to the innovations that are utilized in making, amassing and putting away, altering and spreading data in different structures. It is an upset that utilizes PCs, web and other media transmission innovation in each part of human undertaking. ICT can grow access to instruction from multiple points of view, for example, Anytime; Anywhere, Access to remote learning assets, Motivating to master, Enhancing instructor preparing and so forth. ICT empowers students to investigate imaginative thoughts and offer their insight with specialists around the globe through ICT instruments, capacity of the student to have opportunity to learn regardless of geographic area without stress and presence of ICT in to instructive framework prompts fruitful conveyance of addresses to understudies, checking advancement of the understudies who are learning and evaluation

should be possible successfully in a convenient way.

## 2. BENEFITS OF ICT IN ENHANCING QUALITY EDUCATION

A large portion of our educators need abilities and skills for legitimate and successful utilization of ICT in instruction. It is consequently a pressing national necessity that every one of our instructors are engaged to utilize innovation successfully, to improve the nature of training. Numerous benefits can be obtained by using the ICT tools and techniques to enhance quality education. Some of them are as follows:

- I. **Active Learning:** ICT-upgraded learning assembles apparatuses for examination, estimation and investigation of data, in this manner gives a stage to understudy request, investigation and development of new data. Students have opportunity to learn as they like and, at whatever point proper, they take a shot at genuine issues top to bottom, making adapting not so much dynamic but rather more applicable to the student's life circumstance. Thusly ICT upgraded learning advances expanded student commitment. ICT-upgraded learning is additionally "without a moment to spare" learning in which students can pick what to realize when they have to learn it. Online instructive system, and flipped-classrooms with related instructional method of dynamic learning, have immediately risen as the backbone of compelling training in this century.
- II. **Collaborative learning:** ICT-upheld learning supports association and participation among understudies, educators, and specialists paying little mind to where they are. Aside from demonstrating

certifiable associations, ICT-bolstered learning furnishes students the chance to work with individuals from various societies, along these lines upgrading students' joining and open abilities and also their worldwide mindfulness. It displays learning done all through the student's lifetime by extending the learning space to incorporate friends as well as tutors and specialists from various fields.

- III. **Creative Learning:** ICT-bolstered learning advances the control of existing data and the making of certifiable items instead of the spewing forth of got data.
- IV. **Integrative learning:** ICT-improved learning advances a topical, integrative way to deal with instructing and learning. This methodology kills the fake partition between the diverse controls and among hypothesis and practice that describes the conventional classroom approach.
- V. **Evaluative learning:** ICT-upgraded learning is understudy coordinated and indicative. In contrast to static, content or print-based instructive advancements, ICT-improved learning perceives that there are a wide range of learning pathways and a wide range of enunciations of information. ICTs enable students to investigate and find as opposed to simply tune in and recollect.

### 3. RESOURCES USED IN ICT

Some of the resources used in ICT for open and distance learning system are Internet, Emails, DVDs/CDs, Facebook, mobile phones, Skype and twitter, digital cameras, television and radio, Laptop and desktop computers, e books, Educational software.

#### A. INTERNET ACCESS:

By having internet access various materials can be downloaded and compared for study. It is an easier way to have cost effective communication. People are actively involved in academic, business and social discussions. In addition to this, we are always abreast with the world events. We can acquire a sound knowledge and we can have instant communication which makes sharing and updates more easier. This creates an increase in employment and there are many number of opportunities in the upcoming future.

