E-learning Copy Notes

ICT 6th Semester
2076

by

Mukesh Singh
ICT 5th batch 2073

Sukuna Multiple Campus
Sundardhoka-12, Morang

Unit-1

E-Learning - Concept & Characteristics

Ajanta Page No. 1 Date

1.1. Definition of E-Learning

1) A learning system based on formalized teaching but with the help of electronic resources is known as E-Learning.

2) E-learning refers to a learning system that we can obtain through the Internet using an electronic device.

3) E-Learning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. It refers to a course, program or degree delivered completely online.

1.2. Characteristics of e-Learning

Characteristics of e-learning are mentioned below:

i) E-learning is learner centric learning → The learner centric e-learning makes an array of resources available to the ~~user~~ learner, who is free to choose when, where and how to learn.

ii) E-learning for lifelong learning → With increase access to technologies and its ever increasing sophistication this approach to learning facilitates lifelong learning among various stakeholders.

iii) E-Learning is flexible learning → E-learning has historically been linked with distance education and flexible learning.

iv) E-learning is Social → Various e-learning technologies facilitates various types of Collaboration among learners and teachers.

v) E-learning involves learning objects → E-learning uses reusable learning objects. This allo permits one to create e-learning course with ease.

vi) E-learning is personalized → Usually e-learning system permits its users to personalize the learning by tailoring its offerings to their learning style, job requirements, career goals, current knowledge and personal preferences.

vii) E-learning involves effective Communication → The effectiveness of e-learning also depends on establishing two way communication between teachers and learners, and among learners themselves.

1.3. History of E-Learning

The term "e-learning" has only been in existence since 1999, when the word was first utilized at a CBT Systems Seminar. Other words also began to spring up in search of an accurate description such as "online learning" and "virtual learning". However, ~~early forms of~~ the principles behind e-learning have been well documented throughout history, and there is even evidence which suggests that early forms of e-learning existed as far back as the 19th century.

An e-learning timeline

→ In 1924, the first testing machine was invented. This device allowed students to test themselves.

→ In 1954, BF Skinner, a Harvard Professor, invented the "teaching machine", which enabled schools to administer programmed instructions to their students.

→ In 1960, the first Computer Based Training (CBT) program was introduced into the world. This CBT program was known as PLATO (Programmed Logic for Automated Teaching Operations).

→ In 1966, CAI in schools were introduced.

→ In 1969, US Department of Defence (DOD) Commissioned ARPANET to create the Internet.

→ In 1970, Computer Mouse and the GUI were invented, helping to define "modern computing".

→ In 1980s, personal computer era begins with the introduction of Macintosh (MAC). This enabled individuals to have computer in their homes, making it easier for them to learn about particular subjects.

→ In 1990s, the first "digital natives" are born. This the dawn of new era in learning. Virtual learning environments begins and "e-learning" becomes a widely recognized term.

→ In 2000s, buliness began using e-learning to train their employees. Authoring tools are more accessible than ever, and a wide range of online learning opportunities are available.

→ In 2010s, a new wave of e-learning inspired by social media builds momentum. YouTube, Twitter, Facebook, Massive Open Online Courses (MOOCs), iTunes U, Skype, Opportunities to connect, share information and learn from each other are found everywhere.

Page No. 5
Date

1.4. Approaches to E-learning

Following are the approaches to e-learning:

i) Synchronous versus Asynchronous
ii) Networked versus Stanel alone
iii) Individual versus group
iv) Online versus Offline
v) Internet versus Intranet
vi) Computer based versus other digital devices
vii) Blended versus fully Online
viii) Self-paced versus Instructor lead

i) Synchronous versus Asynchronous

	Synchronous e-learning	Asynchronous e-learning
1	It involves online studies through chat and video-conferencing.	1. It can be carried out even while the student is offline.
2.	Can happen only online.	2. Can be carried online and offline.
3.	The kind of learning tool is real-time.	3. It is not a real-time
4.	Students have access to instant messaging.	4. Students don't have access to instant messaging.
5.	Not a self-paced learning.	5. It is a self-paced learning.
6.	Eg: Chatting, video-conference, virtual classroom. etc.	6. Eg: E-mail, Blog, forum, E-board etc

1.5 E-learning Tools and Technologies

E-learning is a flexible learning environment which serve a number of individuals and organizational purposes by making use of a number of technologies. There are many tools and technologies essential for e-learning and many of these tools come in handy as a standalone to deliver learning using variety of approaches to e-learning.

In addition, we also have Learning Management Systems which integrate many of the individuals tools into a single platform to develop and deliver online learning.

A comprehensive list of e-learning tools and technologies are provided in the following table:

Content Creation Tools
- Tools for creating avatars (virtual characters)
- Course and lesson authoring tools
- E-book tools
- Graphics and animation tools
- Image galleries and sound effects libraries
- Assessment tools
- Pdf tools
- Video and simulation tools
- Survey and polling tools

Delivery and distribution tools
- Podcasting tools
- Rss tools
- Web casting and streaming tools
- Presentation tools
- Mobile learning tools

User Tools
- Operating System
- Browsers
- Media Players
- Plug ins
- Pdf reader
- Word Processor

Communication and Collaboration tools
- Discussion boards and forum tools
- E-mail tools
- Live support tools
- Meeting and teleconferencing tools
- Instant messaging and Chat tools
- Social networking tools
- Social book marking and file sharing tools
- Wiki tools

- E-Learning Systems
- Content management systems
- Learning management systems
- Course management systems
-

Hardware Tools
- PC/Laptop/net book
- Smartphone / palmtop Computer
- Printer / Scanner / Speaker
- Microphone / Speaker / Web Cam

1.6 Communication Tools

The most common Communication Tools used in e-learning include e-mail, Instant Messaging and Blogging.

1. E-mail

E-mail stands for Electronic Mail. E-mail is defined as the transmission of messages over Communication networks. There are many e-mail service providers and the most famous ones are G-mail and Yahoo. Exchanging mail messages with a mentor or peer is an e-learning experience.

~~2. WhatsApp~~

2. Instant Messaging (IM):

Instant messaging is the exchange of text messages through a software application in real-time. Instant messaging allows learners to chat with one another through text messages. Instant messaging helps teachers to create subject specific groups for exchange of information and sharing of resources. Instant messaging apps like WhatsApp, imo, Messenger are extensively used by teaching community as reliable Communication tool.

3. Chat

Chat is synchronous communication tool ~~for~~ facilitating online communication. This tool helps teachers and learners to schedule a discussion on a particular question or theme and later save that chat discussion for later use. The chat tool is an integrated tool in all the LMS and there are many standalone chat applications which can be used outside the LMS.

Page No. 10
Date

4. Blogging

A blog is your own website that you are going to update on an ongoing basis. A blog is frequently updated online personal journal or diary. It is a place to express yourself to the world and to share your thoughts and your passions. A typical blog combines texts, images, and links to other blogs, webpages and other media related to its topic. The ability of readers to leave comments in a interactive format is an important part of many blogs. Most blogs are primarily textual, although some focus on an art (art blog), photographs (photo blog), videos (video blog), music (MP3 blog), and audio (podcasting).

1.7. Collaboration Tools

In today's world, it is a must that people have the ability to collaborate on various projects and assignments. As an educator and e-learning professional, collaboration is essential in our day-to-day tasks. Few collaboration tools are discussed below:

1. Google Drive

Google Drive is Google's online document programs that allows users to quickly and easily share and collaborate on files. Inside the Google Drive, various files can be created including documents, spreadsheets, presentations, drawings and forms. Once a file has been created, you simply "share it" with other Google account holders.

2. Wikispaces

A wiki is a collaboration website that collects and organizes contents created and revised by its users. The most well-known example is Wikipedia. In an e-learning context, wiki permits teachers to give many kind of tasks to the learners to collaborate and create content on any topic.

3. Facebook

Facebook is very helpful in collaboration. If you put up a group page specifically for your class, you get a place of your own to collaborate. There are lot of teachers using facebook nowadays.

4. Social Networking Sites

Social networking can be used effectively to for e-learning by creating specific interest groups. The learners within the group can share information, videos, photographs, graphics related to a particular topic. This can also be used by teachers to collaborate in generating and sharing resources online with ease thereby facilitating learning. Popular Social networking sites are Facebook, Twitter, LinkedIn, Google+, YouTube etc.

5. Skype

Skype is a video and Chat communication tool that allows you to connect your classroom with the outside world by connecting to experts, authors, and other collaborative projects, and all types of classroom connections.

Skype in the Classroom offers live educational experiences for thousands of teachers and their students from over 235 countries, including virtual field Trips, talks with guest speakers, and Collaborative Lessons and Projects with other classrooms around the world.

6. OneNote

OneNote is a Microsoft Office product that is like a digital version of a physical notebook. This means you can capture digital notes and keep them organized, as well as collaborate and share. You can also add images, diagrams, audio, vide and more.

