

EDUCATIONAL TECHNOLOGY AND ICT

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Lecture-37

Module-37: Teleconferencing

Hello dear learners, welcome to SWAYAM-NPTEL course on Educational Technology and ICT. I am the course coordinator, Dr. Sarita Anand, from the Department of Education, Vinaya Bhavana, Visva-Bharati, Santiniketan, West Bengal, India. Today, we will talk about Module 37 on Teleconferencing. This is Lecture 37, and before going to the lecture, we will see the concepts covered. In the earlier lecture, we discussed educational games and simulations in education. Concepts and different types of educational games, pedagogical principles of educational games, the concept of simulations in education, simulation in education, and also the difference between educational games and simulations.

Now, the term teleconferencing. Whenever the term comes to mind, we think that organizing any kind of conference is a hectic task. And if we are going to organize a large-scale conference, then effort, expenses, and resources are required to bring people together for such an event, leading to numerous difficulties. A valuable and viable solution to this problem is the transition from traditional in-person meetings to teleconferencing.

Tele means from a distance. So, teleconferencing can be described as a form of interactive group communication or real-time interaction between individuals in multiple locations facilitated by electronic means. So, it refers to a communication method that enables participants to engage in discussions and interactions despite being geographically distant from each other. So, traditionally, face-to-face interaction has been the conventional approach for conducting conferences, facilitating direct and interactive group communication.

Whereas, the teleconferencing is according to the Shelton and Saltsman, the use of telecommunication technology is to facilitate the real time interaction between individuals

or groups in different locations using audio, video and data sharing tools. This is the teleconferencing. This is the method of remote communication where people use technology to see, hear and share the information without being physically present in the same location because the tele means the distance. So, here we will talk about the evolution of teleconferencing that how it developed evolved from the time. So, teleconferencing evolved from traditional to the today's video conferencing like in early telecommunications there was from 20th century to 1950s, there was Alexander Graham Bell invented the telephone enabling the long-distance voice communication that was happened in the 1876, demonstrated the first video telephone concept. This was on trial, but definitely this was the first attempt. Then in 1940s and 50s the military and business sectors used the early forms of teleconferencing via radio and telephone networks. Then in the second phase the rise of audio and video teleconferencing like in 1960s to 1990s. Where in 1964, AT&T introduced the picture phone, the first commercial video teleconferencing service.

Then in 1970, organizations began to use the audio only conferencing via telephone lines. In 1980s, digital networking improved and teleconferencing and leading to video conferencing system. Then in 90s, 1990s the internet revolution introduced the VoIP (voice over internet protocol) where making the teleconferencing more affordable and accessible. Then in third phase the internet and AI driven teleconferencing from year 2000 till present. So, in 2000 cloud computing and broadband enable the high-quality video conferencing.

In 2010, platforms like Skype, Zoom, Google Meet, and Microsoft Teams revolutionized teleconferencing, which we now call not teleconferencing but video conferencing. And in the 2020s, in this era, due to COVID-19, there was a boom in the use of Zoom, Google Meet, Microsoft Teams, Jitsi, Cisco Webex, and several other video conferencing apps. for every aspect of life, whether education, business, social, or personal needs and at present, AI-powered teleconferencing enhances the user experience through real-time translation, noise cancellation, and virtual collaboration tools available in these teleconferencing tools. Now, the types of teleconferencing.

If you read the books, you will find the old version of the types of teleconferencing, but here I have mentioned them as per the present time, like the first one is audio conferencing, then video conferencing, and the latest upcoming one is integrated teleconferencing, which combines audio conferencing and video conferencing together with advanced technologies for immersive experiences. like Meta's Horizon Workrooms. So, these are the types of teleconferencing.

Here in audio conferencing, we utilize the telephone network, Voice over Internet Protocol service, and traditional telephones used here for conferencing and transmitting voice data to digital packets over the internet instead of analog phone lines. So, earlier, phone lines were utilized for teleconferencing; participants communicated through audio only, voice only, but now they are combining it with video also.