#### B. COMMUNICATION VIA INTERNET:

The role of teaching in ODL is complex when compared to the conventional education systems. The communication between teacher and student, but also among the learners, is a fundamental component of the educational action. Internet constitutes a powerful mean of support and communication between a teacher and the student in many ways. It can offer new conceivable outcomes, changing the educator arranged sort of training into the understudy situated

- (i) **Synchronous and asynchronous communication:** Whenever educators and students convey by being in the meantime in better places, at that point correspondence is called synchronous, while it is asynchronous when communication takes place in different time and in different place. These two last forms of communication, which are run via the Internet, support today the virtual classes.
- (ii) **Types of synchronous communication:** Among the modern methods of communication some of them are telephone communication, audio teleconferencing, video teleconferencing, conference with the use of "whiteboard", the use of applications of chat-room type (supported in text).
- (iii) **Types of asynchronous communication:** Among the asynchronous methods of communication some of them are the use of fax, computer software (educational CD - ROM), video films, audio tapes, compressed video, courses supported by the World Wide Web, bulletin boards in the World Wide Web, e-mail. From the above techniques for correspondence the video conference is exceptionally intriguing [9]. With it, at least two sections, including innovation, can be associated with sound and vision progressively. The vehicle of sound and picture is accomplished with the transmission – gathering of flag of compacted video-sound (spilling video-sound), with the assistance of appropriate programming. Video gathering, energize the separation collaboration.

#### C. VIDEO CONFERENCE:

The video gathering, which gives the likelihood for up close and personal

correspondence and direction, establishes a helpful instructive apparatus. Correspondence and instructive movement among educator and student is encouraged. However, it cannot support exclusively the educational process. The important advantage that is offered with its use is the wide scale of interaction that can take place among the participants. It can be separated in videoconference of main room and videoconference of point to point – videoconference of multiple points.

#### **D. OPEN EDUCATION RESOURCES:**

Open Educational Resources (OER) are unreservedly available, transparently authorized archives and media that are helpful for instructing, learning, and evaluating and in addition for research purposes. It is the main pattern in separation training/open and separation learning area as an outcome of the receptiveness development. Open Educational Resources (OERs) are any sort of instructive materials that are in general society area or presented with an open permit. The idea of these open materials implies that anybody can legitimately and uninhibitedly duplicate, utilize, adjust and re-share them. OERs go from course books to educational modules, prospectus, address notes, assignments, tests, ventures, sound, video and movement.

#### **E. LEARNING MANAGEMENT SYSTEMS - MOODLE:**

Moodle (Modular Object-Oriented Dynamic Learning Environment) is a free open-source learning the board framework or e-Learning stage, that serves teachers and students over the globe. Moodle is a Virtual Learning Environment (VLE) which makes it simple for you to give online help to your course. Giving a focal space on the web where understudies and staff can get to an arrangement of devices and assets whenever anyplace.

##### **(i) Advantages of Moodle**

An easy way to communicate with students and staff where ever they are is through Discussion Forum. It automatically emails messages to all students and staff on the course. Gatherings can likewise be utilized to answer normally made inquiries – and counteract rehashes, to give a space to casual shared

understudy discourse or even online instructional exercises.

A speedy method to share records is through Moodle. Moodle gives a place where you can undoubtedly make site pages with data about your course and give connects to word archives, slides, and different assets that your understudies will need to get to.

- (ii) Simple access to pertinent and valuable online assets: The office and the college give an abundance of materials and assets, yet providing food for such huge numbers of various kinds of understudies it very well may be hard for students to discover those that are most significant to them. Moodle give interfaces specifically to the assets that will be most valuable for your understudies whether e-library assets, aptitudes courses, or data in regards to the course

Online Assignment handling: When your understudies and coaches are not close , task taking care of can spare time and exertion for everybody included – regardless of whether it is simply utilized for understudy accommodation with stamping done on paper or the entire procedure is moved internet sparing time, postage and paper.

##### **(iii) Other Advantages**

- a) Save time and cash – making assets accessible online can spare time and cash in photocopying.
- b) Control access to various territories – can make a space for scattered mentors to speak with one another and in addition understudies. .
- c) Use less paper – keep a focal duplicate on the web so everybody can locate the most recent rendition of a course handbook and so forth give presents on the web and understudies just print out what they truly require.
- d) Designed to support shared learning – Moodle makes it simple to display the oxford instructional exercise framework on the web on the off chance that you need to utilize it with universally appropriated understudies.
- e) Easy to explore different avenues regarding new thoughts and devices – a generally safe approach to fuse new



instruments and thoughts into your educating.

f) Manage your materials – if all your course data is on Moodle this is simple access this a seemingly endless amount of time.