7. Google Translate / Microsoft Translate

Translate languages via text, voice or photograph to more easily communicate in other languages.

8. Podio

Podio makes it easy to work in real-time online with classmates to coordinate study groups, work on class projects, and organize research.

Q. List the advantages and limitations of e-learning.

Advantages

Unit-2

Learning Management System

Page No. 15
Date

2.1. Content Creation Tools / Authoring Tools

An e-learning authoring tool, also known as a content authoring tool, is a software program that enables users to create elearning courses using text, media and interactions.

Some content creation / authoring tools are explained below:

1. Adapt

The adopt authoring tool is an application to allow you to quickly build responsive e-learning content. It is accessed through a web browser. You can create an account, log in, create courses and add assets, components and extensions. You can preview and publish your e-learning content from the authoring tool.

2. Elucidat

Elucidat is a cloud-based, responsive authoring tool that is designed to help ambitious teams create high quality elearning at scale. Exceptional (and free!) support helps both novice and experienced authors uncover the full capabilities of the tool.

3. LAMS

Learner Activity Management System is a revolutionary new tools for designing, managing and delivering online collaborative learning activities. It provides teachers with highly intuitive visual authoring

environment for creating sequence of learning activities.

4. Xerte

Xerte is a fully-featured e-learning development environment for creating rich interactivity. Xerte is aimed at developers of interactive content who will create sophisticated content with some scripting and Xerte can be used to extend the capabilities of Xerte Online Toolkits with new tools for content authors. Xerte online Toolkit is a server-based suite of tools for content authors.

2.2 Delivery and Distribution Tools

1. EPUB

Wikipedia defines EPUB as an e-book file format with the extension epub that can be downloaded and read on devices like smart phones, tablets, computers or e-readers. It is a free and open standard published by the International Digital Publishing forum (IDPF). The term is short for electronic publication and is sometimes styled ePub. Sigil is an open source epub authoring tool and Caliber is an open source epub reader.

2. Podcasting

Podcasting is a ~~form~~ form of audio broadcasting on the Internet. The audio files are developed and distributed using RSS to the computers of subscribed users. These files may then be uploaded to digital music or multimedia players like the iPod. A podcast can easily be created from ~~the~~ a digital audio file. The podcaster first saves the file as an MP3 and then uploads it to the Web site of a service provider.

Record classroom lectures, provide supplement information, provide review sessions, record classmom discussions, interview with experts, student projects are some of the uses of podcasts. Therefore, podcast is versatile medium for delivering e-learning specially audio content.

3. Audio/Video Streaming

Audio/Video streaming is a content sent in compressed form over the Internet and displayed by the viewer in real time. With streaming video or streaming media, a web user does not have to wait to download a file to play it. Instead the media is sent in a continuous stream of data and is played as it arrives. The services provided by YouTube are valued by e-learning providers world over. E-learning providers like Khan Academy uses YouTube extensively in delivering their e-content.

4. MOOC

Massive Open Online Course (MOOC) is a new approach to delivering e-learning. MOOC is a model for delivering content online to any person who wants to take a course, with no limit on attendance. Some of the famous Mooc providers are edx, Coursera and Udacity. The Indian Mooc initiative is known as SWAYAM.

5. Flipped Learning

Flipped classroom approach is model is yet another approach in delivering e-learning in a blended format. The flipped classroom describes a reversal of traditional teaching where students gain first exposure to new material outside of class, usually via reading or lecture videos, and then class time is used to do the harder work of assimilating that knowledge through strategies such as problem-solving, discussion or debates.

6. Webquest

Web Quest developed in 1995 by Bernie Dodge @ San Diego State University. Simply, put a Webquest is an inquiry-based activity where students are given a task and provided with access to online resources to help them complete the task. Webquest is an online based lesson in which most or all of the information that students explore and evaluate comes from the World Wide Web.

According to Remie Dodge, the six building blocks of a Webquest are:

Introduction	Task	Procedure
Resources	Evaluation	Conclusion

2.3. Learning Management System (LMS)

A Learning Management System (LMS) is a software application for the administration, documentation, tracking, reporting and delivery of educational courses, training programs, or learning and development programs.

The Learning Management System concept emerged directly from e-Learning. Although the first LMS appeared in the higher education sector, the majority of the LMSs today focus on the corporate market. The first introduction of the LMS was introduced in the Late 1990s.

Tasks of LMS:

- Manage Learners taking whole courses
- Manage the Curriculum
- Manage Courses in various curriculums
- Present options depending on learner profiles
- Track learner needs and preferences
- Track course completions and scores.

Features of LMS:

i) Ease of Use → A good LMS is user-friendly and easy to use whoever the user is. It should be quick to ~~use~~ learn. Ease of use is a must-have feature of LMS for everyone.

ii) Integrated Virtual Classroom → A familiar virtual learning environment enables learners to get straight into learning an each new-course ~~theory~~ they sign up for.

iii) Technical Support → When things go wrong it's important to know that technical assistance is just a few clicks away.

iv) Customizable and multi-lingual → The most valuable pieces of software are the ones that can be customized to work in just the way they are needed to.

v) Course Management → Course administration, order management, pre-registration and assigning courses can be done semi-automatically.

vi) Communication Management → All course communication and notifications can be done from within the LMS system, no need to copy and paste contact data or switch between two digital services.

vii) Mobile Learning → Mobile learning is the delivery of training or education materials or learning support on a mobile device like a phone or a tablet. Learners can participate in training from any location using whatever device they do own.

Page No. 22
Date

LMS	LCMS
1. Stands for Learning Management Systems.	1. Stands for Learning Content Management Systems.
2. LMS is a software application that is used to administer, track, report and deliver training.	2. LCMS is a platform that allows us to create, manage, host and track digital learning content.
3. It is learner centric.	3. It is content centric.
4. It is a platform for managing people.	4. It is a platform for managing content creation.
5.	5.

Comparing features of LMS and LCMS:

	Features	LMS	LCMS
1.	Manages e-learning	Yes	Yes
2.	Tracks results	Yes	Yes
3.	Includes learner profile management	Yes	No
4.	Schedules events	Yes	No
5.	Supports content creation	No	Yes
6.	Organizes reusable content	No	Yes
7.	Content delivery	Yes	No
8.	Primary user	Learner	Trainer/Manager
9.	Training Progress Mapping	Yes	No

Examples of LMS

Open Source LMS	Proprietary LMS
• Moodle	• Web CT
• Dokeos	• Blackboard
• A Tutor	• Joomla LMS
• Drupal	• eLeap
• Sakai	• Gyrus
• Claroline	• Saba Learning
• Ilias	• Class Campus
• OLAT	• Intra Learn
• Brihaspati	

2.4 E-learning Standards

E-learning standards are a set of common rules that apply to content, authoring software and Learning Management systems. They provide all stakeholders with guidelines for designing and developing content, deploying it across platforms and ensuring interoperability across devices.

Some e-learning standards are explained below.

Standard 1: Installation and Initial Launch

This standard is about the relationship between the learner and the courseware. Earlier, when this standard was set, it was quite a challenge to install and launch the course on a network or a computer system. But now, most of the courses are hosted on a LMS. So, it is not a problem. From the LMS point of view, when courses installed and initially launched, learners should not find it difficult to login and start the course.

Standard 2: SCORM Compliance

SCORM stands for Sharable Content Object Reference Model. It is a technical standard that was first developed by the US military based on a lot of other e-Learning technical standards. SCORM provides interoperability and portability to an e-Learning Course.

Standard 3: AICC Compliance

AICC stands for Aviation Industry Computer Based Training Committee is a technical standard that help define how e-learning courses and LMS interact with each other to support tracking of courses. It is

very similar to SCORM. However, there are minor technical differences. This standard allows a course to communicate information in the HTTP format.

Standard 4: Tin Can API

Tin can API is the successor to SCORM. Tin can API tracks and records learning experiences that occur anywhere, through any device. SCORM can track learning that happens only on laptops or desktops. SCORM cannot track mobile learning. Tin can API can track most learning activities such as mobile learning, gamified learning, offline learning, collaborative learning, experiential learning and simulations. The successor to SCORM can also Track responsive learning efficiently. So, this is going to be a standard for the future.

2.5. Advantages and Potential drawbacks of E-learning

Advantages

i) Flexible → resources are available from anywhere at anytime.
ii) Anytime access to the resources
iii) Immediate result or feedback.
iv) Cost effective → reduces travel cost and time to and from school
v) Fast learning
vi) Easy collaboration
vii) Easy updating

Disadvantages / Drawbacks:

i) No self - discipline
ii) Technology dependent
iii) No face-to-face interaction
iv) Lack of flexibility
v) Unsuitable for certain type of learners
vi) Instructor may not always be available on demand.

