EDUCATIONAL TECHNOLOGY AND ICT

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Lecture-27

Module-27: ICT in Classroom

Hello, dear learners, welcome to SWAYAM-NPTEL course on Educational Technology and ICT. I am your course coordinator, Dr. Sarita Anand from Department of Education, Vinaya Bhavana, Visva-Bharati, Santiniketan, West Bengal, India. Today, we will talk about the module 27 on ICT in Classroom. This is lecture 27 and before going to the topic, we will talk about the concepts covered.

Previous lecture, we have covered Creative Common Licenses, their major principles, evolution of CC licenses, types of creative common licenses and their relationship with the OERs and its advantages and challenges. ICT in Classroom Uses and Feasibility Whenever we are talking about the ICT in Classroom, it is about the technological tools using in our classes like When we know that ICT has transforming our education system by enhancing the teaching learning processes, giving help to the teachers, by integrating these ICT in the classroom, it provides students and the teachers with access to enormous educational resources, facilities, interactive learning and nurtures the critical thinking skills of the students. In the context of education, ICT refers to the use of digital tools, devices and resources to enhance the teaching and learning process.

It involves the integrating technology into classroom to make the education more interactive, engaging and effective. ICT in the classroom may include the hardware and the software. Hardware we already have studied about the computers, the laptops, projector, etc. and the software is having the different softwares like educational apps. We had talked about Igno, e-content, different apps.

Educational platforms which provide software like PM e-Vidya and PM e-Vidya AR. So, these are the educational apps or software and internet-based tools like online resources, virtual classrooms, etc. Now, we will see the uses of ICT one by one according

to the given headings like assessment and feedback. When we talk about ICT in the classroom, assessment is an important factor of classroom teaching, and here online quizzes and automated grading systems, etc. are utilized by teachers for assessment purposes or feedback purposes in the classes.

The second factor is enhancing teaching and learning with the help of hardware gadgets like smart boards and projectors, where we use our PowerPoint presentations. Right now, I am teaching you with the help of a PowerPoint presentation, having some diagrams to explain the concept. So, these are the uses of ICT in the classroom. Personalized learning, self-paced learning, and adaptive systems are used in our classes.

For example, before going to class, we provide some content on the LMS and instruct our students to go through it. So, they get ready-made e-content in their hands to study before and after the class. And then, the next one is the development of a digital library for promoting digital literacy. This digital library may be an individual library promoting digital literacy by the teacher. Teachers can create their own LMS and provide information there.

Content on the elements like I am giving the content in the Google Classroom to my students and this is promoting the digital literacy with the help of ICT. This literacy is not about the ABCD or KKG but this is the literacy about the higher education where students are getting the contents. and the digital skills of the 24th century workplace. Definitely, they are knowing that how to use the LMS, how to use the smart boards with the help of using these facilities in their classroom, motivated by their teachers. Next one thing is

Access to online resources. Definitely, whatever online resources are provided by our government, our institution, the teachers are essentially they have to promote their students to use it, access it like e-books and online courses provided by different institutions. These are the uses of ICT. These e-books are easily available when we are using the NDL.

Earlier, I had discussed about the National Digital Library of India and it is also providing the free books, also I had mentioned about the UNESCO digital library. These are the online resources which are freely available to you all. As a use of ICT in the classroom, teachers can also use and the students are using definitely.

And the next one is the collaboration and the communication. These ICT tools are being utilized by the teachers for the collaboration and to communicate the teaching learning content or any other issue related with the academics like Google Classroom or any other LMS which is easily available to you all and the Microsoft Teams, Google Meet, and if you are using Zoom, these are the collaborative softwares where teachers are utilizing it for organizing their online classes. So, we can call it the uses of ICT in classroom teaching learning process. The uses of ICT, the content, theoretical content, detailed information is given here for your easy access of the content.

It will be provided you in the form of PDF also. Now we will talk about the ICT tools for classroom teaching. So, one by one we will talk about these ICT tools. The first we will talk the interactive whiteboards and the display boards. Definitely the Microsoft whiteboard or any other whiteboards are the digital collaborative boards.

Earlier we were using Jamboards like this. This Jamboard was provided by Google. Why I am saying that was because right now this Jamboard is not available. available on Google. Earlier it was there. 31st December was the last date of this Jamboard and now this Jamboard is not there with Google. You cannot access this Jamboard but definitely this was the part of whiteboard. We can use the Jam files for sharing with the students where when we are taking the online classes, we are writing and after that, we are saving it and the link was given to the students who are attending our classes. Then the next one is a smart board.