#### Other Features and Tools:

- Course calendar – utilize this to signal imperative occasions to everybody on your course.
- Profiles and contact information – encourage understudies and staff become more acquainted with one another toward the beginning of the course, likewise hold data about course group and understudies in a single place.
- Deliver content – post up slides and so on
- Video and audio – numerous scholastics think that its simple to record addresses as web recordings or even organize recordings of addresses or exceptional events– posting these on the web and making it accessible to understudies is straight forward with Moodle
- Group tools for students – there are numerous devices that understudies can use for coordinated effort with one another e.g. gatherings, wiki and talk

#### F. ACTIVITIES CONDUCTED DURING CONTACT CLASSES - OPEN AND DISTANCE LEARNING: FLIPPED CLASSROOM APPROACH:

The flipped classroom is a pedagogical model in which traditional teaching is reversed where students gain exposure to the new material outside of the calss usually by watching

short video lectures and then assimilation is done in the class time such as problem solving , discussion and debates etc. This follows the revised Blooms taxanomy: Understand, Recall, Apply, Analyze, Evaluate and Create.

**Fig 1: Revised Blooms Taxonomy**

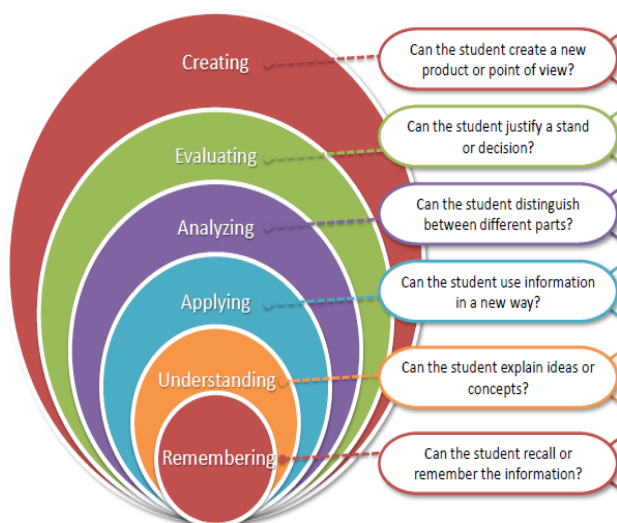
**Bloom's Digital Taxonomy** by Andrew Churches provides a refined understanding of aligning technology with the appropriate learning objective.

For technology tools we do have a taxonomy based on the purpose in which the tool is used. This taxonomy is called the digital bloom's taxonomy and it has the exact same levels remembering to creating. So every technology has a purpose and it has to be used with on a specific activity and this learning activity decides the level in which the technology is being used. So there is a question why digital? Digital because we are using the ICT tools, which are digital tools at the end of the day.

**Remembering / Recall:** The technology tool “Labelled image” is used for listing or identifying parts of the component and this comes in the remembering level. This tool facilitates to see the different parts or identify the different parts of the particular component.

**Understanding:** The video tool is used to explain content and this comes under the understanding level within the digital blooms taxonomy, that means when you show content using video, when you explain content using video, the video tool is used in the understanding level.

You can have advanced searches, where you search for particular expressions, like boolean searches or blogging. Commenting using twitter or forums, annotating using Mendeley's or Adobe Reader or subscribing to RSS feeds or aggregators. So all these tasks are come under the understanding level within the digital blooms taxonomy.



Learning Outcome	Technology tools and methods
UNDERSTANDING	<p><b>Advanced Search:</b> Google (Boolean Searches)  <b>Blogging:</b> Blogger, Wordpress, Tumblr  <b>Commenting:</b> Twitter, Noticeboards, Forums, Threaded discussions  <b>Annotating:</b> Adobe Reader, Zotero, Mendeley, Ink2Go  <b>Subscribing:</b> RSS feeds, News aggregators (Bloglines)</p>

qualify under the applied level within the digital blooms taxonomy.