Unit-3

ICT Integrated Lesson

Ajanta
Page No. 29
Date

3.1. Introduction

Effective integration of ICT into teaching and learning is becoming an essential competency for teachers. The rapid development of emerging technologies, the integration of ICT has increasingly attracted the attention of teachers. A simple combination of hardware and software will not make integration naturally follow. For instance, they have to choose the correct ICT tools for particular learning objectives or contexts, modify existing resources or develop new learning environments to engage specific groups of learners, or decide scaffolding strategies for student-centred learning.

3.1.1 Web 2.0 Tools and Technologies

Web 2.0 is the term given to describe a second generation of world wide web that is focused on the ability for people to collaborate and share information online.

Web 2.0 is such a platform which allows the users to interact with the content, such that they will be able to modify, write and even share the information.

They key features of Web 2.0 include:

i) Folk sonomy → free classification of information, allows user to collectively classify and find information (e.g. tagging).

ii) Rich user experience → dynamic content, responsive to user input.

iii) User participation → Site users can add content for others to see.

iv) Software as a service → Web 2.0 sites developed APIs to allow automated usage, such as by an app or mashup.

v) Mass Participation → Universal web access leads to differentiation of concerns from the traditional internet user base.

Web 2.0 Tools

Web 2.0 tools are internet tools that allow the user to go beyond just receiving information through the web. Social media sites such as Facebook and Twitter are examples of Web 2.0 tools. Web 2.0 tools can be used to enhance teaching and collaboration among teachers and students as well as increase professional collaboration between educators.

Some Web 2.0 tools are described below:

3.1.2. Wiki

A wiki is a website which allows collaborative modification of its content and structure directly from the web browser.

A wiki is a space on the Web where you can share work and ideas, pictures and links, videos and medias, and anything else you can think of. Wikispaces is special because it has a visual editor and a bunch of other tools to make sharing all kinds of content as easy for students as it is for their teachers.

3.1.3. Blog

A blog is a website, usually maintained by an individual with regular entries of commentary, descriptions of events or other material such as graphics or video.

Blogging makes it possible for you to publish your thoughts and spread them out to the entire world.

Nowadays, there are number of blogs available on internet for free blogging. Blogs are perfect medium of interactive communication, instead of a library, which earlier web used to be.

Elements of blogs are: title, body, comments, permalink, post date, categories, trackback etc.

Some blogging tools are:- Edublog, blogger, Wordpress, blog.com, live.journal etc.

3.14 Podcasts

A podcast is an episodic series of digital audio files that a user can download in order to listen. Alternatively, the word "podcast" may refer to the individual component of such a series or to an individual media file.

Podcasting refers to the creation and regular distribution of podcasts through the Internet.

Podcasts, which can include audio, video, PDF and ePub files, are subscribed to and downloaded through web syndication or streamed online to a computer or mobile device.

3.15 Social Network

It is a network of or connectivity among individuals or organizations. It is a dedicated Website or other application which enables user to communicate with each other by posting information, comments, messages, images etc. There is complete freedom for the individuals to make connections on mutual understandings for any general or specific purpose. facebook, Twitter, Google +, linkedin etc. are some of the largest social networks.

Page No. 32
Date

3.2.5 Social Bookmark

Bookmarking is the practice of saving the address of a website you wish to visit in the future on your computer.

Social bookmarking is an advance way to store, organize and share collection of website across the Internet. It is used to save the links to website that the user wants to retain or share.

3.2 Constructivist Learning and ICT

Constructivism states that learning takes place in contexts, while technology refers to the designs and environments that engage learners. This study was based on two premises: ~~The first~~

The first concerns the implementation of the ICT enhanced constructivist learning today in classroom. The second refers to the emerging need for the appropriate teacher education and professional development as a presupposition for the implementation of constructivist innovation in classroom.

3.2.1. 5E Approach

The 5Es represents five stages of a sequence for teaching and learning: Engage, Explore, Explain (or Elaborate), and Evaluate. Though this sequence the students and teachers would be able to involve in activities, which stimulate the experiences, resulting in construction of knowledge built up on the previous knowledge. Each ~~step~~ stage is explain below:

i) Engage → The purpose of Engage stage is to pique student interest and get them personally involved in the lesson, while pre-assessing prior understanding.

Students are given the opportunity to express what they already know about the topic in order to make connection between the past and the present learning experiences.

ii) Explore → The purpose ~~of~~ for the Explore stage is to get students involved in the topic; providing them with a chance to build their own understanding.

iii) Explain → The purpose of Explore stage is to get students provide students with an opportunity to communicate what they have learned so far and figure out what it means.

Students explain the concepts they have been exploring and give opportunities to express their conceptual understanding or to develop new skills or behaviours.

iv) Elaborate → The purpose for Elaborate stage is to allow students to use their new knowledge and continue to explore its implications.

This phase help the students to expand their conceptual understanding and practice skills.

v) Evaluate → The purpose for Evaluate stage is for both students and teachers to determine how much learning and understanding has taken place.

3.2.2. Project Based Learning (PBL)

Project Based Learning (PBL) is a teaching method in which students learn by actively engaging in real-world ~~problems~~ and personally meaningful projects.

Or, PBL is an instructional approach designed to give students the opportunity to develop knowledge and skills through engaging projects set around challenges and problems they may face in the real world.

The basis of PBL lies in the authenticity or real-life application of the research and is considered an alternative to paper-based, note memorization, teacher-led classrooms

Elements:

Phase 1 :→ Discuss the project topic and ask the students' what they already know about the topic.

Phase 2 :→ In teams, students gather information from a variety of sources and synthesize, ~~the~~ analyze and derive knowledge from it. They also ~~talk~~ talk to experts and visit the site involved (if applicable).

Phase 3 :→ The teams then put together a presentation showing what they have learned and make a presentation to the rest of the class.

3.2.3 Web Quest

WebQuest is an inquiry-oriented lesson format in which most or all the information that learners work with comes from the web.

WebQuest is an inquiry-oriented activity in which students get all information from the web. Teachers provide their students with the documents that include links to websites to use the information, according to the activity. The purpose of using webquest is to encourage students to use information rather than gathering it and participate in meaningful classroom discussions. Webquest support critical thinking through analyzing, creating and evaluating. Also, it integrates technology into learning and fosters cooperative learning.

The following 6 components are essential for implementing WebQuests in the classroom:

i) Introduction

The first component provides the learner with background on the WebQuest activity to be completed. It is important that the WebQuest be related to student interests, ideas or past experiences.

ii) Task

The task is the formal explanation of what the student is supposed to do. It outlines what students should accomplish upon completing the WebQuest. Developing the task is most difficult and creativity part of designing a WebQuest.

iii) Process

The process is the steps students take to complete the task. The teacher suggests the steps the learners should go through in completing the task.

iv) Resources

It consists of list of resources provided by the teacher, that will assist the learner in accomplishing the task. Resources can be bookmark sites or printed materials.

v) Evaluation

Evaluation is how ~~them~~ student is graded. It uses a rubric, an established set of rules or guidelines, for evaluating students' work. It is important that standards be clear, consistent and specific.

vi) Conclusion

During the final component, students are provided with the opportunity for reflection and summation about the experience. Students should be encouraged to reflect about the process, to extend, and generalize what was learned.

3.2.4. Virtual Field Trip

A virtual field trip is a guided ~~response~~ exploration through the world wide web that organizes a collection of pre-screened, thematically based web pages into a structured online learning experience.

~~Field trip~~

A virtual field trip ~~is~~ for elementary learners is the opportunity to explore and see places, things and people not normally seen on a typical classroom day. During a classroom virtual ~~field~~ field trip, students can explore places ~~according to~~ across the high seas, states across our country, and many nearby or faraway people, places and things. This is an opportunity to see and experience the world without ever leaving the classroom.

The virtual field trip is cost effective to schools. It eliminates the cost of renting transportation, additional insurance coverage and the cost of chaperons.

Unit-4

ICT in Assessment

Ajanta
Page No. 41
Date

4.1. Introduction

Assessment is the process of identifying, gathering, and interpreting information about students' learning. Assessment involves using wide variety of methods and tools to evaluate, measure and document the student learning. Assessment basically helps one to improve learning and also set direction for ongoing teaching and learning process.

4.2. Meaning and Types of Assessment

Meaning

The word "Assessment" comes from the Latin ~~word~~ verb 'assidere' meaning 'to sit with'. In assessment, one is supposed to sit with the learner. This implies it is something we do 'with' and 'for' students and not 'to' students. (Green, 1999)

Assessment in education is the process of gathering, interpreting, recording and using information about pupils' ~~response to~~ responses to an educational task.
(Harlen, Gipps, Broadfoot, Nuttal, 1992).

