Video Conference in Terms of Application of ICT in Education

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Abstract: *Modern education must follow the development of information and communications technologies. It is necessary to introduce new teaching resources in the educational process as well as a new methodological approach in order to supplement and enrich the traditional manner of learning. In this paper videoconferencing is described as one of the aspects of the application of information and communications technologies in education. The technology of the videoconferencing system and the proper choice of conference tools and ways of realization are crucial for the success of a videoconference lecture.*

Keywords: *video conferencing, tehnology, methods, tools*

1. INTRODUCTION

Video conferencing is connecting individuals and groups via telecommunication networks and video technologies in real time. The sound and images are transmitted electronically in a digital format, which provides simultaneous interactive communication.

The contemporary university becomes increasingly permeated by digital mediation both on-line and face-to-face, relationships between digital media, time and socially-situated practices of meaning-making are foregrounded. [14]

Video conferencing services tend to offer more than just face-to-face interactions. Video conferencing services let users share their screens, remotely access one another's desktops, chat via text, exchange files, communicate via digital whiteboards, and even broadcast conferences to large groups of passive viewers.

Video conferencing has a variety of applications, of which the most important are: meetings, interviews, education, management, remote diagnosis in medicine and perform regular work.

Education takes on a new dimension by using a video-conferencing system. A small group of students fully corresponds to the mode of functioning and video-conference meeting. Using data exchange, for example, a presentation between sites gives away a group experience the same lectures as well as local students. [1]

Virtual Learning Environments seem like the perfect blend of efficiency and practicality for a generation accustomed to speaking over video call, learning via the internet, and expanding their lives beyond their locations–and who might well be headed for a partly or entirely telecommuting job. Attending a college lecture in the digital world involves the same process of information exchange as talking via smartphone. [15]

2. TECHNOLOGY OF VIDEO CONFERENCE SYSTEMS

Technology video conference system consists of three essential components, namely:

- equipment at all locations record sounds and images, converts them into digital form and sends them over the network
- networks by which signals are sent
- conference room environment or room

The installed video conference system must be connected by either IP or ISDN lines .If the system is used at different locations, the connection must be provided at each location. In some locations, it is likely to be provided by IP while on the other, on the contrary, by an ISDN connection.

The starting point for effective video conferencing is the proper conference room, or the environment. The acoustics of the room, light, and many other factors have to be controlled for the most effective video conferencing. Video conferencing is a form of television and has similar guidelines. The high contrast and huge patterns on clothing should be avoided. The movements should be minimal. The conference may suffer from the delay; may be subject to the change of one image to another speaker, every time you hear a different voice. In these conditions, any interruption and a short-term interruption of the few things can be counterproductive, because it will distract attention from the one who speaks. Video conferencing requires discipline and respect of certain rules.

3. METHODS OF IMPLEMENTATION OF VIDEO CONFERENCING

The user to the user is an example of point-to-point video conferencing. [1,2] Only two terminals are included in the connection. In the case that both PC are based, the system runs compilation application. As long as the application software and hardware components are compatible with the standard protocol, the conference will be a success. The user may not be aware of any differences in the application software that is run by some of the PC machine.
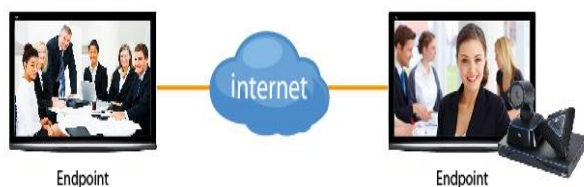

Figure 1. *Point to point video conferencing*

The connection is established via one of the terminals that makes calls to another.endpoints be placed anywhere, they can be in the same building or in different offices or even in different parts of the country or the world.

The user to the study is another example of point-to-point of the video conference system. As in the video conference user to user, here are only two terminals or included endpoints. One of the endpoints may be any type of a terminal device. The difference here is that at one terminal, there is one individual, but there are more at the second.

Studio to studio video conferencing system is a final example of point-to-point internet connection. It should be expected that at both ends, the users have more similarity to the functional mode of the work cited in the previous example, the user to study. This connection is achieved by complete video-conference communication between groups in a studio with a group of participants in another, remote study.

