

EDUCATIONAL TECHNOLOGY AND ICT

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Lecture-43

Module-43: Importance & Utility of Internet in Education

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 43 on the importance and utility of the internet in education. This is Lecture 43, and before going into the lecture, we will review the concepts covered earlier. In the previous lecture, we discussed ICTs in teaching and learning, the role of ICT in teaching and learning, and the challenges faced in using ICT in the teaching-learning process. Now, regarding the internet concept and its evolution, we all know that the internet is a global network of interconnected computers that enables communication, data sharing, and access to a vast array of resources.

It has evolved from military research projects into an essential part of modern life, transforming industries such as education, business, healthcare, and entertainment. It is a decentralized system of networks that connects computers worldwide, allowing for seamless communication and information exchange. It operates on standardized protocols, primarily the Transmission Control Protocol and Internet Protocol (TCP/IP), which ensure that data is transmitted efficiently and accurately between devices. When discussing the internet, we must examine its features, such as its ability to offer instant access to learning resources.

When we talk about the internet, our goal is to understand how internet facilities provide access or benefits to learners and the entire education community. With an internet connection, students can explore a vast collection of educational materials, including images, e-books, videos, and other instructional content available on internet platforms. One feature of the internet is that it provides global connectivity. A person sitting in any

corner of the world can interact, use, and communicate with the help of this internet connectivity. It allows users from different parts of the world to interact with each other.

Decentralization: no single entity controls the entire internet. Because the internet has its own system, and each institution, government, country, state, city, or even an individual operates their own internet facility. That is why its main feature is decentralization. No one can control an individual internet facility. The next one is interoperability.

This means different types of devices and networks can communicate using standardized protocols. So, this interoperability also features different networks communicating with each other on standard protocols to facilitate better internet services. Then another feature is scalability. The internet can expand with new devices and users without significant structural changes. So, if we want to enlarge the reach of learners, we can expand the scale of internet resources or facilities.

Multifunctionality is also a great feature of the internet, where it supports various applications including emails, social media, cloud computing, or any kind of e-learning resources available on different platforms and educational systems. The evolution of the internet: before discussing more about the internet, we should see how it evolved and how it reached its present state.

Earlier, in the pre-internet era of the 1950s to 1960s, the idea of a network communication system originated during the Cold War when the United States government sought a decentralized system for secure communication. From there, the Advanced Research Projects Agency (ARPA), a branch of the US Department of Defense, funded research to create a robust and survivable communication system.

So, from 1969 to 1980, ARPANET the first internet came, and this ARPANET, the Advanced Research Project Agency Network, was developed in 1969 and started as an operational packet switching network. Then it connected four universities in the United States: UCLA, Stanford, UC Santa Barbara, and the University of Utah. Then they moved on to developing this internet, and the major development came with the introduction of packet switching technology, which broke messages into small packets and transmitted them independently to the receivers. Then, in the third stage in the 1980s, expansion and TCP/IP adoption came, and here in 1983, the Transmission Control Protocol or Internet Protocol became the standard networking protocol, allowing different networks to be interconnected.

So, the Domain Name System (DNS) was introduced, and we have seen these DNS packages replacing numeric IP addresses with human-readable domain names like It evolved, for example, into .com, .edu, .gov, .in, etc. These are the readable domain names; earlier, it was numbers. Then, the internet expanded beyond military and academic institutions to include commercial and governmental organizations. Earlier, it was limited to defense and academic institutions; now, it was becoming part of working towards common people and government organizations.

Then, in the fourth stage in the 1990s, the birth of the WWW. This is the biggest scientific evolution in the field of the internet: the World Wide Web. In 1989, Tim Berners-Lee, a scientist from CERN, developed the WWW, enabling users to navigate the internet using hyperlinks. So, these scientists from CERN made remarkable work in the field of the internet, and the first web browser, Mosaic, was launched in 1993, making the web more accessible to the public.

So, in 1995, commercialization came, and companies like Amazon and eBay emerged, marking the start of the e-commerce revolution and this is the picture of the Dr. Lee from the CERN University because definitely he has worked a lot for the whole human community, his work contribution should be appraised because we are these days using this WWW and without this any kind of ICT cannot be worked properly. Then comes the internet service providers such as America online and Yahoo! offered public internet access latter stages at present there are so many internet service providers are there, they are providing their services in the field of education and personal life also.

The fifth one is the broadband and social media web 2 resources. This the in the early 2000 we saw that the transition from dial up to high-speed broadband internet came and now improving the access to the access and usability increased and web 2 technologies like user generated content and Interactive platforms such as social media, online learning and cloud computing are all and the sixth one is mobile, internet, 5G and beyond and AI integration.

In 2010 and till present we can see there is the drastic change in the whole education system not only education system but in daily life also we are utilizing different technological gadgets mobile application and internet basically for the daily life also and as well as in the educational purposes 5G technologies improved connectivity in higher speed and lower latency and AI has remarkable change made in our lives and things of internet of things and cloud computing also enhance the automation and smart devices.

These days, auto gear shift cars, AI driven cars, education system apps are there for our benefit and these are being run on the help of internet. Increased focus on cyber security and data privacy due to growing threats such as hacked and misinformation. Nowadays you can see in daily life also there is a fear factor regarding the cyber security, but accordingly the cyber security system is developed by the different sector of the education as well as daily life. If you in banking system you are using online banking then you will have to pass two three stages then only you can access your account.

Similarly, if you are using your Gmail account and trying to sign in from another system, you definitely need to have your registered mobile with you, and only after verification can you log in. So, if cyber concerns exist, solutions are also available with the help of the internet, allowing users to properly utilize this system. Internet facility. So, now, we all know that if we imagine there is no internet facility, what would we do? In daily life, people are not able to live without Facebook, Twitter, and WhatsApp.

If the internet is not there, how will you use those social media platforms? Nowadays, people are not standing in queues at railway stations for ticket counters; instead, they purchase tickets online with the help of the internet. Nowadays, when you go to the airport, you do not have to stand in a queue for entry; you can use the digital Yatri app or whatever app the government has developed. You can do online boarding. Many facilities are available in daily life as well.

So, we can say that there are enormous facilities that have transformed our lives with the help of the internet. Whatever apps, software, or technology we discuss, they definitely require the internet, and with its help, we can bridge any gap. Whether in education, vocational training, or any other field, we will now discuss the importance and utility of the internet in education. If we examine the educational system, from traditional to modern classes, these days, classes are equipped with ICT resources.

Most ICT resources depend on the internet facility. If the internet facility is not available, access to information and resources is not possible. It means whatever information resources we are having that requires the internet services. And if you for example, if you want to use the digital library, worst resources of NDLI Some online paper, research paper, educational website, open access journals, video tutorials, you need internet. So, it is very important. Without internet, you cannot do anything.

Even your smartphone will not be smart if you are not using the proper internet. So, it provides the unlimited access to the educational content, making learning more inclusive

and comprehensive for the learners. For example, I have mentioned OERs. Any kind of OERs, thousands, lakhs of OERs are available but only one thing, the single thing that is the internet facility is not there, you will not access it. Only the facilities which are physically available in your library or at your home, the books are there and only you can use those physical resources, not the online resources.

Then comes the digital libraries, I have already mentioned that there are lots of Google books, lots of NDLI books, lots of content in the DIKSHA platform or SWAYAM platform, but if the internet will not be there, then you will not be able to read it, fetch it, listen the audio or the podcast because there is requirement of internet. So, research database Different tools like Google Scholar, JSTOR allow students to researches for review work, for review the article, research papers or academic journal or in previous lecture I have shown you about the Journal of Educational Technology from CIET.

If you want to see the soft copy of that journal definitely you need internet to access the information and the resource as a journal on the CIET website, so these papers or the journals or research database can be utilized only if the available internet facility is there, then comes the online learning and distance education resources The internet has definitely has the importance regarding the e-learning platforms, it provides the structured courses, e-content available regarding beyond the location, but if the internet is not there, only accept the TV program.

If the educational program is telecasted with the help of Swayam Prabha or EDUSAT program is there telecasting on the radio and the television, then okay. Then you can fetch it out, you can access, you can pursue your online learning and distance education with the help of television and radio but, if you want to go through your MOOCs courses or online content in the different subjects and allowing the learner to gain the knowledge, earn the certificate remotely for that internet makes learning beyond the physical classroom. Making education accessible for anyone anytime with the help of this internet facility.

Like, I have already mentioned that if you are trying to fetch out the information, fetch out the knowledge given on the different MOOCs platform, you need internet. If you want to go for the virtual classes organize classes for not only the classes but the training for the skill development or for the seminar conference webinar anything you want to organize then definitely internet is required, we have seen that during COVID-19 the whole education system was dependent on the ICT, use of ICT and behind use of this ICT the pillar was the facility of internet. If the internet was not there the worldwide education

system was not be able to facilitate or run during the COVID-19 because everything was closed. Every educational system was closed and only with the help of ICT, gadgets, hardware, software and internet this education system was running.

So, this is the importance and utility of the internet. Then comes the LMS. Me as a teacher, you as a learner or a teacher, if you want to organize your classes, manage your class. On any LMS platform like Google Meet or Moodle or Canvas definitely for managing that class uploading the material or assignment or the quizzes or giving any information anytime anywhere to your learners definitely you need the facility of internet, if internet is not there you will not be able to use the LMS for your classes So, the third one is personalized and self-paced learning.

This personalized and self-paced learning is about the adaptive learning platforms like Dreambox or Knewton we can utilize, but if the internet is not there, we cannot use it properly. So, recorded lectures or educational apps, if we want to use, we want to see, then definitely internet is required for self-based learning, the personalized learning. Whenever I want to see the recorded lecture on YouTube, given information or the content on the LMS by the teacher, definitely if we are having 24-7 internet facility, then we can fetch it out as per our speed, our need, our timings. Otherwise, we have to be bound with the educational institution, we have to go to the class and attend the classes and there will be no self-paced learning. Then comes the collaboration and communication.

For any kind of collaboration, communication, I have earlier mentioned that for collaboration and communication ICTs are important but, if internet facility is not there, you cannot collaborate with the other teachers or the institution breaking down the geographical barriers, because to inform them to connect with them we need internet facility.

So, group projects like Google workspace, working on Docs, Slides, Sheets allow students to collaborate and for that collaboration you need an internet. Similarly, if you want to use discussion forum, you want to discuss with your learner, your teachers then definitely there should be proper internet connectivity, though it can be asynchronous but to see the queries, to respond, give the response; definitely you need the internet then the global classroom programs like on the organized on the Skype or any other service providers, they collaborate on the projects in US collaborate with the peers in India, then definitely this kind of cultural exchange, educational exchange projects can be done only with the help of internet.

If the internet facility is not there, then I have to go with my student to United States or United States teacher or student come to India and you know there is a lot more difficulty regarding the fund. So, go beyond the fund problem, we have to collaborate in the global classrooms. Then comes the professional development of teachers. Definitely for the professional development of the teachers, if we are going to organize online training programs either if blended mode also, but when you will mixing the online and offline, then if online training is there, then you will definitely need the internet facility.

Then comes the webinars and virtual conferences for similarly, if you want to organize for training for the teachers, then definitely some virtual conferencing Apps like Zoom or Google Meet will be utilized and using these apps we need the proper internet services. then comes the resource sharing all kind of resources which are available online for sharing those online resources like website for the teachers pay or teacher allow educators to share sell or the lesson plans worksheet and other resources like earlier I have told the Pinterest we I had used for the lecture on the educational games and to fetch out to see,

To search the Pinterest page, we need internet and without internet I was not able to download it and share that resource in my PPT for you all to teach the concept. Then comes the enhanced assessment and feedback. Similarly, if you want to give the proper feedback on the assessment using different quizzes like online quizzes you are using Kahoot, Quizlet, Quizzes, Google form whatever resource you are using you need internet. Automated Grading, if automated grading is there that will not work if internet is not there. Immediate Feedback system like if you have prepared the automatic generating response sheet in Google form, instantly student will give the answer and they will get the report that their answer was right or wrong.

So, for that also internet is required, then comes the AR and VR definitely. Here also, here in comparison to other resources internet is required the higher level of internet, having the larger speed of internet is required to use that VR headset. So, tools like VR headset or Google Expedition used in geography history or any other classes can be utilized only if you are having the internet facility, a proper internet facility in proper speed.

So, the AR app different AR apps utilized being utilized in the anatomy or biology classes by the teachers that can only be faced with the help of internet suppose if I am time and again taking the name of ePatshala AR (Augmented Reality) but if the your mobile your smartphone is not having the internet, proper internet then that will not open the augmented

scene or the experiment in your mobile phone so these are the importance of internet then comes the skill development and carrier development.

The internet offers opportunities for self-learning, skill development, and helps students with professional acquisition or acquiring industry-relevant skills. For that, any working professional can opt for online courses, like I have already attended many and completed several certificate courses from SWAYAM for my upliftment, development, and career advancement but, if the internet facility were not there, I would not be able to learn, read, or access different content in video or audio form, nor read the text material. So, for skill development or advanced career development, the internet is also required. The next one is educational and social media and community learning. For this, there is enormous social media available, different platforms exist, and all kinds of tutorials are accessible.

You can also join different social media groups, but if there is no internet facility, then you cannot work properly on those hashtags you use on Facebook or Instagram. Then the tenth one is online assessment and digital examination. Any kind of online assessment conducted in class by teachers or institutions, such as quizzes or online examinations, is related to academic issues. If the internet does not work properly, these online assessments will not function correctly. Also, questions arise regarding the proctored examination.

There are software platforms like ProctorU that monitor students and prevent cheating; but again, the question arises: if you want to utilize the facility of ProctorU for your class assessments, conducting online tests requires proper internet facility. Then comes bridging the gap. Yes, there are many websites trying to do this. I have given this picture just for reference, like many community internet centers that provide free internet for learners. Institutions also provide this; for example, right now, I am working here at IIT Kharagpur for content development, and they are providing free internet facility for their stakeholders.

Different mobile learning platforms provide SMS-based services, like Energy Education, which delivers educational content to students via SMS, a rare feature in the educational world, which is why I have included this picture here. I have prepared a comparison table of the advantages and disadvantages of internet use, based on the discussions we have had in this class so far.

So, you can go through with this table for your proper understanding and comparison the benefit and the problems related with the educational technology and its performance with the help of internet. So, in conclusion we can say that the internet has transformed from military research experiment into a fundamental tool for communication, education,

business and entertainment. These days internet is the basic need like we talk about the air to breathe and water to take. Similarly, the internet is also becoming the future of interaction and it is the daily life thing.

So, it has reformed our education by providing access to information, enabling online learning, facilitating collaboration and enhancing the skill development. As technology advances, the role of internet in education will definitely continue to expand and making learning more inclusive, efficient and innovative. I have given some reference for your further reading. I hope you will go through it.

Keep learning. Thank you.