4.2.1. Types of Assessment

Assessment can be classified into various types or approaches based on the purpose for which it is designed. It can be classified as follows:

1. Formative Assessment

Formative assessments are used in the middle of a lesson or year to determine how students are progress-ing. The goal is to monitor students' learning to

provide feedback and information during the instructional process, while learning is taking place.

2. Summative Assessment

Summative assessment measures the students achievement at the end of instruction. It takes place after the learning has been completed and provides information and feedback that sums up the teaching and learning process.

3. Diagnostic Assessment

Diagnostic assessment assesses a students strengths, weakness, knowledge and skills prior to instruction. Knowing students strengths and weakness can help you better plan what to teach and how to teach it.

~~4. Authentic Assessment~~

4. Dynamic Assessment

It measures what students can achieve when teaches about unfamiliar topic or field. An example can be teaching students Spanish for a short while. It helps to see how students who do not have any prior knowledge of it.

5. Performance Assessment

Performance assessment is one which requires students to demonstrate that they have mastered specific skills and competencies by performing or producing something.

4.2.2. Current Trends in Assessment

Traditional multiple-choice tests have come under a great deal of criticism in recent years, but whatever their flaws, they are a mature technology that offers some distinct advantages. In comparison to some other forms of assessments, they do not require a lot of time or cost a lot of money to administer, and they generate scores that are familiar to educators.

However, the recent trend in assessment initiatives by NCERT and CBSE the reach of assessment is more expansive and complex, designed to produce a well-educated, well-rounded student, not just one who could demonstrate discrete literacy and numeracy skills. Thus, they included not just academic content knowledge, but also outcomes that related to thinking, creativity, problem solving, and the interpretation of information.

Some major features of assessment are:

- Integral to classroom culture.
- Oriented towards clear learning goals.
- Incremental and interactive.
- Providing feedback that is timely and specific.
- Focused on the process of learning as much as the outcome.
- Using varied methods to deepen learning and meet diverse student needs.

4.3. Role of ICT in Assessment

Technology has a vital role to play in effective and efficient assessment of learning. Modern technology offers educators a variety of new tools that can be used in the classroom. Technology can help teachers assess their students' learning as well as their performance in the classroom. Use of ICT in assessment involves the use of digital devices to assist in the construction, delivery, storage or reporting of students assessment tasks, responses, grades or feedback.

Teachers can use computers to construct their assessment tasks to deliver these tasks to relevant students and to record and provide feedback and grades to these students. Computers can also be used to analyse students' responses, both to provide feedback to the student as well as to provide ~~feed~~ feedback to the teacher.

ICT based assessments can be used to test many different capabilities and skills that are developed by students.

4.3.1. Computer Assisted Assessment (CAA)

Computer Assisted Assessment refers to the use of computers to assess students' learning and performance. CAA is a term that covers all forms of assessments, whether summative or formative, delivered with the help of computers, either online or offline.

CAA is typically formative, in the sense it helps students to discover whether they have learned what the educator intended and provide timely feedback on how best to teach subject. Increasingly, it can be summative with limited feedback typically being given at the end of a course.

Advantages
- It can be marked objectively which is reliable.
- Tests can be marked quickly and easily.

Disadvantages
- It is costly.
- Construction of good objective tests requires skill and practice.
- Security issues.

4.3.2. Computer Adaptive Testing (CAT)

CAT is a form of computer-based test that adapts to the examinee's ability level. For this reason, it is also called tailored testing.

In CAT, depending on the student's responses, the software will automatically adjust the level of difficulty of the questions it poses. If a student gives a wrong answer, the computer follows up with an easier question; if the student answers correctly, the next question will be more difficult.

CAT Components

There are 5 technical components for building a CAT:
1. Calibrated item pool
2. Starting point or entry level
3. Item selection algorithm
4. Scoring Procedure
5. Termination criterion

Advantages
i) Faster tests as it provide 50% - 9% reduction in test length.
ii) Higher motivation
iii) Increase in security (less chance of cheating)

iv) More accurate results

v)

Disadvantages

i) Requires large sample size.

ii) No review.

iii) Recovery of poor starts

Page No.
Date

9.4. Assessment: Digital Tools and Options

i) Padlet → A free website for collecting and sharing text, images, videos and files.

ii) Recap → A free app that lets teachers prompt the students to explain their thinking on a question or topic using video.

iii) Google forms / sheets → A Google Drive app that create forms with hyperlinks, images and videos that student can collaborate on real time using smartphones.

iv) Google Classroom Question Tool → Used for creating questions and that can be shared with students.

v) Formative → An online, all-student response system provides teachers the opportunity to assign activities to students, receive the results in real time, and then provide immediate feedback to the students.

vi) Todays Meet → Simple online conversations & allow teachers and their students to communicate outside of the classroom.

vii) Quizalize → A new website for playing class quiz games.

viii) Go Class → Give powerful interactive lessons to kids via their mobile devices.

4.5 E-portfolio

An e-portfolio is a digital collection of electronic evidences assembled and managed by a user or student. Such electronic evidences include text, essays, posters, files, images, videos, artworks, hyperlinks etc. A good e-portfolio is both a process and a product. E-portfolio is also known as digital portfolio or online portfolio.

4.5.1. Tools for Creating e-portfolio

1. Google sites/apps → Students can use it to create and host their own digital portfolios. You can create as many as pages and then upload and share with others. Site 'help' has everything students need to effectively use Google Sites.

2. Google Slides → Google slides can be used to create digital portfolios in the form of a presentation.

3. Wordpress → It is a famous blogging site to create online portfolio. Blog posts and smartly designed websites enable students to categorize their work and revisit it in the future.

4. Edublogs → It is a student-centric learning platform that includes course blogs, e-portfolios, and managing student projects.

5. Weebly → Like Google sites, Weebly provides users with a simple drag and drop feature that allows ~~student to~~

you to design your website the way you want without any technical knowledge.

6. Evernote → It is a cross-platform tool designed to take notes, organize content and archive the same. It empowers students to write down notes, take photos, upload content, record audio, and tag items with specific keywords.

7. Seesaw → It is a powerful tool to help students create and share digital portfolios. Teachers and parents can easily access and check students work.

4.5.2. Advantages of e-portfolio

1. Recognizing learning
2. Recording learning - (save educational & work experience)
3. Reflecting on learning
4. Validating learning
5. Planning new learning
6. Assessing learning

4.6. Digital Rubrics

'Rubric' means "a scoring guide used to evaluate the quality of students' constructed responses". Simply, it is a set of criteria for grading assignments.

4.6.1. Tools for Creating Digital Rubrics

i) iRubric → It is a powerful tool for creating educational rubrics. Student grades are automatically saved in the gradebook and a copy of the scored rubric with your notes is securely displayed to individual learners.

ii) Quick Rubric → Used to create rubrics to help you assess things such as oral presentations, writing projects, reading comprehension, storytelling and many more.

iii) Rubistar → It is a free online rubric maker to help the teacher who wants to use rubrics but does not have the time to develop them from scratch. It can help you create rubrics for your project-based learning activities.

iv) Google forms for grading rubrics → It uses basic spreadsheet function (that automatically add up a student's score) to give feedback that can be emailed to them immediately.

4.7. Digital Assessment Alternatives

Several digital assessment alternatives are available for assessing students' performance. Some of the Web 2.0 tools today can serve as alternative assessment tools for student learning.

4.7.1 Online Assessment

It is the process used to measure certain aspects of information for a set purpose where the assessment is delivered via a computer connected to a network. Most often the assessment is some type of educational test.

i) Online forum

Forum is an asynchronous communication tool. Learners could be asked to brainstorm on a topic by posting their ideas in a forum. Teacher can ~~mate~~ create many topic specific discussion forums and this could be used to evaluate learners' level of understanding and misconceptions if any.

ii) Blog:

Wiki

- improve writing by helping students to practice and refine writing knowledge, skills and behaviours.
- define personal learning goals as students can reflect and plan for future learning and progress.
- provide a representation of understanding for students to connect the experience to the learning.

4.7.2. ICT for Self and Peer Assessment

ICT can support peer and self-assessment process. The use of electronic learning environments and web-based interfaces provide a good scope for peer and self-assessment in reflection and feedback.

Web-based tools like Wikis, blogs, WebPa, Teammates, peerwise, SparkPlus etc. allows the frequent and efficient implementation of self and peer assessment activities even in large classes.

i) Blogs → allows students to keep record of their learning progress. As a teacher, we can follow each student's blog, adding supportive comments as appropriate.

ii) Wiki → It is a collaborative website which allows the members of the group to create, discuss and edit the comment. We as a teacher can manage and set up the process and monitor the contributions.

iii) WebPa → It is designed for teams of students doing group-work, the outcome of which earns an overall group mark. Each student in the group grades their teammate performance.

iv) PeerWise → Students use it to create and explain their understanding of courses related assessment questions, and to answer and discuss questions created by their peers.