Figure 2. *Studio to studio video conferencing*

Multi-point video conferencing is more complex than the previous examples, and requires additional menagement parameters and conditions for setting and controlling the links between terminals. The multi-point video-conference sessions are sublimated, all simpler and previously described methods of managing video-conference events. For this reason, here are sublimated and the biggest difficulty for equipment and software support. It is necessary to carefully and constantly take into account all parameters of audio-visual signals and comply with all the necessary rules for the proper flow and conduct of video conferences. At the same time this form of video conferencing gives the greatest effect by enabling connectivity and communication of greater number of points and their complete interaction. [2]

Figure 3. *Multi-point video conferencing*

Continuous presence or managing events permanent presence, is the process where the video streams of remote video conference participants are simultaneously displayed on the display on the local display. During a call, the phase of the multi-point video conferencing is adjusted so that each terminal establishes its own operational parametre. The number of video flows can be decoded and prominently set on display through the terminal during this phase.

Voice activation of inclusion and integration, is the basic model of work and the use of the large percentage of video-conferencing. [14] This control model conference is facilitated by the MCU connectivity for transmission rate by the video signal to a current exhibitor. The current exhibitor does not get his own video display back, but the ones of the previous exhibitors. The effect of the current exhibitors accepting audio and video presentation of the previous exhibitors is that it gives the impression of giving a direct answer if the current speaker of the conference is in a distant place. The output signal on the remote display of the remote sites represents monitoring of the representative and exhibitors from other remote sites. Website in this elsewhere is the site of previous exhibitors.

Control of the chairman is a model where one site, which is allowed, controls over the speech by indicating through hardware or software control.

The example of control of the chairperson may be in terms of providing legitimacy and publishing award words of the exhibitor that can be uttered during the legal debate between the two parties.

4. CONFERENCE TOOLS

4.1. Conference tools used in Serbia

Adobe Acrobat Connect is derived from software Macromedia Breeze and provides audio-visual communication in the form of virtual conference rooms. Video conference tool Adobe Connect is a hosted tool, i.e. the company offers only online version of the tool, which is located on their server.

Adobe Connect is an innovative system for collaboration and distance learning. It enables business communication with associates, clients and partners regardless of where they are located, without obstacles and limitations. It combines various communication in real-time and on demand, which makes it an optimal solution for the most demanding organizations. [7]
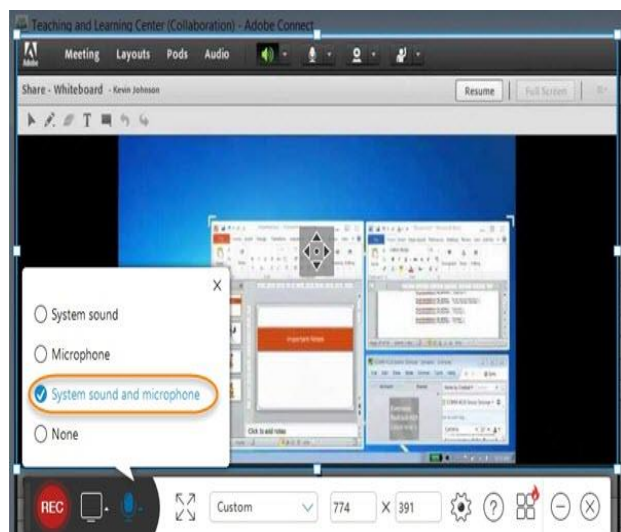

Figure 4. *Adobe Connect Video conferencing system*

Thanks to the fact that Adobe Acrobat Connect Professional is based on the flash player, there has been a large degree of flexibility in the application of this system on a variety of platforms. [6]

Adobe Connect is a web application that allows efficient interaction and exchange of rich content among participants in communication. Access is enabled on all desktop platforms (Windows, Mac, Linux) with a browser, and on all mobile platforms (Android, iOS, Blackberry) through the client application of Adobe Connect Mobile.