Essentially, it is an extension of a standard telephone call, enabling communication among more than two individuals simultaneously, like these days we do on mobile conference calls. and we connect our friends, our peers, our colleagues on that call, and a group of people can interact with each other, and these are the VoIP calls (Voice over Internet Protocol calls) and the second one is video conferencing; we all have experience with this method of conferencing. It combines the oral as well as physical face-to-face interaction using video and audio systems. So, participants can both hear each other and see each other during the conference call, like on television live telecast interactions with different people.

So, earlier video conferencing was mean about the video calling on the television one way video conferencing may be sometimes if they are going live TV channels are going live then that was the two-way video conferencing, but now at present scenario has been changed and the concept of video conferencing using internet camera microphone and transmit audio video in real time.

It is a real time visual communication method that connects the two or more remote participants over the internet creating an experience similar to as a in person meeting. So, people are residing far places and they are connecting with each other with the help of these internet-based video conferencing. We now call it web conferencing. computer enabled video conferencing and using the video conferencing apps which with the internet share the multimedia contents like we can share the documents, presentations, live chats, polls etc.

It includes the webinars, virtual meetings and online workshops. Participants can interact with a shared digital white board allowing them to draw, write or add annotations in the real time. So, these video conferencing apps at present providing the facilities to brainstorm the sessions, designing and discussion and educational activities by incorporating the visual elements. It enhances the communication and improves the clarity of idea and the concept.

During COVID-19, we all have experienced this video conferencing and whole education system was going on with the help of these video conferencing apps. So, many features with the electronic white board application, screen sharing, document sharing, text chatting

making them versatile solution for both the professional field and academic setting. For example, we can utilize Zoom, Microsoft Teams, Webex, Google Meet, Jitsi, Cisco Webex, GoToWebinar and this list is so long. Earlier Google Meet was not free and after COVID they made it free and each and every individual those who are using the Google or Gmail they are having this Google Meet freely in their pocket.

So, third one is integrated teleconferencing, this is very interesting that the combination of audio, video and web conferencing. It uses AI based collaboration tool, real time transcription and AR, VR immersive meetings. Like these days not in India, but in foreign countries Meta's Horizon Work Rooms are there which are providing VR based teleconferencing to join a work room meeting in VR. You need Meta Quest 2, Meta Quest Pro or Meta Quest 3 headsets. If among these headsets any of these you are having you can join the virtual meeting.

So, you can also join the workroom meeting from a regular video call also from your computer similar like zoom meetings, but they will not give you that immersive feeling which you will get with the help of these headsets. Web app is available globally in the countries where Facebook is available and most of the countries are having the access of this Meta Horizon and now the AI features in video conferencing. If we are talking about the present day in educational teaching learning process.

Definitely AI technologies are there in the teleconferencing or video conferencing apps. These are you can see they are having the virtual reality, the real time translation facility, annotation facility, noise cancellation, noise reduction facilities, automated transcriptions are there. facial recognition the are there, meeting moderation is there, they are streamlining the meetings, they are preparing the partitions among the group and the participants as well the presenters.

These facilities are there in these AI based features of the different video conferencing apps like real time language translation and speech recognition. This is a very good AI powered tool like Google translate, Microsoft translator and zoom live caption provide the real time subtitles in multiple languages which helps the learners. Automated transcription and note taking, the AI tools are transcribing the meeting, summarizing the key points and generating the action taken. So, they are providing the help to the learners like Microsoft stream transcription, Otter.ai etc. The next one is AI powered noise cancellation.

Many AI algorithm remove the background noise and like they are using the NVIDIA RTX voice or Krisp.ai. The next one is facial recognition and virtual backgrounds. These days

when we are joining the video conferencing apps, then definitely we can use the face tracking or background blur enhanced video conferencing where we can blur our background, if we are not interested to show the background, we can filter it, we can choose it. The next one is the teleconferencing or video conferencing app for the large-scale virtual meeting and conference.

They are enormous list of these platforms and we will start with the Zoom. You all are aware with this video conferencing app now this is AI powered platform and providing the large-scale webinars conference and virtual meetings even government of India is also utilizing the facility of Zoom.

It supports the 50000 attendees and in maximum, but sometime in special capacity if the user is allowed, they have purchased version, then they can definitely go to the attendees list to 1 lakh. So, noise cancellation breakdown rooms and small group discussions are available here in this Zoom platform, live polling question answer sessions are AI empowered transcriptions are accessible here on Zoom. It also gives the AI generated meeting summaries, notes, etc. and the list of the number of users on Zoom are very large.

So, we have to note that the zoom webinar is the best presenting polished content to a large audience whereas, zoom meetings is the ideal for small or large team discussions. and collaboration. We have to learn or know the difference between the Zoom webinars and Zoom meetings, though both are the different terms. Zoom webinar is an option add on used to host virtual presentation and broadcast them to a view and listen only audience. large if you are interested to organize webinars on a large scale you can use the zoom webinar whereas, you want to arrange some meeting in your department in your institution school college then definitely you can go for zoom meetings.

So, where we use the this Zoom for the conferences, online classroom, university lectures, public lectures, large teacher training programs and other activities. So, these are the picture of both the concept that is zoom webinar and the zoom meeting. So, I have given the link and you will go through it that how it works. Now, the second one is the second video conferencing app is Google Meet. This is also the user number of this

Google meet is very large scale and it is cloud-based video conferencing tool integrated with the Google workspace for education formerly it was known as G-Suite account or G Suite for the education and its name has been changed now we call it Google workspace for education and it is fundamental in features include the Gmail, Google Calendar, Google Classroom, Google Drive for the limited storage and the Google Docs, Sheets, Slides and

Forms. So, whatever are the Google tools those are available with the Google Meet. So, it provides the AI powered noise cancellation, distraction free learning and auto captioning and translation for multilingual students. It also facilitates the AI-driven background blur or a smart lightning adjustment.

Where we use it? So, schools, colleges, universities and integrated inbuilt features in Google Classroom 2. If you will see here in this section, I have shown two classes. I had thought that I will not show the class code, but I forgot to remove it no problem. This is the M.Ed. Ist Semester class Google Classroom and here you can see that this is made on the personal Gmail account and here is only showing the class code.

Students can join, and teachers can share the content. Whereas, in this demo class, on the left side, you can see that I have created one class to show you, and you can see that it has not only the join option but also the meet option. So, this Google Meet is the factory setting, an inbuilt feature of Google Classroom, where teachers need not share the link time and again with the students. But if they have made the class learning management system utilizing Google Classroom, every time whenever she or he announces the class, the students only have to go to their Google Classroom and click on the link of this meet, and they will enter the online class. Whereas, in the personal Gmail account, if you are creating, like I have created, but here, I have to share the link every time because this is not the G-Suite or Workspace for Education account, which is why there is a difference.

Now, you can go through this link, edu.google.com, and this is the link for the Workspace for Education, which is Google Workspace. Now, after Zoom and Google Meet, the third most prominent video conferencing app is Microsoft Teams. It is preferred by organizations for corporate meetings and educational webinars. It provides seamless integration with Office 365, AI-powered real-time captions, and translation in multiple languages. Immersive Reader AI for students and those who have reading difficulties.

Also, it gives AI-powered insights about the meeting or lecture going on and tracks student engagement. Most importantly, seamless LMS integration with Moodle and Blackboard is available. Like I have told you, Google Meet is an integral part of Google Classroom. Similarly, nowadays, Microsoft Teams is collaborating with Moodle and Blackboard. People are using these facilities in the Moodle background.

So, it is available where educators can add Team's classes and Team meeting apps to their Moodle or Blackboard courses. Where we can use it? We can use it in schools, college, university and corporate training also and this is the picture plugin which you can see on

the Moodle page also and this is the team Microsoft team which is now available on the internet and you can download and use it. Now, the fourth one is Cisco Webex. This is also very famous video conferencing app which is ensuring the enterprise grade security for corporate and academic webinars and AI driven automation is also there.

It has AI powered voice command, real time meeting transcription, AI powered presenter tracking and automatic smart camera framing. So, it also has the Webex assistance and AI for the meeting summarizes and key. takeaways provide the live polling question answer and real time translation in 100 plus languages and also has the recording feature. This Cisco Webex is also can be utilized with the LMS which we are using. So, in the academic conferences, corporate training and government webinars

we can use and when you will go to the website of Cisco Webex it will look like this and you can utilize it and Cisco Webex is utilized for different having different features you can go through the website and organize the webinar or the classes with the help of Cisco Webex. Then fifth one is BigBlueButton. This is open-source software best suited for the online educators, customized e-learning and virtual classrooms.

This virtual having the virtual whiteboards, poles, breakout rooms and small group discussions, open-source flexibility and it has all kind of AI powered like facilities like speech to text and live transcription, breakout rooms and polling for the interactive lessons when the teachers are taking the video conferencing classes and real time sharing the notes and document collaboration with the help of white board and screen annotation tools.

So, we can use it in the online schools, online classes, teacher training courses and also, we can utilize it for the e-learning platform. It focuses it claims that it is not made for the corporate purposes, but it is focusing on the pedagogy and promoting the itself as a virtual classroom software. If you will go to the website of this BigBlueButton definitely they are giving emphasis on the pedagogy. Now, the advantages of tele conferencing we all know that there are enormous advantages of these teleconferencing either it is audio or video it is cost and time efficient we without going anywhere we can participate it saves our money our time energy and which requires in the face-to-face conferences.

So, it enhances the communication also we can participate in the conferences sharing our ideas knowledge collaborating in different projects. participating in surveys investigations and report writing etc. It also facilitates the access to the updated information. These kinds of platforms are teleconferencing activities are providing to help to update our knowledge

and insight to interacting with the experts and authentic sources. It reduces the resource wastage.

Unlike the traditional face to face conferences, teleconferencing minimizes the time spent on social formalities making interactions more focused on the purpose driven. It also facilitates about the equal participation. Participants can engage more freely and equally as they can prepare adequately without any pressure in person meeting. But in online meeting also there is some pressure on the participant side, but that is lesser than the real time situation. Advanced learning tools technologies like audio plug-ins teleconferencing and computer supported video conferencing are enabling the self-paced learning, training, recorded materials and interacting making it interesting for the learners.

So, the next one is collaboration opportunities. Definitely, these teleconferencing facilities are fostering unique partnerships among subject experts, teachers, students, and diverse skills and interests, enriching their knowledge and contribution to education. These online resources, chat features, and video displays remove the barriers of distance and time, enabling seamless interaction among learners who are seeking guidance from information and also trying to meet experts. They may not meet in person, but they can meet virtually. So, we can say that teleconferencing holds significant potential for enhancing communication among learners and educators. However, it cannot be a replacement for classroom teaching or traditional face-to-face interaction. Instead, it should be used as a supplementary tool to enrich conventional methods of teaching and learning.

So, in conclusion, we can say teleconferencing has transformed communication, education, and business and health sectors by making interactions more efficient and accessible. The integration of AI and virtual reality with high-speed internet, like the 5G we are using now and future 6G, will further enhance teleconferencing by making it more intelligent, interactive, and immersive. The evolution of teleconferencing technology has led to more efficient, immersive, and intelligent virtual communication systems.

Advanced hardware like cameras, microphones, and connectivity tools enhance the user experience. Different platforms such as Zoom and Google Meet facilitate large-scale remote collaboration. More importantly, AI-powered innovations continue to optimize conferences and meetings. They improve accessibility and boost learner engagement. So, these are the references. I hope you will go through them for further reading.

Thank you. Keep learning.