4.7.3. Mobile Apps for Assessment

i) Socrative → is a mobile app which emerges the entire classroom with educational exercises and games while capturing students results in real-time. It will instantly grade, aggregate and provide visuals of results to help you identify opportunities for further instruction.

ii) Plickers → is a powerful assessment tool that lets teachers collect real-time formative assessment data without the need for student devices.

iii) Recap →

4.8. The Trends in Technology Based Assessments

i) Enhanced Question Types → Technology based assessments allow for a variety of question types beyond the limited multiple-choice, true or false, or fill in the blanks questions that have characterized traditional assessments. Examples are: graphic response, hot text, equation response, performance based assessments etc.

ii) Provide Real-Time Feedback → Technology based assessments can offer real-time reporting of results, allowing stakeholders to understand students' strengths and weaknesses, while guiding them to make valid, actionable interpretations of the assessments data. Such assessments can enhance educators to see, evaluate and respond to student work more quickly than can traditional assessments.

iii) Increase Assessibility →

Advance in technology grounded in Universal Design and systems that align to Universal Design for Learning (UDL) have made assessments more accessible and valid for greater number of students, including those with diverse abilities and language capabilities. Similarly, assistive technology, such as text-to-speech, alternate response systems, and refreshable braille, supports students with disabilities in accessing learning.

iv) Adapt to Learner Ability and Knowledge
→ Computer adaptive testing uses algorithms to adjust the difficulty of questions throughout an assessment on the basis of students' responses. For example, if student answers correctly, next question will be challenging and if answers incorrectly then next question asked will be easier.

v) Assessment for Ongoing Learning → Technology provides students with multiple pathways to create accessible work throughout the year. To demonstrate their understanding, students can create multimedia productions, construct websites and design interactive presentations to serve as products for assessments. Technology has transformed the assessment practices by providing several softwares.

vi) Gamification → The adoption of gamification is perhaps one of the biggest trends in educational technology that turns the learning process lot more fun and engaging. By adding game elements and bringing video game designs into the learning process, this edtech trend improves the concentration level of the students.

Unit-5

ICT for Educational Management

Ajanta

Page No.

Date

5.1. Introduction

ICT in education is the mode of education that we information and communication technology to support, enhance and optimize the delivery of information.

ICT has become an essential part of our everyday life, accordingly this integration in school improvement is not only for the purpose of teaching and learning, but also for educational management use, it has become one of the most effective factors in the school improvement. ICT ~~improves~~ plays vital role in functional effectiveness of the school system.

5.2 Role of ICT in School Administration

ICT plays a vital role in supporting powerful, efficient management and administration in education sector. It is specified that technology can be used right from student administration to various resources administration ~~to various~~ in an educational institution.

5.2.1. Record keeping

The school records are official transcripts or copies of proceedings of actions, events, other matters kept by the school administrator. School records could be viewed as authentic registers or instruments or documents of official accounts of transaction or occurrence which are preserved in the school's office. Therefore, every school must keep certain specified records.

Some important school records are:

- Admission and withdrawl register
- Attendance register
- Log Book
- The visitors Book
- Staff and Students' Personal files
- Students' report sheet/card
- Lesson Notes/Plan
- Cash Register etc.

5.2.2. Scheduling

Creating a schedule that will maximize instructional time, provide time to meet the needs of the school's students, provide time for staff to meet and plan, organize various activities of the school is very important for any school. Use of ICT ensure that such scheduling

happens smoothly.

Some important activities of the school that needs to be planned and scheduled are:

- School Calendar
- Teaching time table
- Examination time table
- Meetings including PTA

There are many softwares which help in such scheduling. Google calendar and FET (Free Evolutionary Timetabling) time table software two such commonly used tools.

3.2.3. Communicating with Parents

Communication is important to inform parents about school activities. It is also a vehicle for developing awareness and understanding among parents of their role in the learning and development of their children. Communication between schools and ~~parents~~ families is essential for building trusting relationships that foster parental involvement.

ICT is improving parental involvement in schools and social institutes and uncovers barriers that prevent usage of technology to promote communication.

Tools and Technologies for Connecting with Parents:

- E-mail
- Website or Blog
- Online Survey
- Virtual Learning Environment
- Social Networks (Facebook, Twitter etc.)
- SMS and instant messaging (WhatsApp, imo, etc.)

5.2.4. School Management Tools

School management includes admission of students to various courses, assigning subjects and classes to teachers, maintaining records, communicating with parents, preparing various certificates etc. A School manager should have a good understanding of the school itself as well as the trend of education development. Going with school administration software could be costing your time and effort.

There are lot of School administration ~~tools~~ software available free of charge. Some of them are listed below:

- Fekara → for conducting exams, assignments, budgeting and internal messaging.
- TS School → Stands for Time Software School. Used for student management system and exam module.
- Fedena → For handling records.
- Ascend SMS → Offers a health management system for the school nurse to a mobile app for parents to a simple discipline reporting system.
- School Tool → Provides educators gradebooks, class attendance sheets, and daily participation journals along with organization features including apps like Google Calendar.

5.3. Assistive Technology and Inclusion

5.3.1. Assitive Technology - Meaning and Nature

Assistive technology (AT) means any piece of technology that helps a student with or without a disability to increase or maintain his/her level of functioning. These often includes laptops with specialized programs, like speech to text, text to speech, graphic organizers and word prediction software.

Assistive technology device means any equipment or product system that is used to increase, maintain, or improve the functional capabilities of a child with a disability.

Nature of Assistive Technology

- AT compensates for a students' skills deficits, needs and areas of disability.
- AT is used to lessen or remove barriers faced by person with disabilities.
- AT refers to both high and low-tech tools included in everyday life, education, employment and living.
- AT offers a wide range of equipment to support participation and learning.
- AT improve the speed and accuracy of students' work.

5.3.2. Types of Digital Assistive Technology

It is important to understand that not all technologies are appropriate for all individuals. So, when choosing an assistive technology, consider the specific individual, the setting and the tasks to be performed.

Low-tech Assistive Technology : Pencil grips, Graph paper, highlighting pens, Digital Clocks, Calculators, etc.

Mid-to Hi-Tech Assistive Technology
- Digital recorders
- Digital books
- Graphing calculators
- Electronic math worksheets
- Portable keyboards
- Mobile Technology, e.g. smartphones, tablets, mp3 players
- Reading Systems such as scanner
- Speech/Voice recognition system

5.3.3. Choosing and Using Appropriate AT

Motivation is very important to support an effective use of AT, for this reason the goals of the ~~person~~ potential user should be carefully defined, so that the device application can become meaningful and motivating to the person.

AT is to be successfully used by the end-user when it is appropriate :
- Effectiveness or how will the technology enhance the users capability.
- Affordability or how easy the technology is to purchase, maintain and repair.
- Operability or how easy the technology is to empty.
- Dependability or how long the technology operates without reduced performance or breakdown.

5.3.4 Universal Design for Learning (UDL)

The term "universal design" means a concept or philosophy for designing and delivering products and services that are usable by people with the widest possible range of functional capabilities, which include products and services that are directly usable and that are made usable with assistive technologies.

The origin of the term UDL is generally attributed to David Rose, Anne Meyer, and colleagues at the Center for Applied Special Technology (CAST).

CAST's philosophy of UDL is embodied in a series of principles that serve as the core components of UDL:

- Multiple means of representation to give learners various ways of acquiring information and knowledge.
- Multiple means of expression to provide learners alternatives for demonstrating what they know.
- Multiple means of engagement to tap into learners' interests, challenge them appropriately, and motivate them to learn.

5.3.5 Advantages and Limitations of AT:

Advantages

- No one feels left out → everybody has equal opportunity
- Students are able to work at their own pace.
- It is for both students with disability and others.
- Students are able to achieve academic standards.
- Creates awareness.
- It builds social bridges among students.

Date

Limitations

- Most of ATs are costly.
- It is time consuming as it needs training to use.
- Training is required.
- Not universally accessible

5.4. Management of ICT infrastructure of the school

5.4.1. Automated and ICT Managed School Processes

School will adopt ~~or~~ an e-governance and automated school ~~information~~ administration programme for schools, build capabilities for its implementation and deploy school based Management Information System (MIS). These MIS will be integrated with the proposed State wide web based School Education Management Information System.

A school wide local area network enables automation of variety of processes. Beginning with library automation, locally cached offline access to internet resources, office automation, maintenance of records, student tracking, resource planning, using the existing ICT infrastructure will increase efficiencies. At the same time, savings in cost, time and effort will also accrue. The school wide local area network will be used to faulitate this automation.

5.4.2. School Management Information System

- A nation wide network will be established in which Schools, teachers, students, school managers and the community at large participate. This implementation will include the School MIS, digital resources of tools, content and resources, professional development and continuing education platforms and guidance, ~~tons~~ counselling and other student support services.