The software allows: personalized URL address to the conference room, screen sharing, administration speakers, record meetings for later viewing, viewing multimedia content (animations, video clips, demonstrations of software...), sharing files and documents among participants of the conference/meeting, voice communication among participants using VoIP, video communication, text message, whiteboard visible to all participants, the possibility of assigning the right to use local applications to remote participants and many more.[6]

Big Blue Button is an open source web conferencing system developed primarily for distance education. Interested developers can get involved in the further development of this project. There is no need to install it. It is localized to over 40 languages. There is a possibility for it to be installed in another application. [5]
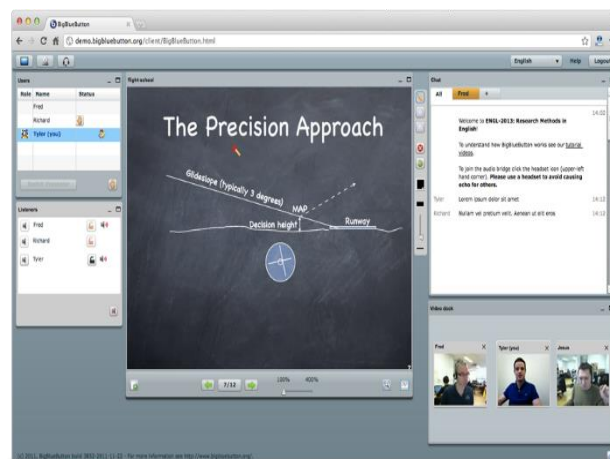

Figure 5. *BigBlueButton Video conferencing*

It allows sharing: desktop speakers, documents (PDF, PPT, Open Office documents) cameras without limitation participants, white board, chat room correspondence, phone calls (voice over IP), record and play videos with the web conference (slides, audio and chat).

Video Whisper contains a number of video conferencing tools that can be installed or integrated into any site or LMS. On the official website www.videowhisper.com we can find details about each tool that is offered by Video Whisper, intentions and instructionsl for the installation and integration of the same.

Figure 6. *VideoWhisper conferencing system*

The tools offered by Video Whisper are: exchange video messages live, online video consultation, two-way video communication, video conferencing

software, streaming software in real time, software for video recording.

WebEx is a licensed web video conference tool, Cisco. Cisco offers a trial version which is limited to 14 days and the participation of a maximum of three participants.

The characteristics of the web video conference tool WebEx are rooms for private meetings with their own logo and design, verbal communication and real time text communication for participants, presentations containing audio streaming and video animations, interactive whiteboard, document exchange, animation, and even the computer interface, use the mail box, a conference can be held on all platforms. [10]
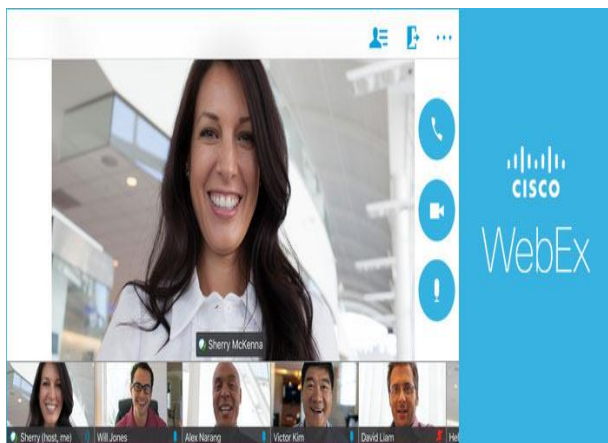

Figure 7. *WebEX Cisco Video conferencing*

WebEx can be used not only for business but, it is also a great tool that can be used in distance learning. WebEx conference tool can be integrated into the LMS.

WizIQ Live Class is another in a series of softer skin solutions for web video conferencing, which has all the necessary elements for the good functioning of the meeting. It is licensed, with its official website www.wiziq.com which offers a free trial for 30 days.[9]
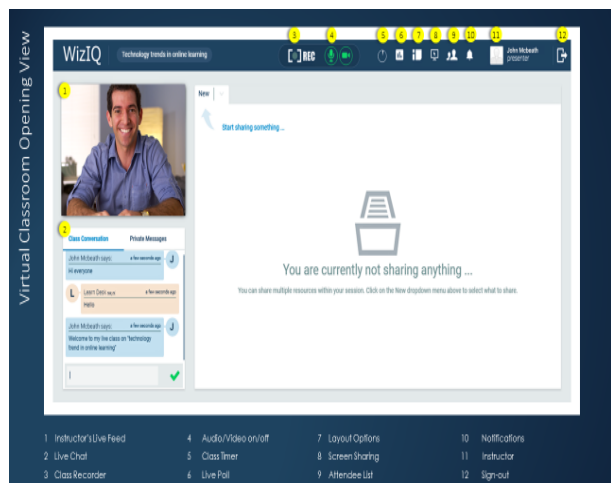

