# EDUCATIONAL TECHNOLOGY AND ICT

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**Week-07**

**Lecture-33**

## Module-33: Assessment and Educational Technology (Part-I)

Hello dear learners, welcome to the SWAYAM-NPTEL course on Educational Technology and ICT. I am your course coordinator, Dr. Sarita Anand, from the Department of Education, Vinaya Bhavana, Visva-Bharati, Santiniketan, West Bengal, India. Today, we will talk about Module 33 on assessment and educational technology. Because assessment is a broad area, I have divided the modules into two parts. This is Part 1, Lecture 33, and before going into the lecture, we will review the concepts covered. Earlier, in the previous lecture, we covered the application of ET in informal and inclusive education systems, characteristics of informal education, applications of educational technology in informal education, characteristics of inclusive education, and its application in inclusive education.

Now, regarding assessment and educational technology, whenever we discuss the education system, assessment is a crucial part of the teaching-learning process, especially in formal education. In modern education, there are numerous innovative approaches to assessment that focus on both the learning processes and the outcomes. Technology, particularly ICT and digital media, has become an integral part of classroom activities. Integrating technology into teaching helps educators organize more effective and engaging learning experiences. The use of technology motivates and inspires students, enhancing their overall learning experience.

These days, students often access information through the internet and other digital tools, using these resources to support their learning. Now, the teacher is not the only source of information; there are other technological resources available for learners. They also rely on computers and electronic devices for self-directed learning and knowledge construction. This shift necessitates that teachers become proficient in using technology to evaluate

student performance. Especially in these days of AI, students are submitting assignments generated with AI tools.

So, we have to learn about these technological advancements too. A variety of technological tools are available to assist teachers in helping students, and students themselves can use these tools to monitor their own progress. Therefore, it is essential to develop awareness of these technologies and the skills needed to effectively utilize them for assessment purposes. Now, the meaning and the type in this teaching-learning process, it is essential to collect, analyze, and interpret the information—that is, data about students' knowledge, skills, and abilities in both scholastic and co-scholastic areas. This ensures that students are effectively learning what is being taught and making progress.

If not, teachers can adjust their teaching methods and adopt new strategies to help students better understand the topic. Therefore, assessment is the foundation of an effective teaching-learning process. It not only improves the teaching-learning process but also provides direction for ongoing teaching and learning activities. So, what is assessment? Assessment is the process of identifying, gathering, and interpreting information about students' learning.

It involves using a wide range of methods, tools, and techniques to document, measure, and evaluate students' progress in their learning journey. So, now we will talk about the types of assessment first. Assessment is generally categorized into the following types: formative and This formative assessment is about the learning that occurs during the learning process. During classroom teaching, this formative assessment occurs.

It proposed the monitoring students learning. and gather the feedback by the teachers can use to improve their teaching methods while students can reflect on their learning for example asking questions to define the concepts or recall the formula during the lesson in the class is it is the form of formative assessment it means it means formative assessment is going during the classes The summative assessment, the this summative as assessment takes place at the end of the learning period. Its primary goal is to evaluate the student learning by comparing its against a set standard. Like there is the concept of pass and fail, first division, second division, these are coming under summative assessment.

This often results in assigning marks or grades to the students for example, annual exams End semester examination conducted at the end of the semester are the form of summative assessment. The third one is performance assessment. Definitely each and every

examination or assessment cannot be only paper and pen test. So, there is performance assessment focusing on the evaluating specific skills and abilities.

In this type of assessment, students are required to demonstrate their mastery of skills competencies by performing and creating something like the competitions in activities like drawing, painting, sketching, dancing, singing where students showcase their abilities. The fourth one is diagnostic assessment. This type of assessment is conducted before instruction to identify the student's current level of knowledge, strength, weaknesses and skills. Similarly, like before giving the medicine or the treatment doctors are diagnosing the problem ah of the patient.

Similarly, here the teacher also tries to know what kind of teaching method or process should be taken care of in the classroom for the different students and their levels. So, by understanding these aspects, teachers can better plan their teaching strategies. For example, testing students' prior knowledge before introducing a new topic is a form of diagnostic assessment. Assessment plays a... So, these four types of assessments are there, and they are very important, playing a crucial role in shaping the effective teaching-learning process, ensuring that both teachers and students are on the right path toward achieving the educational goals.

Now, we will talk about the categories of assessment. There are categories of assessment like assessment of learning, assessment for learning, and assessment as learning. So, we will see that the assessment of learning is the typical type of assessment where it helps teachers to evaluate the students' achievement against specific outcomes and standards. Commonly known as summative assessment, it typically occurs at a key point during a unit of study or at the end of the term, end-semester examination, or yearly examination.

It is often used to rank or grade the students based on their performance. The whole education system, whether it is a school system, college, or university-level higher education, assessment of learning is going on, which promotes one student from one stage to another stage, but assessment for learning and assessment as learning are different from the first one. Let us see that this assessment for learning uses the evidence of students' knowledge, understanding, and skills to guide and adapt their teaching strategies provided by the teachers. Often referred to as formative assessment, it takes place continuously during the teaching and learning process to clarify and support the students' learning and comprehension.

The third one is assessment as learning. This occurs when students take on the role of assessing their own learning. They monitor their progress, ask questions, and employ various strategies to determine what they know and can do. They also use this self-assessment to guide their future learning efforts. So, now we will talk about the traditional two technology-enhanced assessments.

The practices of assessment are evolving significantly due to the rise of technology. Traditionally, teachers and stakeholders relied on conventional tools and techniques, such as paper-and-pencil tests, for evaluating students. However, with the influence of technology, newer assessment methods have emerged, like written examinations being increasingly replaced by electronic assessment methods. Assessment and project reports, which were once submitted in handwritten format, are now being submitted as e-text created using word processors or PDF creators.

Also, the manual collection of students' learning documents has shifted to the use of e-portfolios. This shift highlights how technology is being integrated into assessing students' learning processes, marking the second dimension of the paradigm shift in assessment practices. Now, technology is transforming assessment at different levels, like enabling enhanced question types. These enhanced question types are traditionally used in the examination system, like long questions, short questions, MCQs, fill-in-the-blanks, etc.

However, technology-enabled or digital assessment allows teachers to design and implement a wider variety of questions. Even if they are using or making MCQs, they need not check it manually, but it will be auto-filled and checked by the system or machine. For example, in 2017, the US Department developed simulation equation-based answers and performance-based assessments, where learning management systems like Moodle offer diverse question formats such as calculated MCQs (multiple-choice questions), drag-and-drop, embedded answers, essay types, matching, numerical questions, random short answer, true/false, and descriptive questions, etc. These platforms enable students to track their learning process and help teachers generate questions for their students. The second one is measuring complex competencies.

The goal of education is the holistic development of students, encompassing both cognitive and non-cognitive (scholastic and non-scholastic) skills. While cognitive skills like knowledge, understanding, and application are essential, non-cognitive skills such as life skills and values are equally important. Assessments make it possible to evaluate these complex competencies effectively, ensuring a well-rounded development of students. The

third one is providing real-time feedback. Technology-based assessments can deliver real-time feedback, allowing teachers and stakeholders to quickly identify student strengths and weaknesses.

Instantly, they can know the result of the test taken by the student. This immediate insight enables the adoption of corrective measures to enhance learning. For example, many learning management systems or MOOC platforms provide instant exam results. Similarly, assessments apps often include features that offer instant responses to students, helping them understand their performance immediately. They also provide solved answers to the questions after the test.

So, students can understand what their fault was and where they had made the mistake, etcetera. So, knowing their weak points will lead to better learning. The fourth one is an increase in accessibility. Despite the digital divide, many educational institutions now have access to technologies like simple technologies such as computers, projectors, smart boards, etcetera. Specialized tools are also available to support children with special needs and the growing trend of 'Bring Your Own Device.'

These days in higher education, we use this BYOD concept where students come with their laptops or tablets, and even smartphones are also helping students further enhance their accessibility to technology. Many educational tools and software are affordable, with free and paid versions available, making technology accessible to a broader population. Students can download them on their smartphones and use and access technological apps. So, the fifth one is adapting to learners' abilities and knowledge.

Traditional paper-pencil tests present the same questions in the same order to all students, ignoring individual differences in understanding and abilities, whereas technology enables adaptive testing where assessments are designed for each student's ability level. For example, if a student answers a question correctly, a more challenging question may follow. If the answer is incorrect, the system may provide an alternative question or adjust the difficulty level to better suit the student's knowledge. This personalized approach ensures that assessments are more aligned with individual learning needs. Similarly, as we see in programmed learning, the branching type of programmed learning and these advancements highlight how technology is reshaping learning, assessment, and making it more dynamic, inclusive, and effective. So, the sixth one is technology-enabled assessment. Assessment is deeply embedded in the teaching-learning process. We cannot

ignore it; we cannot avoid it. So, serving as a critical component to help students gauge their understanding of the subject matter and track their learning progress.