• School MIS will emerge as a single window clearing house on all information related to the secondary school system. The information will facilitate research and analysis activities and guide decision making at different levels - in the education system, contributing to enhanced efficiencies.

• The scope of information to be collated by the MIS will be broad and include student and teacher tracking, particularly for their academic needs. The norms will also define standards of technology including language fonts, word processors, technical dictionaries etc. Open standards facilitating universal access to information, content and resources will be ensured.

5.4.3. Infrastructure and its Maintenance

Concept of ICT Infrastructure

The ICT infrastructure is composed of by a set of hardware, software, services, procedures, processes and persons. The ICT Infrastructure enables to share the ICT capabilities which provide services for other systems of the organization. These capabilities requires complex combination of the technical infrastructure (cabling infrastructure, hardware platform, base software platform), ICT shared services (as communication services), ICT applications (as Web services), the human operators and the managerial experties to guarantee reliable services. In ICT system, ICT infrastructure does the include the specific computer apps but the teachers or other users should experience and innovate using specific computer apps on the ICT infrastructure.

Hardware

- Each school will be equipped with at least ~~one~~ 10 networked computer access points to begin with. Each laboratory will have a maximum of 20 access points, ~~accounting~~ accomodating 40 students at a time.
- Not more than two students will ~~access~~ work at a computer access point at a given time.
- At least one printer, scanner, projector, digital camera, audio recorders and such other devices will be the part of the infrastructure.
- In addition, at least one classroom will be equipped with appropriate audio-visual facilities to support an ICT enabled teaching-learning.

Software

- A software environment favouring pedagogy of learning which promotes active learning, participatory and collaborative practices and sharing of knowledge is essential to nurture a creative society.
- Free and Open Source Software - OS and software applications will be preferred in order to expand the range of learning, creation and sharing.
- Graphics and animation, desktop publishing, web designing, databases and the programming tools have the potential of increasing the range of skills and conceptual knowledge of students and teachers.

Network and ~~Security~~ Connectivity

- All Computers in school will be part of a single local area network to enable optimum sharing of resources.
- Internet Connections will also be provided at the library, teachers common room and the school-heads office.
- The number of computers given internet connectivity will be governed by the available bandwidth, in order to ensure adequate speeds.
- Teachers and students will be educated on issues related to the safe use of internet firewalls and other security measures.

Enabling Infrastructure: its maintenance

- The enabling infrastructure required to efficiently maintain the ICT facility will be defined, established and maintained.
- Regular and regulated supply of electricity, appropriate electrical fixtures, adequate power backup and support including alternate sources of energy, where needed, will be ensured.
- Students and teachers will also be trained in the safe use of electrical outlets and fittings.
- All the equipment and resources will be secured from theft and damage.

5.4.4. Technology plan for the school

The school mission is to educate, guide and challenge all students to develop lifelong learning skills necessary to successfully contribute and compete in a rapidly changing global community.

Principals and program leaders have sufficient technology available to support curriculum, instruction and assessment.

Building Schools for the future

The following conditions are recognized as critical elements of future schools:

- Schools of the future must be open and flexible, focusing on learning.
- Educators must be supported in their use of technologies for learning and professional development and collaboration.
- Learners must be able to use technology to achieve new levels of learning and to acquire new information age skills and abilities.
- Free from one geographic location, anywhere, anyplace, anytime.
- Supportive of all learning styles.

Students will be able to use technology in an ethical manner to:

1. Communicate globally
2. Locate information
3. Gather research data
4. Organize information
5. Utilize decision making
6. Produce presentation and projects.

Date

7. Evaluate Presentations or Projects

Unit-6

ICT for Teacher Professional Development

Ajanta
Page No.
Date

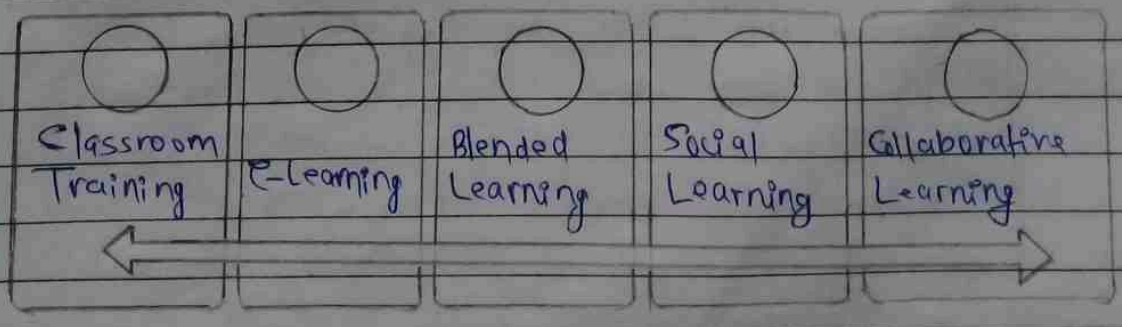
6.1. Introduction

6.2. Teacher Professional Development - Concept

Professional development refers to the acquisition of skills and knowledge, both for personal development and for career advancement.

- Teacher Professional Development (TPD) is 'a systematized, initial and continuous, coherent and modular process of professional development of educators in accordance with professional competency standards and frameworks.'
- Teacher professional development would also include training in the adaptation to the evolution of change of the profession of teachers and managers of education systems.
- From the definition, we understand that it consists of systematic activities with clear purpose. The purposes are concurrent with the needs of teachers that arise from time to time.
- The teacher professional development is now a developing area in teacher education.

There are different models that are in practice for the purpose. One model proposed by Hart J (2010) that speaks of workplace learning look useful to understand various avenues for teacher professional development in the context of ICT.



Date

- Classroom Training - refers to formal professional education programs available for teachers.
- E-elearning → refers to the teacher development materials available in digital form and learning happening mostly through online mode.
- Blended Learning → brings together the strengths of both face-to-face and e-learning modes.
- Social Learning → will include a social aspect to the blended mode through social interactions, using social media.
- Collaborative Learning → One has to collaborate with others as a part of learning. Here learning and working are assumed to take place together.

63. ICT in Teacher Professional Development

Researchers have identified many use of ICT in relation to TPD that can group in three categories:

- A focus study that develops teachers' abilities to use specific ICT tools, such as online platforms.
- A delivery system providing teachers with information to improve pedagogy and content mastery.
- A catalyst for new forms of teaching and learning, such as inquiry-based learning, collaborative learning and other forms of learner-centered pedagogy.

In other words, professional development in the context of ICT can be placed under three broad headings, namely:

- Learning how to use ICT
- Learning through ICT
- Integration of ICT in teaching and teacher learning

6.3.1. Learning How to use ICT:

ICT with its versatile nature has found its application in every activity related to educational practice. Some typical questions you may have to address while learning how to use ICT are as follows:

- How do I use ICTs? (Technical)
- What can ICTs help me do? (functional)
- How can I use ICT tools with so many students? (Logistical)
- How can I learn from and with ICTs? (Conceptual)
- How do I assess student learning in ICT based projects? (Evaluation related).
- How can ICTs help my students learn in different ways? (Instructional)

Another way to look learning about ICT use in educational purposes is to see the various applications of ICT in educational setting. Following is a non-exhaustive list giving an indication on various areas of ICT application.

- Learning ICT use for instructional planning.
- Learning ICT use for facilitating learning.
- Learning ICT use for assessment.
- Learning ICT use for school management.
- Learning ICT use for inclusive classroom.
- Learning ICT use for strengthening school community relationship.

6.4. Teacher Professional Development through ICT

Emergence of new technology, especially Web 2.0 technologies have given many platforms for teachers to learn. In this section, we explore various opportunities available for professional development of a teacher through ICT.

6.4.1. Onlin Learning Platforms

Internet is a host for a large number of learning opportunities. Some of them give learning opportunities by offering complete online courses. There are free as well paid courses that one can from. The online learning platform may supply the reading materials as well as opportunity to post your learning.

Following are some examples of online learning opportunities:

- The Open University, London,
  http://www.open.edu/openlearn/education
- Commonwealth of learning,
  http://www.cctionline.org/

Some other online platforms are:

- Javatpoint : http://www.javatpoint.com
- Tutorialspoint : http://www.tutorialspoint.com
- Geeksforgeeks : http://www.geeksforgeeks.org
- Khanacademy : https://www.khanacademy.org/
- iEarn : http://www.iearn.org

6.4.2 Massive Open Online Courses (MOOCs)

It is a model for delivering content online to any person who wants to take a course with no limit on attendance, to any number of participants, at a fixed given timeframe.

The MOOCs are different from the online learning platforms in a sense that in MOOCs, one would be able to enroll into a full-fledged course, comprising of course structure, instructional video, guided interaction, monitored evaluation, grading of the tasks completed etc.