Learning Outcome	Technology tools and methods
APPLYING	<p><b>Running, Loading, Operating:</b> Installing programs, operating systems  <b>Playing:</b> Visualisations, Simulations, Second Life  <b>Hacking:</b> Armitage, Wifite, Social Engineering toolkit  <b>Uploading and Sharing:</b> Google drive, Dropbox, SugarSync  <b>Editing:</b> MS Word, Photoshop, Pixir, LibreOffice Writer</p>

**Apply:** The technology tool of MS excel which is used for calculation and representation. So for example, if the teacher gives MS excel with pre-written formula and macro in it and student just have to enter data into it and the excel sheet gives you representations, calculation and representations then as a teacher you are using MS excel in the level of applying. So if you remember at the applying level you just implement carry out or execute the process using the technology.

So in this particular example we had students just enter the data into the excel and the excel itself showed the representation and did the calculation for the students. Hence, we say that the learning activity of using excel in this particular case is at applying level. Some more applying level operations are running, loading and operating which means you installing programs or operating systems.

There is playing as in games, the visualizations or games like the Second Life. Hacking as in ethical hacking using Armitage or tools like that, uploading and sharing, wherein you use a Google drive or a drop box or one drive or even editing using Google docs or MS word or Photoshop, wherein you know what exactly you have to enter.

Use of flash tools to execute the algorithm, this is at apply level. So there is an already existing algorithm and you use the tool to just execute that particular algorithm, which is right. Latex to prepare various docs may be at applying level but what is important is? Are you creating latex right from the start? So are you using existing templates or are you creating templates on your own? So basically the summary is that you have to specify the learning activity to qualify to see whether your tool use

**Analyze:** Simulation game, wherein students are given a problem. So it goes beyond mere application of the tool, which is this simulation, a higher cognitive level, which is quite similar to the analyzing level within the blooms taxonomy and since it is a game it is also an interesting exercise for the students as it motivates them to complete the task.

Some of the common tools and their methods at analyzing level are shown here. So mashing can be done through Google maps or Google earth. Surveying through Google forms or survey monkey. Linking databases, so for linking databases, spreadsheets, CMap, which you saw today morning. It is a concept map tool for CMap is a tool for concept mapping. For tagging, you have Evernote and Tabbles, for reverse engineering you have a boomerang or OllyDbg.

So these are some tools and the purposes for which these technology tools are used to fit at analyzing level.

Learning Outcome	Technology tools and methods
ANALYZING	<p><b>Mashing:</b> Google Maps, Google Earth</p> <p><b>Surveying:</b> Google Forms, Survey Monkey</p> <p><b>Linking:</b> Database( MySQL, Access, Base), Spread Sheets (Excel, Calc), CMap</p> <p><b>Tagging:</b> Evernote, Tabbles.</p> <p><b>Reverse Engineering:</b> Boomerang, Jad, OllyDbg</p>

**Evaluating:** A teacher has to review an assignment report of the student; teacher can use the particular functionality of MS word wherein he/she give comments using "Track changes". So some other purposes or learning activities which are at evaluating level are commenting and posting, moderating, networking, refactoring and testing and these are some of the tools which can be used for this purpose.

So at an evaluate level what it means is that tool provide them with facility to decide on something and thing about something and give a judgment about the activity.

Learning Outcome	Technology tools and methods
EVALUATING	<p><b>Commenting and Posting:</b> Blogspot, Facebook, Moodle Forum</p> <p><b>Reviewing:</b> MS Word, Review Board, Collaborator</p> <p><b>Moderating:</b> Moodle Forum</p> <p><b>Networking:</b> Email List, LinkedIn, Facebook</p> <p><b>Refactoring:</b> Eclipse, SharpDevelop, Coderush, Express</p> <p><b>Testing:</b> Wireshark, Snort, Metasploit</p>

**Creating:** One specific activity for which wiki can be used at create level is portfolio creation. Now portfolio creation can be both done by the teacher and the student where they display what is essential about them using wiki features. You can link to activities; you can upload multimedia files and link them in a single wiki page to show the portfolio of yourself.