The smart boards are definitely we have seen these are interactive whiteboards for the collaborative lessons. We can design, develop the shapes, the drawing and explanation, different maps, wind maps, etc., Then comes the active panel of promethene. This is touchscreen display screen for the interactive teaching. But it is not widely available.

Those institutions who are having mainly they are having the smart boards. now the second one is the second ict tool is learning management system why i am calling it ict tool because in the large scale we are using this learning management system like blackboard google classroom i always take the name of google classroom because it is freely available you all are having it in your pocket and the next one is the Moodle. This Moodle is also the open source LMS creating the personalized learning environment. But I always suggest the teachers, the school teachers, that if you are not able to use this Moodle or Blackboard, definitely you can use the Google Classroom, because this is the platform for assigning, grading, and organizing classroom activities very easily. It is a very simple

LMS that can be utilized by teachers. The next one is Canvas. Canvas is also a very good, user-friendly LMS for course management. But I always suggest going for Google Classroom, at least if you are not using any LMS as a teacher.

The next ICT tool is the presentation tool. Definitely, as teachers, we need PowerPoint Microsoft PowerPoint for creating slides and presentations. We can also use Google Slides, which are more convenient because they are openly available as a link, and you can collaborate with your peers or colleagues. So, creating slideshows for your presentations for students or collaboration is very useful. Now comes Prezi. Prezi is also a very dynamic presentation tool.

It has zoomable canvases and also includes ready-made tools. You can add your content to make interactive presentations. But the only drawback is that Prezi does not allow downloads in the free version. So, you can only get the link to the created presentation. Now, Canva.

Canva, I will suggest that this is the most user-friendly designing tool for creating visually appealing, not only the presentation, but the posters, the thumbnail, the YouTube thumbnail, any brochure, poster, whatever you want to prepare, you can go to the Canva and you can design your content. Then comes the Mentimeter, widely used by the people for live poles, word clouds and cruises. These days, the trend of word cloud and live poles increased because of this use of Mentimeter. The next ICT tool is virtual classrooms and video conferencing tools. Definitely, you all have remembered the COVID period and that time our whole education system was running on virtual world.

And these video conferencing tools played a very important role in our education system. And you remember this June, this June got the boom. widely used by the people in the academia. This is the video conferencing app with having the screen sharing and the special quality is that it has the breakout rooms. So, if you are organizing your classes in different schedule, different groups are there, group tasks are there, you can utilize the Zoom.

Now the Microsoft Teams. This Microsoft Teams is also a collaboration tool with the chat and video calls. Normally the other video conferencing tools are having the same features. Google Meet is having the seamless virtual classroom integration. And we know this Google Meet is having two categories-

One is G-Suite account. The people who are having G-Suite account or institutional account, they can they can utilize the Google Meet for the large number of participants. I think this is there is the scope of 250 participants and if you are using your own Gmail account, then you can organize the virtual class or video conferencing meetings or the classes for maximum 100 people. So, these are the video conferencing tools.

Big blue button is also open-source teaching platform you can utilize for your classes. The ICT tool is digital assessment and quizzes. Definitely when we are talking about the teaching learning, then assessment will definitely come. The Kahoot! is a game-based learning platform for quizzes and surveys. It is very famous tool. The quizzes are interactive. Quizzes are made by with the help of these quizzes and fun elements like memes and ladder boards are there. Then the Socrative, this provides you the live quizzes, quick and real-time assessment and feedback tool. Another one is the most famous is Google form. We already utilized at the time of COVID-19 period.

Though this is not proctored, you remember one of our participants in this course was asking a question about the Google Form. Definitely, this cannot be proctored, but we can utilize it for quizzes, surveys, and polls, etc. Now, the sixth point is collaboration and productivity tools. These collaboration and productivity tools like Padlet, Trello, and Miro are tools where we can collaborate with the other people at the same time.

Like Padlet, a virtual bulletin board for sharing ideas and resources with your peers or your teachers. Suppose I have given you a question to think about on Padlet, and the class or the students or your peers can reply there, and through the answers of the peer group, you can gain knowledge about the given question. Trello offers project management for collaborative learning, and Miro is an online collaborative whiteboard for brainstorming and planning. Google Docs, Google Sheets, and Google Slides are also utilized by teachers for real-time document collaboration and editing.

We can also use this in MS Office if you are using the 21st version. There is also a facility to create links or collaborate, like we do in Google Docs, Sheets, or Slides. And then comes Slack. This is a communication and teamwork platform. If you are interested in collaborating with your colleagues, teammates, or peer group, then you can utilize it.