Some examples of MOOC are:

- Courseera : https://www.coursera.org/
- edX : ~~https~~ https://www.edx.org/
- Open learning : https://www.openlearning.com
- Future learn: https://www.futurelearn.com/
- Stanford Online: http://online.stanford.~~online~~ edu/

6.4.3 Social Media Networks

Social media networks provide teachers with opportunities to get connected with people who are working in areas connected with educational practice. Most highly used of such a network is sharing ideas. Spaces such as Twitter (https://twitter.com/), LinkedIn (https://in.linkedin.com/), facebook (http://www.facebook.com/) and Google+ (https://plus.google.com) offer instant opportunities to follow and learn from authors, educators, educational ~~leaders~~ leaders ~~and~~ who not only share information and resources but ~~also~~ frequently initiate

and invite direct engagement.

6.4.4. Web 2.0 Technologies

Web 2.0 is the term given to describe a second generation of World Wide Web that is focused on the ability for people to collaborate and share information online. Web 2.0 tools are easy to use and quickly developed and organized. Thus, they allow powerful information sharing and straightforward collaboration.

Some Web 2.0 technologies/tools are described below:

i) Wiki → Wiki is another web 2.0 technology where teacher could contribute and hence engage in professional development. Wiki is a type of interactive website where the webpages are editable by the users of the site. Users are able to edit existing pages and add new pages to the site. Since putting together information on a particular topic requires research, synthesis and presentation of the idea for others that helps teachers develop their knowledge on the area they are exploring, it makes a wiki a powerful tool for professional development.

Useful wiki for teachers:

- Wikipedia (https://en.wikipedia.org/)
- Wikimapia (http://wikimapia.org/)
- WikiHow (http://www.wikihow.com/)

ii) Blog → Following a blog written by others in the profession is a good way for one's professional development. Since, blog also provides opportunities to interact asynchronously, there is a possibility of social learning. Writing a blog is another way of engaging in professional development. Systematic, articulated

writing is only a product of thoughtful engagement in the problem.

iii) Podcasts → A podcast is an episodic series of digital audio files that a user can download in order to listen.

Podcast is another web 2.0 technologies that are useful for teachers. Since the audio formats can be played on mobile phones, they are available for teachers for convenient professional development, i.e. teachers can select what, when and where they learn.

Some useful podcasts for teachers:

- Radio Lab (http://www.radiolab.org/)
- Grammar Girl (http://www.quickanddirtytips.com/grammar-girl)
- Teacher Created materials (http://www.teachercreatedmaterials.com/podcasts)
- Math Mutation (http://mathmutation.blogspot.co.uk/)

iv) Onlin groups → Online groups such as WhatsApp groups are most popular among teachers. There are other ways to connect people through formation of groups. One of them is mail group. Facebook Messenger group is also one of them. All of these onlin groups help teachers to share information and provide platforms for conversations.

v) Social bookmarking → Social bookmarking, an online service through which adding, editing and sharing bookmarks of online resource is possible. This collection of resources is useful to every teacher teaching the topic

Sharing such a collection of sources is easy when social bookmarking service is used. Some of the most popular social bookmarking service providers are: ~~Digg~~, Diigo, StumbleUpon, delicious etc

6.4.5 Web Conferencing → Web conferencing allows us to connect and communicate in real-time with people in different locations through Internet. It allow people to reach in a conversation crossing state, national and international boundaries, crossing various time zones. Web conferencing has become popular for delivering professional development to teachers. Whenever an expert, be it a subject expert, pedagogic expert or a teacher expert needs to be invited from a far off place, webinars are found to be a good tool for hosting such interactions.

6.5 Teacher Professional Development in integrating ICT

ICT integration refers to the use of ICTs to support teaching and learning across the curriculum. Integrated use of technology may involve students working with computer productivity tools to complete learning tasks or searching the Internet for learning, but it is always tied directly to student mastery of their school subjects.

Few examples of ICT technologies which lend themselves for easy integration in teaching and learning are discussed below:

6.5.1. Online Video / Teaching Channels

There are many platforms like YouTube (http://www.youtube.com) which provides thousands of videos which can be embedded in the lesson. They are popularly known as teaching channels. These not only enrich the contents of for teachers but also provide a rich learning experience by exposing students to professionally made educational videos.

Some other teaching channels are:

- TED Ed (http://ed.ted.com).
- Stellarium (http: www.stellarium.org/)
- Teacher Tube (https://www.teachertube.com/)

6.5.2. Teacher Portfolio

Portfolios are also good tools for teacher professional development as they can be used to record, display, analyze and reflect on individual teachers' professional journey.

Since the teacher portfolio given in addition to the experience of the teacher, a reflection on the experience

it gives an opportunity to improve upon one's own teaching. Thus, portfolio management gives teacher an explicit opportunity to reflect on teaching experience and learning, making a teacher a reflative ~~practitioner~~ Practitioner.

E-Portfolio → Teacher portfolios maintained in digital form are called e-portfolio.

Components of Teacher portfolio:
- Thoughts about teaching.
- Documentation of your teaching.
- Teaching effectiveness.
- Material demonstrating Students learning.
- Activities to improve instruction.
- Honors, Awards, or Recognitions
- Teacher Reflections

6.5.3. ICT integrated Action Research

Action research is an example of a reflective practices of teacher. Action research refers to a practice in which teacher investigate teaching and learning so as to improve their own teaching and their students' learning.

One popular action research model proposes four cyclic phases. Look, Plan, Act and Reflect.

The look phase is an analytical phase where one identifies the problem.

During the Plan phase teacher starts devising a plan to overcome the problem.

In the Act phase, the plan is implemented and

during the Reflect phase one again look at the situation and see to what extent the problem has been addressed.

ICTs are helpful to teacher in every phase of action research. Apart from being a tool for the teacher in taking up action research, ICTs provide many opportunities to integrate it in teaching learning process and make learning effective.

6.5.4. e-publication → The e-publication has been used in the sense of broad sense of publishing in an online platform in the online. It could range from publishing in a professional journal to publishing content in a website. One the other hand, publishing doesn't require this review in advance. As readers comments and express their views the content could be revised and further developed.

There are many avenues to create blogs and websites. Some of the service providers to publish blogs and websites are:

- Wordpress (https://www.wordpress.com/)
- Blogger (https://www.blogger.com)
- Simplesite (http://www.simplesite.com/)
- Googlesite (http://www.google.com/sites/overview.html)

6.5.5 Teleconferencing - EDUSAT Experiment

EDUSAT is an educational satellite dedicated to serve the educational sectors offering an interactive satellite based distance education system for the country. EDUSAT was launched in the year 2004.

It was intended to provide connectivity to schools, colleges, and other similar institutions.

For Teleconference refers to an arrangement of reaching out to multiple centers from a central place through satellite connectivity. The centers could have audio or video outputs. The experts located at the central position interact with participants located at various centers through video or dedicated telephone connection.

Apart from this, model radio and video lessons were used to help teachers to get a sense of how to lead the lesson. in interactive radio instruction (IRI) and interactive video instruction (IVI).

This is a good example of ICT being used for professional development of teachers for integrating ICT in classroom.

EDUSAT also facilitated the launch of dedicated live televisions, GyanDarshan 1 and 2 and a radio channel, Gyanvani.

Unit-7

e-Content & Open Educational Resources

Ajanta

Page No.
Date

7.1. Introduction

This unit aims at making you understand the meaning, designing and development of e-content. You will understand the standards of e-content, learning objects, re-usability of e-content and authoring tools. In this unit, you will also learn about open educational resources, meaning and importance, various OER initiatives and creative common licensing.

7.2 Electronic Content (E-Content)

Electronic content (e-content) which is also known as digital content refers to the content or information delivered over network based electronic devices or that is made available using computer network such as Internet.

According to Oxford dictionary 'e-content is the digital text and images designed to display on web pages.

E-learning is becoming popular because of its flexibility of time, place and pace of learning. Well developed e-Content can be delivered many times to different learners.

7.2.1. Designing and development of e-Content

The purpose of e-content development is to create an information rich society. Every one in the society is empowered to create, receive, share and utilize information for their ~~purpose~~ progress. Very well designed, developed and validated e-Content will provide access to high quality meaningful digital content and serve as an effective virtual teacher.

In designing and development of E-content, we have to adopt one of the instructional design models based on our requirements. Most common and popular model is ADDIE model.

The abbreviation stands for the five stages involved in the model. They are Analyze, Design, Develop, implement and evaluate.

1. Analysis → It is the first phase of this model meant for examining the suitability of the e-content to be developed. Analyzing the learning needs is identifying the needs from the perspectives of different learners, teachers, subject experts, practitioners, policy makers etc. needs are to be clearly stated.

- Content Analysis
- Learner Analysis
- Task Analysis
- ~~Content Analysis~~

2. Design → It is concerned with defining learning objectives, structuring the content logically, specifying the instructional and evaluation strategies, and preparing for visual and technical design.

