

# **EDUCATIONAL TECHNOLOGY AND ICT**

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**Lecture-32**

## **Module-32: Applications of ET in informal and Inclusive Education Systems**

Hello dear learners, welcome to the SWAYAM-NPTEL course on Educational Technology and ICT. I am Dr. Sarita Anand from the Department of Education, Vinaya Bhavana, Visva-Bharati, Santiniketan, West Bengal, India. Today, we will talk about Module 32 on the Application of Educational Technology in informal and inclusive education systems. This is Lecture 32. Before going into the lecture, we will discuss the concepts covered earlier. In the previous lecture, we covered the applications of ET (Educational Technology) in formal and non-formal education, that is, open and distance learning. We discussed the characteristics of formal education, the application of educational technology in formal education across different stages, the application of educational technology in non-formal education, and we also covered a comparison of the application of educational technology between formal and non-formal education.

Now, we will begin today's lecture on educational technology in informal education. We know that informal education refers to unstructured, spontaneous learning that occurs naturally through daily experiences, social interactions, and self-exploration. It does not follow a fixed curriculum, specific learning methods, or institutional structure. Instead, it happens through activities such as parents teaching children everyday skills, reading books from a library, or learning from online resources.

Unlike formal education, informal learning is neither pre-planned nor consciously designed. It can take place at home, in the community, in the neighborhood, the workplace, the market, or through digital platforms. This form of education is gained through real-life experiences rather than structured classroom instruction. Examples of informal education include learning basic numeracy skills from parents or elders. Grandfathers and grandmothers teach their children at home.

These are examples of informal education. Acquiring one's native language through daily conversation, like if we are residing in West Bengal, we speak the Bangla language. Our kids are learning the Bangla language because it is their native language. So, gaining knowledge about banking procedures by observing others in a bank, or calculations in the market or the vegetable shop, these are examples of informal education in daily life. So, what are the characteristics of informal education?

It occurs beyond the boundaries of traditional institutions. No structured syllabus or predetermined content is involved. Daily learning takes place spontaneously without a fixed schedule or time frame. No formal fee is required as it is gained through daily interactions. It continues throughout life as a natural process.

There are no certifications, no degrees, or no formal assessments involved in this informal education. Knowledge can be obtained from various sources such as media, books, personal experiences, and conversations among people. So now we will see the application of educational technology in informal education. This informal learning happens across various domains, making knowledge acquisition more flexible and efficient. The key applications of educational technology in informal education are digital learning through online platforms. Educational technology enables individuals to access knowledge from diverse online resources without a formal classroom setting.

The MOOCs are Free learning sources, these platforms like SWAYAM course, Udemy, edX, Future Learn, Khan Academy offer open access courses on various subjects. Learners can explore topics at their own pace without any institutional restrictions or demand. They can pursue by their interest. The second one is educational websites and blogs for self-learning.

NDLI, websites like Wikipedia, OpenStax, MIT Open Sourceware provides free and open educational content. Different blogs and forums like Quora, Medium, and ResearchGate allow learners to engage in discussions and self-directed learning. Different YouTube platforms of different institutions also are playing important role here in informal education, like educational channels such as TED-Ed, Crash Course, Byjus, Unacademy, National Geography Learning provides interactive video-based content.

Also, the website of NCERT or any other institution where they are providing the free content to learn. These contents are placed on the YouTube channels and anybody can access those contents for their own learning. Live streaming sessions and recorded tutorials offer flexibility in learning anytime, anywhere. Now, the social media as a learning tool.

Now, these days social media is also becoming the powerful learning tool for the informal learning platforms.

Like it is enabling the individuals to acquire knowledge from peer interactions, expert discussions and collaborative learning communities. The first one is Facebook and LinkedIn learning groups. Professional networking sites like LinkedIn Learning offer short skill-based courses and career development resources. Facebook groups and discussion forum allows knowledge sharing in various fields. The second one is Twitter oblique X. That is the Twitter that was earlier Twitter but now this is X. It is providing micro learning and real time updates.

Learners can follow subject matter experts, institutions, and researchers for real-time knowledge updates. Hashtags like hashtag edtech, hashtag science talk, hashtag AI learning apps help users to discover valuable learning resources and they are getting it instantly. So, the third one is WhatsApp and Telegram educational channels. These days, many educational communities, coaching institutes and online tutors use WhatsApp and Telegram to share study materials

articles and short lessons. Learners can engage in group discussions, live question and answer sessions and collaborative problem solving in their courses or the subject. The third one is mobile learning and educational apps. With the widespread use of a smartphone, mobile learning has becoming one of the most effective tools for informal learning. We will start with the first one that is language learning apps Duolingo, Babel, Roseto, Stone and Google Translate help individuals learn new languages informally through interactive lessons.