But I will suggest the easiest one is the Google tools. These Google tools like docs and sheets and slides are very easy to use for the teachers as well as for the students. The seventh ICT tool is educational content creation tools like I already mentioned maybe some name will be repeated because they can be come under the one criteria like canva was I

mentioned in the presentation also because this is multitasking app so it will come in many categories so here canva is a graphic design for educational materials when I prepare my YouTube videos for my YouTube channel, then the thumbnails are prepared with the help of this Canva app only.

EduPuzzle is also very interactive video lessons providing tool and with embedded questions. We can embed our questions and in the running time we can ask to our learners. PowerToon. PowerToon is actually the animated video creation tool for the lessons. We can create the animated lessons or the content also.

The Renderforest, I forgot, maybe I forgot to mention the name of Renderforest. This Renderforest is also very good app where you can utilize the platform for making the animation video with the help of your ready-made story or the content. And the Animoto is also easy to use. Storytelling tool, so you can utilize these tools also for your educational content creation. Now, the augmented and virtual reality tools, AR and VR.

Google Expeditions is an example of VR field trips and immersive learning. MergeEDU is an AR tool for interactive 3D learning experiences. Post Spaces EDU is also used to create and explore virtual reality worlds for education. Quiver is also an AR coloring and visualization tool. Most importantly, the reason I mentioned it last is that PM e-Vidya AR is an initiative of the Government of India.

They are promoting augmented reality for school students. Currently, this app provides AR for 9th and 10th-grade NCERT science books. If you are going to use PM e-Vidya AR, you simply have to download the app on your mobile. Take the 9th or 10th-grade science book.

Choose the image of the scientific experiment you want to see on the AR screen of your mobile. Place the book under the screen, align it with the picture, and scan it. If I get the time, I will prepare a video for you on how to access PM e-Vidya AR for your teaching and learning process. Teachers who are joining this course will benefit from it. Also, our B.Ed. or M.Ed. students who are pursuing this course, they will be also benefited by this PM e-Vidya AR. The next ICT tool is coding and computational thinking tool. Definitely this scratch is having the block-based coding for the beginner. These days coding is not a very new thing for you all. This is now the part of the computer syllabus of the school children.

Maybe we had not learned about the coding and the computational things in our school days. But right now, they are studying about the coding, the Python and very big words in their school books. So, these are the tools for not only the students, also for the teachers. This Tinker is having the game-based programming for the student, Code.org. This is providing the coding courses for various levels and Blockly is having the drag and drop coding interface where you do not need to remember anything.

Just you have to decide the design and you have to drag the given sample and put it on the proper place and you will generate one computer program or the coding output. So, these are why I am telling you about these ICT tools. Maybe right now in your syllabus only knowing this tool is enough because if I am going to explain you deal with the each and every concept of these tools then it will be the lengthy lecture so that's why for your information seek i am telling you about these tools and as a learner you have to go through these names of these tools and go on the internet and search it and you please promote the self-study by using these things.

ICT is always about the practicing, the searching, the new things. So, if you will be trying to know that how it works, definitely you will get the demo videos and you can learn about like Blocky or the Scratch. Then comes the 10th ICT tool that is Open Educational Resources and the Digital Libraries. Different open educational resources are available there. I had already given one lecture about the OERs and now I am just giving the names of these tools because for a teacher, this will be very beneficial for classroom teaching learning process.

Khan Academy- Khan Academy provides the free video lessons and on various subjects like school students are utilizing very much about this Khan Academy. So, Coursera and the edX also are having the MOOCs platform. These are The MOOCs platform and the NDLI, National Digital Library of India.

This is the repository of academic resources, not only books, but the journals and the competitive examination preparation facility is also there. So, you can go through it. Then the OER Commons, open access learning materials are there. And we had already discussed in the creative common licensing. Then the eleventh ICT tool is video and multimedia tools.

These video and multimedia tools include tools like Edpuzzle and Flip. Formerly, its name was Flipgrid. Edpuzzle allows adding interactive questions to videos for student

engagement. Flip is a video discussion platform for student responses. YouTube, as you all know, provides all kinds of educational videos and channels.

But in education or academics, we always search for educational YouTube videos. Also, TeacherTube is part of YouTube where you can find e-content video lectures at the school level. So, I have not listed the names here because this is homework for you all to explore TeacherTube on the internet. Then comes the next part. This is interactive lessons with multimedia content.