- Learning Objectives – are statements that describe what the learner will be able to do at the end of the course or program.
- Instructional Strategy – depending on the nature and learning style of the content we have to decide the appropriate instructional strategy.
- Learning evaluation Strategies – Provide the information and knowledge required to meet the learning objectives. Practice, assessments, pretest, post tests etc. are to be specified.

3. Development → It is related to the creation of story board. Story board is nothing but scripting the entire course content (step by step). The story board is created based on the objectives and instructional strategies. Here the developers create and assemble the content

assets and learning objects. Programming and integration of all media elements into a cohesive multimedia package are the part of this phase.

4. Implementation → In the implementation phase, materials are distributed to learners. A comprehensive implementation strategy document is developed. This document should cover the course curriculum, learning outcomes, method of delivery in terms of hardware and software requirements and testing procedures. Ensure that the website is functional of the material is on the website.

5. Evaluation → The evaluation phase consists of two parts i.e. formative and summative evaluation. Formative evaluation is present in each stage of ADDIE process. Summative evaluation determines the adequacy of the distributed materials in achieving the course objectives. Material is to be revised at all the stages based on the feedback received.

7.2.2. Standards of E-content

E-Content standards are rules that most e-content developers should abide by.

Standards are engineering or technical specifications that help e-content developers to establish uniformity. The different kinds of standards are mandatory, voluntary and dejacto.

Mandatory means one should comply, voluntary is one may or may not follow and dejacto which are well established common practices but may not be formally published.

Formal standards bodies ~~are~~ such as the World Wide Web Consortium (W3C), the Internet Engineering Task force (IETF), and Internation Standardization Organization (ISO) etc. publish the electronic standards.

According to ISO, standards can be defined as "documented agreements containing technical specialization or other precise criteria to be used consistently as rules, guidelines or definitions of characteristics to ensure that materials, products, processes and services are fit for their purpose.

1. Sharable Content Object Reference Model (SCORM)

→ It is a powerful tool. Content can be created and used in many different systems. Contents can also be used in many situations without modification. It is the most widely used standard in all LMSs. It has applications in general usage as well as defense related users.

2. Aviation Industry CBT Committee (AICC)
This was the first standard to be adopted by the e-learning industry. It is still actively used in the aviation industry.

3. Institute of Electrical and Electronics Engineering (IEEE) IMS standards
This enables high quality accessible and affordable learning experiences. This standard is mainly used today in schools, colleges, universities, government institutions etc.

4. Instructional Management System Global Learning Consortium (usually referred to as IMS GLC, IMS Global or simply IMS)
IMS is a global, non-profit, member organization that strives in shaping and growing the learning industry through community development of interoperability and adoption practice standards. Their main activity is to develop interoperability standards and adoption practice standards for distributed learning.

7.2.3. Learning Objects and Re-usability of E-Content

The term learning object was coined in 1994 by Wayne Hodgins.

Learning objects are defined in different ways by different organizations and individuals. Let us consider some of the definitions of Learning Objects here.

1) According to Wikipedia, 'a learning object is a resource usually digital and web-based, that can be used and re-used for learning.'

2) According to IEEE, a learning object is "any entity, digital or non-digital, that may be used for learning, education or training."

Learning objects are any items which have the potential to promote learning. An object which can promote learning and teaching is considered as a learning object. for example, a printed book, a newspaper report etc.

Following are some important characteristics of learning objects:

- Learning Objects are a new way of thinking about learning content.
- Learning Objects are much smaller units of learning, typically ranging from 2 minutes to 15 minutes.
- They are of discrete nature. (can be categorized and stored independently.)
- They are self-contained (each learning object can be taken independently.)
- They are reusable.
- They can be aggregated. (can be grouped into larger collection of contents.)
- Every learning object has descriptive information.

Re-usability of e-content:

Three aspects are important in the re-usability of e-content. They are technical, non technical and pedagogy related ones.

i) Technical re-usability of e-content is concerned with the various kinds of tools used to support e-content. These tools may include documentation such as guidelines and instructions saved in the repository.

ii) Non-technical re-usability of e-content is related to the standardization initiatives, intellectual property protection, knowledge transfer, organizational, managerial, social aspects etc.

iii) Pedagogy related re-usability includes content, scenarios and pedagogic approaches. E-content can be modified and re-used easily.

7.3. E-Content Tools

E-Content can be created in a variety of ways by using variety of tools and software. E-content development combines Content Management System (CMS) & LMS.

~~Among available tools and~~

Several proprietary software, freeware, Open source Software (OSS), Public domain domain software and so on are available for e-content development. Among available tools and software packages, Microsoft Office, Libre Office, Software Package can be easily used by the beginners of e-content development.

7.3.1. Graphics, Audio and Video-Creating and Editing

There are several audio, video and graphic creators and editors available online. Some are free and some are proprietary:

i) Wevideo → It is a video creator and editor which allows us to edit and make video in an easy and intuitive way on this cloud-based app. It allows you to control the video sections easily in areas like the transition, fast and slow motion, adding effects etc.

ii) Magisto → It is a video editor that can help you make your video in just a few steps. Upload the video, then you can choose one of the premade editing styles, add a sound track, add a title and the video will be ready for download or for sharing on the social media.

iii) DrawPad → It is a graphics editor and an easy-to-use image composition and manipulation program for all types of graphic design projects. You can make sketches and paintings on your computer, create logos, banner ads or billboards, draw diagrams, icons and other web graphics.

iv) Photoshop → It is a well known and widely used graphic editing software. It helps in image editing and drawing.

v) MyPaint → It is a graphics editor which can be easily used by teachers and students for digital painting.

vi) Wavelad → This is audio editing software. It lets you record and edit music, voice and other audio recordings.

vii) VideoPad → It is a powerful and easy to use video editor that lets you import videos, add music and effects, then burn to DVD.

viii) Openshot → It is a free, simple to use open source video editor for Linux. Openshot can take peoples videos, photos and music files. It helps to create the film as you feel like.

7.3.2. Authoring Tools

An e-learning authoring tool is software packages which can be used to create and modify web content for the web by other people. Examples are blogging, wiki, online forums etc. This tool can be used by e-content developers for creating, packaging and delivering the e-content to the learners. By using authoring tools, one can produce attractive and useful graphics. Authoring tools can be used by people with minimum technical skills.

The main advantage of authoring tools is their easier and faster use. Using these tools e-content can be developed and transferred easily. There are many categories of authoring tools which differ with respect to their features.

There are many authoring tools in which there are proprietary software, free software, open source software etc.

i) eXe Learning → It is a free software tool that can be used to create educational interactive web content. eXe Learning can generate interactive content and it allows one to create easily navigable web pages including text, images, interactive activities, image galleries or multimedia clips.

ii) Xerte → It is a free and open source authoring tool which provides a full suite of open source tools for e-learning developers and Content authors producing interactive learning materials.

iii) Adobe Captivate → It is a proprietary software. It is a rapid responsive authoring tool that is used for creating e-learning contents such as software demonstrations, software simulations, branch scenarios and randomized quizzes in small web formats (.swf) and HTML5 formats. It can also convert Adobe Captivate generated files formats (.swf) to digital mp4 (.mp4) formats which can be played with media players or uploaded to video hosting ~~sites~~. Websites. It can be used to create screen casts and to convert MS powerpoint presentations to small web formats and HTML5 formats.

7.4. Open Educational Resources

Open Educational Resources (OER) are freely available, openly licensed materials and media that are useful for teaching, learning and assessing as well as for research purposes. Wide variety of OER is available for free use for teachers, instructors, researchers and students. It is gaining importance in open and distance learning domain. OER allows us to bring the excellent teaching learning materials into our education system and use them.

7.4.1. Meaning and Importance of OER

Meaning

Many organizations and eminent people have attempted to define OER. Some definitions are provided here for you to understand the meaning of OER.

1) The William and Flora Hewlett foundation defines "Open educational resources as the teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others.

2) Wikipedia defines "Open educational resources (OER) as digital materials that can be re-used for teaching, learning, research and more, made available free through open licenses, which allow use of the materials that would not be easily permitted under copyright alone."

3) According to UNESCO, Open Educational resources are "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.

Importance of OER

- OERs are useful in improving education across the globe.
- They offer free access to some of the world's best courses.
- OERs allow us to bring the excellent teaching learning materials in our education system.
- They offer equal access to knowledge and re-usability.
- They provide self-paced learning.
- They offer flexibility in study time i.e. any where and any time the learner can study.
- Provide access to huge amount of study materials.
- Help in enhancement of content knowledge.
- Accessible and affordable for all.
- Help in one's own professional advancement.
- Promote lifelong learning.
- OER promote informal learning.

7.4.2. Various OER initiatives

Several countries have witnessed OER ~~Educational Resources~~ initiatives. ~~Some~~ of the initiatives are provided here for our reference: