EDUCATIONAL TECHNOLOGY AND ICT

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Week-01

Lecture-01

Module-1: Introduction to ET

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. Today, we will talk about Lecture-1, Module-1, on Introduction to Educational Technology. Educational Technology, according to J. K. Galbraith, involves the systematic application of scientific knowledge to practical educational tasks and the division of these tasks into smaller, manageable units.

It focuses on selecting or designing effective teaching strategies to achieve learning objectives. A key aspect of educational technology is its emphasis on evaluation. By assessing student outcomes, educators can determine the effectiveness of their teaching methods and make necessary adjustments to improve future learning experiences. ET can be considered a behavioral technology that influences the teaching-learning process through various factors, including teaching objectives, content, materials, environment, student behavior, teaching behavior, and the interaction between the two. It takes principles from psychology, sociology, engineering, and other sciences to optimize the educational process.

Educational Technology encompasses a wide range of tools, techniques, and resources used to enhance the teaching-learning experience for both students and educators. Its purpose is to make education more efficient, effective, and accessible. By integrating technology into classrooms and educational practices, educators can create more engaging, personalized, and flexible learning environments. With advancements in digital platforms and artificial intelligence, educational technology has become a fundamental part of modern education, offering solutions that address the diverse needs of students, teachers, and institutions. It is not merely about tools but involves the systematic use of knowledge to improve processes and solve problems.

Dear learners, we will now talk about the definitions. There are different definitions to describe educational technology, as it captures its scope and purpose across various contexts. According to AECT (Association for Educational Communication and Technology), educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technical processes and resources. UNESCO has also defined educational technology and stated that it is the systematic application of knowledge about teaching, learning, and conditions of learning to improve the efficiency of teaching and training.

ISTE (International Society for Technology in Education) also defined it as the infusion of technology, tools, resources, and practices to support student learning, creativity, and innovation. After foreign definitions, we will now discuss some Indian definitions. Some definitions from an Indian perspective draw from national institutions and scholars who have contributed to the understanding and application of educational technology in India. The most prominent is CIET, the Central Institute of Educational Technology. CIET defined educational technology as a field of study and practice that leverages technology to promote and facilitate learning, teaching, and educational administration, with a focus on contextual adaptation to cater to diverse learners' needs across India.

UGC also defined educational technology as involving the systematic design, development, and application of instructional resources and processes to improve the quality of education, especially in distance and higher education in India. IGNOU, the Indira Gandhi National Open University, also defined ET as the integrated use of media, materials, and methods in designing and delivering learner-centered education, especially for open and distance learning environments. And we cannot forget about NCERT.

NCERT defined that ET is the application of scientific knowledge about learning and the conditions of learning to improve the effectiveness and efficiency of teaching and training. It includes both the content and the process involved in the implementing educational strategies and utilizing technological tools to address educational problems. So, educational technology therefore, is not just about using gadgets but it also about the thoughtfully integrating technological resources to create more meaningful, efficient and accessible educational experiences during and beyond classroom teaching learning process.

Now, we have to understand the present Indian context of educational technology, because educational technology is evolving day by day, we have to know about the present context. In India, educational technology plays a vital role in addressing the country's vast and diverse educational needs. Within a large student population and varied socio-economic backgrounds, the Indian education system has embraced digital tools to expand access improve quality and reduce the disparities. For this, the key initiative includes the first one is Digital Infrastructure for Knowledge Sharing that is called DIKSHA.

It is launched by the Ministry of Education. DIKSHA provides free digital content and resources for school students and the teachers across India in multiple languages. The platforms enable self-based learning and professional development for teachers. The second one is SWAYAM, a national platform for online courses which you are already attending right now.

SWAYAM offers free high-quality courses across various disciplines from school to postgraduate level. This initiative aims to make learning accessible to all, including those in remote and rural areas. The third one is NDLI, the National Digital Library of India. This digital library provides students and teachers with access to millions of e-books, journals, and educational materials, promoting a culture of reading and self-learning. The fourth one is ICT in schools.

As part of the broader ICT policy of the Government of India, ICT in schools aims to enhance digital literacy by providing digital infrastructure and training in schools across India. It promotes computer literacy, digital learning, and the integration of technology into the school curriculum. The fifth one is the National Education Policy (NEP) 2020. It also emphasizes the role of educational technology in the Indian context.

NEP 2020 envisions a blended learning approach and recommends setting up a National Educational Technology Forum to facilitate innovation, research, and knowledge sharing in educational technology. To see this NETF, you can visit the given URL and get detailed information. Additionally, this policy emphasizes the importance of bridging the digital divide and promoting e-content in regional languages. Now, we will talk about the key components of educational technology. Educational technology can be defined as the systematic use of technological resources to facilitate learning and improve performance.

It includes both digital and non-digital tools that support various aspects of education, from content delivery to assessment. The key components of educational technology include the hardware. Hardware includes devices like computers, tablets,

projectors, and interactive whiteboards that enable educators to present content and engage students actively. The software and the applications. Educational software or platforms, such as learning management systems like Moodle, Blackboard, or Canva, and interactive educational apps provide platforms that help educators organize courses, track student progress, and facilitate interactions in online or hybrid learning environments.

The third one is digital content. Digital content consists of resources such as e-books, which we have discussed- NDL, video online lectures (which you are already listening to), simulations, and digital assignments from library resources that students can access on demand. Then, data analytics and AI. By analyzing a student's performance data, educators can tailor content and instructional methods to individual learning needs.

Interactive tools promote engagement and collaboration, including interactive whiteboards, discussion forums, gamified elements that make learning enjoyable, and interactive features fostering teamwork and peer learning. So, educational technology integrates these components to create an ecosystem that supports instructional goals and learning needs. Now, we will talk about the need for educational technology. In a densely populated country like India, where the demand for mass education is high and resources are limited, educational technology plays a vital role across formal, informal, and non-formal teaching-learning modes.

The following points highlight the need and significance of educational technology. Radio as an educational medium. These days, radio broadcasts educational programs across the nation, addressing local needs and promoting adult education. It serves as a powerful tool for delivering knowledge to diverse audiences. Community radios also work well for ethnic practices of local communities.

Television as an educational tool. Television telecasts a variety of lessons and educational programs for formal and non-formal education. It brings scientific innovation, discoveries, wildlife explorations, and diverse knowledge areas to the masses through satellite services. Even remote areas can access educational content and updates on space and planetary activities.

Swayamprabha is an example of this kind of educational program telecast. The third one is teacher training. Educational technology addresses the pressing need for cost-effective and efficient teacher training. In-service teacher training programs utilize mass media and multimedia packages developed by NCERT to overcome challenges. Techniques like

micro-teaching, simulated teaching, team teaching, and innovative teaching models enhance teacher training.

Distance education in India heavily relies on educational technology, combining various media for instruction. It offers flexible learning opportunities, making education accessible to all, anytime, anywhere. The ODL Systematically developed and well-planned ODL courses provided by universities like IGNOU are products of educational technology. Some intermediate and secondary-level courses are also delivered through this mode, like NIOS.

Open schools use specially designed lessons, study centers, local counselors, tutors, and holiday courses to ensure effective instruction. Audio-visual aids, essentially the product of educational technology, are gaining importance in India. These mechanical devices, such as projectors and slides, require proper preparation, development, and skilled use.

NCERT's department for teaching aids develops materials, conducts surveys, and evaluates their effectiveness, offering guidance to educational technology institutions on their use. Language learning: Educational technology significantly aids language teaching and learning. Devices like audio cassettes, CDs, DVDs, and linguaphones enhance spoken language skills and help correct voice errors. Language laboratories equipped with these tools facilitate the teaching of Indian and foreign languages like English, French, German, and Russian.

Thus, ET has become indispensable in addressing India's educational challenges and improving the quality, accessibility, and effectiveness of education across diverse contexts. Now, we will talk about the applications of educational technology. The first one is Personalized Learning. This technology enables tailored learning paths by adjusting content based on individual student performance. Collaborative Learning.

Tools like forums, group chats, and virtual classrooms help students collaborate, discuss, and learn from each other even when they are not physically present. Accessibility and Inclusion. Educational technology can bridge the gap for students with disabilities, allowing them to access content via tools that suit their needs, like screen readers, captions, or assistive devices. Teacher Training and Development: Teachers use educational technology for professional development and training through webinars, online courses, and collaboration with colleagues worldwide.

Assessment and Feedback. Digital assessments can provide instant feedback, making learning more efficient and allowing teachers to quickly identify student challenges. Conclusion. In conclusion, we can say that educational technology continues to evolve, driven by new tools and innovative practices, making it a dynamic and impactful field for educators and learners alike. It has the potential to transform education, making it more engaging, accessible, and effective.

As educational technology continues to evolve, it is essential to address challenges such as the digital divide and ensure that both students and teachers are equipped with the skills to use technology effectively. In countries like India, where diverse educational needs and limited resources exist, educational technology can be a powerful tool to democratize learning and bridge gaps in access and quality. However, technology should complement rather than replace traditional teaching. Preserving the human connection that is essential to education. By fostering innovation, promoting equitable access, and supporting teacher training, educational technology can help create an inclusive and future-ready education system for all. Thank you for now.

Thank you.