So, if you want to utilize it, explore it on the internet by searching yourself. Now, the 12th point is digital storytelling tools. These digital storytelling tools include Book Creator. It creates and publishes digital books. Storybird is a platform for creating visual stories, and Adobe Spark is also available for PDF books.

Now, the third ICT tool is about subject-specific tools. For math teachers or math students, there are ICT tools like GeoGebra, Desmos, and Khan Academy. For science students, PHET simulations, Labster, and for language and arts students, Grammarly, Duolingo, and ReadWriteThink are the ICT tools. Then comes social studies. Google Earth, History.com, etc. are tools for social studies students as well as teachers. Now, the classroom management tools. For classroom management, you can use Classcraft. The list of these tools is enormous, but I have categorically selected those tools which are or may be utilized in our classes. So, Classcraft is a gamified classroom behavior and participation tool.

It makes the classroom interactive. Seesaw is a digital portfolio tool for students and their work. Schoology combines LMS features with class management. You can say Schoology is a two-in-one software. or the website where you can utilize Schoology as an LMS and a class management tool.

The 15th and last ICT tool is cloud storage and file sharing. This class storage— you know that cloud storage includes Google Drive, which we use for storing and sharing large files. Dropbox is a cloud storage tool for easy file sharing and OneDrive, which we recently use as part of Microsoft's cloud storage solution.

Now, we will discuss the feasibility of ICT in the classroom. Earlier discussions were about the uses of ICT tools or ICT in the classroom. Now, the feasibility. The successful integration of ICT in classrooms depends on several factors, where the first is infrastructure and accessibility. This is the biggest issue for academics: the lack of

infrastructure, reliable internet connectivity, and availability of digital devices, which are crucial for effective ICT use.

Many countries like ours have inadequate infrastructure, which becomes a barrier to the feasibility of ICT in classroom teaching and learning. We can say these are the barriers to the feasibility of ICT in classrooms. The next one is teacher training and readiness. Definitely, this is the biggest issue: teachers are not adequately trained to use these ICT tools in classes.

Teachers must be adequately trained in digital pedagogy to integrate ICT effectively in classroom teaching and learning practices. So, professional development programs should be there to enhance the teachers' competency in using ICT tools. The cost and the sustainability. Definitely, cost is an important factor for any ICT tool or gadget. The financial burden of acquiring, maintaining, and updating the ICT infrastructure can be high. So, schools or colleges need to have sustainable funding models and government support for long-term implementation of these ICT tools in their classes. The next one is student engagement and equity. While ICT enhances learning, it may also create a digital divide where students from low-income backgrounds lack access to necessary devices and internet services, which will also be a barrier for them regarding ICT use.

So, ensuring equal opportunities for all students is crucial or important for successful ICT integration in classes by teachers. The next one is data privacy and security. Data privacy and security are the biggest issues regarding the feasibility of using ICT in classes. Because these days, people- students, teachers, or parents are fearful of these security concerns. Because online learning platforms collect vast amounts of student data, raising concerns about data privacy and cybersecurity, like Deepfake, there are software like Deepfake that create security issues regarding people and their data. Other factors like information theft raise data concerns. Schools or colleges must implement strict data protection services for their institutions. Now, the advantages of ICT in the classroom. It is not much needed to explain the advantages.

We all know the advantages of ICT in classes. But anyhow, this is the course content. We have to provide some advantages or challenges in daily routines. We have to discuss them with our students. That's why I enlisted some students.

Advantages like making learning interactive. Definitely, ICT tools make lessons more interactive and engaging, giving hands-on experiences to students. The second one is encouraging critical thinking. Definitely, the more you try using ICT tools—like I

mentioned earlier the more it will enhance and encourage your critical thinking. Through trial and error, you will learn many things in your ICT journey.

So, this provides or motivates the students to learn, analyze, or evaluate the digital information available to them. Then comes the support for diverse learning styles. Definitely, ICT caters to the visual, auditory, and kinesthetic learners. The next one is that it facilitates remote learning. Definitely, when we are talking about ICT, the uses of ICT, we move towards e-learning, MOOCs, or online learning.

These are facilitating the students who belong to remote areas, and it promotes continuous learning outside the traditional classrooms. Then it improves the teacher's efficiency. Definitely, this is the biggest advantage of ICT: that it is improving the teacher's efficiency, like if I am sitting here to give you the lecture, I am out of the four walls' boundaries. And dealing with thousands of learners from one place, so it improves our efficiency as a teacher in a regular or traditional classroom as well as in online or distance mode classrooms, like right now I am doing with you, engaging with you with the help of these ICT tools. It automates administrative tasks like grading, attendance, as well as, most importantly, content creation. Now, the next one is that it promotes collaboration. Technology enables students to work together on projects even if they are sitting apart from each other, and they can collaborate. The next one is personalized learning.

Definitely ICT also provides, allows the teachers to design their lessons to give the students according to their need. Like our visually challenged students ask us, ma'am, please provide us the content. Then we prepare the podcast in audio form. I am using Podbean. Sometimes I am using Spotify to generate the audio for my learners.

So, these are the advantages for a teacher towards their duty for their students. Now, the eighth one is improves the access to information. Obviously, this is the era of internet, the social media, the different websites and both the teachers and the students can access the wealth of online resources for their teaching, learning and research process. The next one is it prepares the students for the future. I always talk with my students and say them, you have to prepare yourself for the workforce.

For the workplace, because if the students of M.Ed. and M.A. Education or any other teacher, trainee studying in D.El.Ed. and B.Ed. they can be the familiar of these ICT tools. They must be, they should be knowing about the ICT tools like smart boards, projectors, preparing the PPTs, sharing their links, etc. Then it will be definitely help them

in their future performance at the workplace. Now the challenges of ICT in classroom. I have tried to design this program.

Challenges in different forms because, in earlier lectures, I have seen that those were becoming more monotonous due to the written textual content. So, these are the points as challenges of ICT, starting with the digital divide, definitely. If the learners who do not have different ICT gadgets, they will face challenges, and it creates the digital divide. Then, unequal access to devices. Someone has the device, someone does not have the device or the facility of the internet. Maybe connectivity issues, limited internet connectivity.

These may be the challenges, and we should try to resolve these issues. Then comes the software bugs or viruses. Definitely, when you click on unsafe links, your system may hang or your system may be corrupted. You need to use antivirus, etc. These are the challenges-   Hardware malfunction- maybe your hard disk is not working, some kind of problem in your hard disk, battery problem, maybe electricity problem, any malfunctioning may be there, and this will hinder the use of ICT in the classroom. Then comes the technical issue. If some fault occurs in your system, you may not be able to trace it.

That is a technical issue- Maybe from the software side, from the hardware side, anything may happen. These are the challenges. Then comes teacher training. The biggest issue: if the teacher is not trained themselves, then how will they train their students?

So, teacher training is the big issue, big challenge for the students. Academics, also the lack of training programs. If the teachers are not well trained, then the institution's responsibility is to train them. The greater opportunities should be there for the teachers to get the training and attend the training programs. Insufficient support, the support system required from the institution side should be there to promote the training or the training.

The facilities to be used by the teachers. Then comes the lack of supervision. Many times there is facility, there are the resources but there is no supervision then how and when you should use those ict in the classroom teaching learning process so these kind of supervisions are also required if you leave the smart board with the small kids then you will see the magic that your smart board has gone so the lack of supervision is there the proper supervision is required to use these digital gadgets Also, non-educational content.

Maybe there are enormous contents are available on the internet. When you do the pranam to Google Baba, then definitely you get the non-educational content. So, the

filtration is required from the teacher's side, from the student's side, from the parent's side to guide them properly. I always suggest you all, my students also, that if you are searching something academic, academical or in a research purpose, then go for the Google Scholar. Because it will always provide you the educational content, research-based content, not the shopping mall type of content available in the Google Scholar.

Also, I recommend the base search engine, Wakefield Academic Search Engine, where you can search for educational content and research-based content. Also, the biggest problem is distraction. Whenever you are trying to use ICT for your research purpose or teaching-learning process, searching for something academic, promotional videos or advertisements appear, and you get distracted. Instead of searching for educational content, you end up browsing through Myntra, Amazon, and Flipkart. So, these are the distractions on the side of ICT use in the classroom.

Now, in conclusion, we can say that ICT classrooms offer numerous benefits, including enhanced learning experiences, improved collaboration, and access to a wealth of educational resources. However, its feasibility is influenced by infrastructure availability, teacher preparedness, financial constraints, and equity issues. To maximize the potential of ICT in education, governments and institutions must invest in digital infrastructure, provide adequate training for teachers, and ensure inclusive access to technology. With strategic planning and support, ICT can significantly enhance educational outcomes and prepare students for a technology-driven future. These are the references for your further reading.

I hope you will go through them and benefit from them. Keep learning.

Thank you.