Here, Google Translate helps to read out the news in different languages. We can translate it and easily read it. The second one is skill development and coding apps like SoloLearn, Grasshopper and Codecademy provide coding lessons in an interactive manner. LinkedIn Learning and Coursera mobile apps also offer skill-based courses for professionals.

The third one is general knowledge and quiz apps. There are so many apps for general knowledge and quizzes, like QuizUp, Kahoot, and general knowledge trivia, which enhance informal learning through gamification and quizzes. The fourth one is audiobooks and podcasts for learning on the go. Different platforms like Audible, Spotify, Podcast, and Google Podcast provide educational content on history, science, literature, and self-improvement. As a teacher, I also use Podbean for developing podcasts for my students.

The fifth one is gamification and virtual reality in learning. These days, gamification and immersive technology enhance engagement by making informal education more interactive. Educational game concepts like Minecraft Education Edition, Prodigy Math Game, and BrainPOP make learning fun and engaging. The sixth one is virtual and augmented reality. AR and VR provide practical knowledge.

Google Expeditions, Oculus VR and Merge Cube provides immersive learning experiences in subjects like astronomy, history and engineering. VR based simulations help learners experience real world scenario in medicine, architecture and engineering. The fifth one is open educational resources for lifelong learning. The first one is digital libraries and open textbooks. These facilities for everyone either it is formal, non-formal or informal.

The resource resources like NCERT, ePathshala, NDLI, Project Gutenberg, OpenStack offer free access to academic books, journals and research papers. So, these names are repeatable because these are useful for all kind of education system either it is formal, non-formal or informal. The next one is AI based personalized learning assistance like chatbots and AI tutors, Google bird. Now this is becoming Gemini, the chat GPT, IBM Watson assistant learner by providing instant explanation, summaries and learning recommendation. Even these days, small kids are utilizing copilot for designing different drawing and painting and sketching.

So, self-paced learning through AI powered platforms like AI driven platforms customize the learning path based on the user preferences, their liking, their learning history, they design the upcoming content. So, for example, Google AI for beginners and Coursera AI powered recommendations and Duolingo adaptive language learning. These provide the upcoming content as per the previous search history. Now we will talk about the educational technology in inclusive education. So, first we will talk about the concept of inclusive education as it is an approach that ensures all students regardless of their abilities, disabilities, backgrounds or socio-economic status have equal access to quality education in mainstream schools, not special schools.

It emphasizes removing barriers to learning and promoting participation for all learners within the general education system. So, if we will talk about the inclusive education, we will see the definition given by UNESCO in 2009. They refer that the a process of addressing and responding to the diversity of the need of the all learner through increasing participation in learning, cultures and communities and reducing exclusion within and from education this is the inclusive education it focuses on providing appropriate

accommodations and support systems to every learner can succeed now the principle of inclusive education on what principle inclusive education works the first one is equal access all children regardless of their differences have the right to education Diversity to strength, recognizing and valuing the different abilities, background and learning need of the learners.

Flexible teaching methods, using differentiated instructions, assistive technologies and adaptive assessments to cater the diverse learners and their needs. Supportive environment, creating a school culture that foster emphasizes the respect The collaboration and sensitivity to the individual need. The collaboration engaging teachers, parents, policy makers, community members in supporting inclusive practices in the institution. Now, we will talk about the application of educational technology in inclusive education system.

The inclusive education refers we have already discussed that it is focusing on the educational efforts and the abilities including those who are having the disability, learning difficulties and diverse socioeconomic background and learn together in a same environment. Here educational technology plays a crucial role ensuring the accessibility, equity and effectiveness in inclusive education by providing the tools and resources designed to diverse learning needs of the learners. The first one is assistive technologies for accessibility. These assistive technologies and the devices support the student with physical, sensory, cognitive and learning disabilities by enhancing their ability to access, engage with and express learning content.

Its applications in inclusive education are followed in different aspects in this slide. text to speech tools. It helps the visually impaired students by reading digital text aloud like Java, NVIDIA and Microsoft Immersive Readers providing this kind of facilities. The second one is Braille translators and displays. It converts text into Braille format, adding students with blindness, partial blindness,

refreshable braille display, braille note touch, etc. It helps the visually impaired students or the learners for reading the content. The third one is speech to text, STT and voice recognition software. It converts the spoken language into text. benefiting the students with motor impairments or dyslexia like Google voice typing, Dragon naturally speaking, etc.