Technology-enabled assessment, technology-enabled features make this process seamless and integrated, ensuring that evaluation is not a standalone activity but an inherent part of the instruction. For example, in gamification, students engage with the learning content through game-like questions, simultaneously learning and assessing their progress. The seventh one is online learning assessment. Technology has also facilitated online learning assessment by offering students diverse ways to create, submit, and access work electronically throughout the academic year. Students can produce multimedia resources, interactive presentations, videos, concept maps, and more, which serve as assessment procedures or products.

This makes it easier to evaluate continuous learning, and assessments can even be conducted online. Though there will be difficulty in proctored assessment, there are tools and apps to conduct proctored tests also. Advantages of using technology for assessment, according to JISC, there are so many benefits like variety and authenticity in the assessment, enhanced learner engagement. Anywhere and anytime assessment, assessment of cognitive and non-cognitive skills. These are the advantages for the learners and also for the teacher because anytime, anywhere is providing the flexibility and the evaluation level like academic and life skills.

So, this efficient process, technology-enhanced assessment, is very efficient, streamlining the submissions, marking, moderation, and data storage. Also, those who have submitted their assignments late are identified, and their marks will be given accordingly. So, these are the facilities: accuracy and consistency ensure reliable and consistent results, immediate feedback is provided, and diverse question formats are supported. They support a wide range of question formats that suit the different difficulty needs of the learners.

These advantages highlight how technology enhances the assessment process, making it more effective, engaging, and aligned with the modern educational goals of the education system. in assessment for learning. Now, we will see technology in assessment for learning, then assessment as and for learning. Especially this 'for' is very important because assessment for learning can be either non-digital or digital. Digital tools include digital devices, application software, different apps, and there are numerous digital tools available for creating various types of questions.

Each LMS, e-portfolio, quiz apps, e-rubrics, blogs, and discussion forum. There are many facilities available to accommodate the different technological aspects. These tools can be used to design and develop the test. Once the test is created, it can be administered to the students either offline or online, meaning all technology-based assessments fall into one of these two categories.

So, whether it is digital or non-digital does not matter. It is important to note that the software can be either free—we can call it open-source software, for example—or proprietary, where we have to pay to access the apps. For example, free apps include Google Classroom, which we all have in our pocket. LearnClick and Blogger are often recommended as free software when available. Similarly, apps like Moodle LMS, which have built-in assessment features, are available in both free and paid versions. Note that free apps usually have limited access. So, Moodle also has limited access maybe 45 days for free and then it will ask for payment.

Additionally, many digital tools and apps are hosted online and can be accessed directly through websites, while others require downloading. Both types of resources are available. These details apply to all tools used for self-assessment, peer assessment, or collaborative assessment by teachers. Let us delve into some of the technologies or tools commonly used for assessment for learning or formative assessment. The first one is online assessment tools. There are several digital devices and software applications available.

The first one is CAA (Computer Assisted Assessment)- CAA refers to the process of conducting evaluations using computers. Since various software applications can be operated on computers, they support different forms of assessment in education. These assessments can be administered either online or offline. For example, using an LMS such as Moodle or Google Classroom for assessment requires an internet connection.

Whereas, the test created using presentation software or word processors can function in both online and offline environments. The next one is Computer Adaptive Testing (CAT). This CAT enhances the efficiency of the testing process, as it is developed using specialized software that dynamically adjusts the difficulty of the questions based on the student's responses. If a student answers multiple questions correctly, the system automatically presents more challenging questions in the sequence, in line with the respondent's responses, whereas incorrect answers lead to easier ones.

So, this method ensures that the test adapts to each learner's ability, providing a personalized assessment experience. The third one is mobile-based assessment. These

mobile-based assessments refer to evaluations conducted using mobile devices such as smartphones and tablets. These assessments can be administered in different ways, including accessing mobile-friendly assessment platforms via web browsers or using dedicated mobile applications.

These mobile apps are specifically designed to operate on portable devices and offer a user-friendly way to develop and administer tests. Assessment apps include Socrative, Plickers, and Kahoot. Additionally, many learning management systems provide mobile-friendly versions to facilitate assessments on handheld devices. So, the fourth one is LMS-based assessment. These LMS platforms are referred to as LMS assessments.

This platform come with the built in features that allow instructors to evaluate students These platforms support various question formats. For example, in Moodle educators can create different type of questions like descriptive question, essay type, matching, embedded questions, filling, multiple choice, short answer, numerical, true and false, drag and drop, jigsaw puzzles, ordering, multi select and many more. So, these options are already provided and teacher has to just Choose then which type of items or the questions they want to ask to the learners.

The fifth one is concept maps. These are very good visual representations that illustrates the relationship between the different ideas or the concepts. It serves as an effective assessment tool to gauge the students understanding. Teachers can ask the student to develop concept maps before, during or after a class determining their grasp of subject matter. If a student has well understood the teacher's class, then definitely their concept map will be clearer than the student who have not understood well.

So, traditionally concept maps are drawn on paper, but digital tools have made it possible to create them electronically. Digital concept maps can be designed using offline software like woe and free mind or on different online tools such as bubble US and map. So, the sixth one is survey, the survey is a method of gathering information from individuals and ah typically it is understood that the their thoughts opinions or experiences can be shared by using these survey and we all have the experience of google survey which you all must have filled ah and know the uses so one common approach involves using questionnaire where respondent provide answers to specific question while paper based survey have been widely used digital tools now make data collection more efficiently and easily and in short time.

So, some commonly used survey tools include Ask, Ad Poll, Epic Poll, Google Forms, Key Survey, Microsoft Forms, SurveyMonkey, Type form, Web Online Survey, and Joho Survey, and many more others are there which can be utilized. But personally, we have used Google Forms during COVID time. Many people know that these are also free surveys. Then, the seventh one is wikis. Wikis is a collaborative online platform that allows users to create, edit, and update content using a web browser. Wikipedia is the most well-known example, but there are several other wikis such as WikiEducator. We, as teachers, can go and register on WikiEducator. We can keep our profile there and put our work there, such as WikiSpecies and WikiTree.

WikiSource, WikiMapia, WikiAnswers, TermWiki, LyricWiki, Everypedia, Bike.com, ByDoBike, and many others are there which provide content for assessment. Using wikis for assessment: Wikis can be integrated into assessments by asking students to contribute to an existing wiki such as Wikipedia. If one concept is given there and a student has to add their knowledge to that content, it can be used as an assessment. By adding or updating relevant content related to their coursework, their contribution can be evaluated based on factors like the quality of the content added, its relevance, and accuracy.

So, based on these criteria, Wikis can also be utilized as an assessment tool. The second one is discussion forums and application software for assessment. These are very crucial for online forums. A discussion forum is an internet-based platform where individuals with similar interests engage in conversations on specific topics. Like, you all are discussing very well in the discussion forum of the course Educational Technology and ICT.

Many times, people are informed of the right answer, the justification, etc. These forums can serve as effective assessment tools in multiple ways. Educators can either create forums focused on a particular subject or utilize existing discussion forums integrated within the learning management system. So, it depends on the teacher how they are utilizing it.

Students' participation and responses in these forums can be evaluated as part of their assessment. The application software, different apps. Application software, commonly known as apps, which we are using, you all are using, are computer programs designed to assist users in performing a specific task. There are numerous free and paid apps especially developed for catering or creating tests and conducting online examinations. Many of these applications are available in both desktop and mobile versions, allowing flexibility based on the users' needs.

Some widely used online exam and e-assessment apps include ClassMarker, Online Exam Builder, SpeedExam, ExamBuilder, Quiz Creator, and Flubaroo. So, in conclusion, we can say that assessment plays a crucial role in the teaching-learning process. Helping educators measure students' progress, identify learning gaps, and provide constructive feedback. With the advancement in educational technology, assessment methods have evolved beyond traditional paper-pen tests. So, it includes digital tools that enhance self, peer, and teacher-led assessments.

The integration of technology in assessment not only saves time but also enhances the quality of feedback, making learning more personalized and meaningful. As education continues to embrace digital advancements, adopting innovative assessment tools will contribute to more effective, engaging, and student-centric learning experiences. So, these are the references for your further reading. I hope you will go through them.

Thank you. Happy learning.