So you either as a teacher and if you want to see specific activities done by students within a course, you can create individual

course portfolios for the students and this particular activity. Learning activity of portfolio creation is at create level where students have to do much more than judgment, or much more than analysis, but they have to present something on their own.

So some of the tools which are used for creating are either programming tools, technology tools which assist in filming and animating, which is used for blogging and wikis for publishing, video cast or podcast or even screen cast for that matter and some modelling tools.

Learning Outcome	Technology tools and methods
CREATING	<p><b>Programming:</b> Scratch, Alice, Visual Studio, Lego Mindstorm</p> <p><b>Filming and Animating:</b> Movie maker, Animoto, Pencil</p> <p><b>Blogging and Wikis:</b> Blogger, Moodle Wikis, Wikispaces</p> <p><b>Publishing:</b> Word, OO writer, Mixbook, Portfoliobox</p> <p><b>Videocast, Podcast:</b> Voicethread, Skype, Elluminate</p> <p><b>Modeling:</b> Sketchup, Blender</p>

**Recommendations:**

- Tie the use of the tool to specific learning content and outcome.
- Give students an opportunity to first gain exposure to the tool before the assignment.
- Provide help manuals and tutorials on using the tool.
- Provide mechanisms for students to get feedback from peers, teaching assistants, and lectures.

Here In class room is considered as the contact classes. During this we can promote active learning strategies. Some of them are

- (i) **THINK – PAIR – SHARE:** Think-Pair-Share: Think-Pair-Share exercises suggest a conversation starter to understudies that they should consider alone and afterward



examine with a neighbor before settling on a last answer. This is an extraordinary method to propel understudies and advance larger amount considering. Despite the fact that the action is called think-"Match"- share, this is the term numerous educators use for sets and little gatherings (three or four understudies) alike. Gatherings might be framed formally or casually. Frequently this gathering discourse "sharing" is caught up with a bigger classroom exchange. Some think-match share exercises are short, "speedy reaction think-combine share" and some of the time the exercises might be longer and more included, "broadened think-combine share". The educator can utilize the understudy reactions as a reason for dialog, to inspire an address portion, and to get criticism about what understudies know or are considering and it is anything but difficult to fuse in excess of one think-combine share movement in a given class period.

- (ii) **TEAM - PAIR - SOLO:** In this active learning strategy which promotes cooperative learning. In this, students work as a team to solve the problem. Next the team breaks in to pairs and the students work on either the same problem or on a related one. Finally the pairs break up and the students work individually to complete the same or related task.
- (iii) **PARTNERS:** Partners is a cooperative learning strategy for making contrasts and comparisons. Students of a course are divided in to teams. The teams are assigned work such as analyzing a topic, setting quiz on a topic in which they are learning. The teams are rejoined and the students teach each other and answer quiz each other about which they learned.
- (iv) **JIGSAW:** With the jigsaw, students can cover a lot of information in a rather short amount of time. They also have a lot of social interaction and language practice while they are doing it because the teacher takes a facilitative role. The teacher divides the class into groups of 4 or 5. These will be the "original groups". Next, the teams break up into specialized "expert groups" so that they can study a single lesson component. The "expert groups" work together to gain a better understanding of their specific topics

and think of a good way to teach it to their peers. Students return to their original groups and teach their topics to their peers.

#### 4. CONCLUSION

Education plays an major role for the development of an individual both professionally and personally. New innovations in technology paves a new way for distance learners in open and distance education. Introducing technology in education is not the pivot part but pursuing quality education is the main criteria. ICT provides tools for enhancing and promoting quality education to reform the society. Digital tools are useful for students to use in and out of class to create communicate and collaborate. Bloom's revised digital taxonomy allows us to map learning outcomes to the use of digital tools.

To ensure quality education, distance education institutions must carefully use the media and technologies in the righteous way. All this depends on the resources that can be offered by the institution for the course and it reflects on the socio-economic and cultural background of an individual to acquire knowledge from different media and technology.

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