The fourth one is augmentive and alternative communications devices like assist non-verbal students with communication, Prolog2go, Tobii Dynax, Dynavox. These are the devices which help the special students. The fourth one is hearing aids and captioning tools. It provides the real-time transcriptions for hearing impaired students like Google Live

Transcribe, Ava, YouTube, AutoCaption, etc. The second one is adaptive and personalized learning.

Technology allows for the customization of learning experiences based on the individual learners their pace their ability their preferences etc these applications are like first one is ai and machine learning ai based platforms adapt content difficulty for students with different needs like newton and a smart sparrow differentiated instruction platforms like tools like Google Classroom, Edmodo, Moodle allow teachers to provide customized assignments for different ability level of the students. The third one is interactive digital content. Educational apps modify lesson based on the student's engagement and the progress.

Like Dreambox Academy and BYJUS are providing this kind of facilities for the teacher for the benefit of their students. The third one is universal design for learning udl udl implementation this udl ensures that learning materials are accessible in multiple formats scattering all learning styles and the ability of the learners the first one is multi-modal content delivery digital tools provide text audio visual interactive formats to accommodate different learning styles like ted-ed microsoft immersive reader The second one is interactive white board and smart board, we all have seen this enable kinesthetic and visual learning experiences like promethene, smart board, bank interactive boards etcetera. The third one is closed captioning and audio description.

This facility facilitates the assist the d diff and hard of hearing students in understanding video content. zoom live transcripts youtube auto caption help the deaf students the fourth one is online and distance learning for inclusive education the student who cannot attend the physical classroom due to disabilities location constraints or the socio economic barriers benefit from online learning technologies like ah moocs we have already discussed virtual classroom, video conferencing tools like Google Meet, Microsoft Teams, Zoom, etcetera where they get the live interaction for the students with the mobility impairment or any other socio-economic reasons. The third one is cloud-based learning management system. These platforms like Moodle, Google Classroom, Blackboard, Canvas allow the self-paced learning to the learners with disabilities.

The fifth one is virtual reality and augmented reality. These AR and VR create immersive and non-immersive environment for the learners with the disability, autism and cognitive impairments and these are the virtual fields. For example, it allows the students with mobility impairment to explore the places virtually. Where they cannot go, they can utilize

the Google expedition, discovery VR etcetera. The augmented reality learning apps, it provides the 3D models for better understanding, merge cube, queer, AR, flashcards and Indian app is PM eVidya AR.

The third one is theoretical VR for special needs. It helps the students with autism and ADHD, developed social skills and sensory experiences like Florio and Oculus education. These apps can be utilized as per the requirement of the students and the next one is sixth one is gamification and interactive learning for inclusive education. This game-based learning motivates the student with learning disabilities, grabs the attention and disorder students and other challenges to engage more actively in learning process. educational games and simulation.

Each and every student either is a special student or the normal students all are liking these educational games and simulations. Tools like Kahoot! Quizzes and Classcraft make learning interactive and enjoyable. The second one is adaptive learning games. The platforms like ABC Mouse, Prodigy and Funband provide individualized support for the different learning needs of the learners. The seventh one is AI and data analytics for special education.

These facilities are also the similar with which we have already discussed. The next one is social and emotional support through educational technology. This is also important like AI chatbot for mental health. These days Vyasa, Webot provide mental health support and mindfulness exercises. the mindfulness and well-being apps different other apps are there for the students and the parents also to manage their stress and emotional regulations like headspace calm smiling mind etc now we will compare the educational technology between informal and inclusive education whatever we have discussed I have prepared one table comparative table you can go through it for your better clarification by comparing both the system either it is informal education or inclusive education system.

So, now, in conclusion we can say that educational technology has revolutionized the informal education by providing easy access to knowledge, self-paced learning and interactive resources. Through MOOCs, social media, mobile learning apps, VR and AI powered tools individuals can now learn anytime, anywhere without institutional constraints and if we use effectively this educational technology driven informal education can empower individuals with lifelong learning opportunities, skill development and personal growth.

Educational technology also plays an important role in inclusive education by making learning more accessible engaging and personalized for students with diverse abilities and backgrounds with assistive technologies ai driven tools gamification air and vr facilities and online learning platforms all students regardless of their abilities can actively participate in education and achieve their full potential and this is how educational technology is the equity in education. These are the references for your further reading. I hope you will go through it.

Thank you. Keep learning.