Figure 8. *WizIQ Video conferencing*

WizIQ is a great tool for web expansion of the teaching process outside the traditional classroom. WizIQ conferences are based on the Web which is

equipped with tools for real-time collaboration, such as the live, two-way audio and video communication, writing board and share content.

It is possible to integrate the same with the LMS. The registration is required on WizIQ official website to download the plugin after getting the activation key. After installation, the new "Activity" feature, WizIQ Live Class begins to be displayed in an LMS. Administrators and teachers can choose this module to create new classes to their course, of course, like every other standard activities. At the scheduled date and time, students and teachers can attend on-line time by simply clicking the link.

Dimdim started in 1996 with the goal of providing web conferencing software that was both simple and free. With over 15 years dedicated to simplifying complex web conferencing software, Dimdim is now able to claim its web conferencing software as being the easiest to use and simplest web meeting tool available today. Dimdim is a web conference service where users can share everything with other users: files, screen, slides as well as to correspond, talk and use a webcam at the meeting. Dim dim allows holding meetings online using search. Dimdim is a free meeting room. This service offers the possibility to organize a virtual meeting of twenty people (the free version), where the whiteboard (on which everyone can draw, write and delete) is available to the participants, a tool for presentations and demonstrations, with the inevitable communication voice and video - if you have a webcam, of course. You can record the meetings for later use. This service is suitable for the organization of e-learning, because the professor can schedule a meeting or lecture at a desired time and invitations for attendance to the student by e-mail. In the e-mail students obtain login data used for access to lecture. Dimdim is used as a supplement to various LMS systems at a time when it is necessary to hold a short demonstration or establish a video interaction with the teacher. [8]

Figure 9. *Dimdim conferencing system*

4.2. Top 10 web conference tools in the world

Collaborating with eLearning team members, offering live training events, and enabling online learners to reach out to their peers are just a few of the many uses for web conferencing software. However, due to the sheer abundance of web conferencing software tools that are available today, finding the one that suits your needs and fits your eLearning budget can be challenging. will be displayeda list of the best 10 web conferencing software. [13]

AnyMeeting is the go-to web conferencing and webinar tool for small organizations, thanks to the fact that it is an all-in-one platform which features everything from video and phone conferencing support to webinar hosting. It's been around since 2011, and has quickly become one of the most popular options available, boasting over 800,000 registered hosts. You can sign up a free trial and pay just $18 for small group meetings after that.

Onstream Meetings is great for eLearning professionals who want a more personalized web conferencing platform, as it allows you to customize every aspect of your web conference screen. Its interface is easy to use and they offer a wide range of plans that are just right for organizations of any size. Some of its standout features include: real-time reports, mobile apps, and on-the-spot meetings.

Zoho Meeting is a user-friendly web conferencing software tool gives you the power to hold virtual meetings and host live webinars in a matter of minutes. You can even embed the web conferencing platform directly into your eLearning blog or website, which can significantly boost attendance rates. It's also a great tool for eLearning professionals who wish to offer online support to their online learners without having to rely on other instant messaging platforms.

InterCall offers both audio and video conferencing support, and it is compatible with a variety of different secondary platforms, including: Adobe Connect, Google Hangouts, Cisco WebEx, Microsoft Live Meeting, and Microsoft Lync. Their plans start at $25 per month, which covers up to 10 participants, making it one of the most affordable web conferencing options online today.

ClickMeeting features a user-friendly interface and a great price point. You can sign up for a free trial without even entering any payment information, then choose from one of their many packages after that. Their basic package starts at just $30 per month, which is a bit more than other options, but that covers up to 25 attendees. If you plan on hosting large scale webinars, you can opt for their $280 per month package, which covers up to 1,000 users. Their 30-day trial can support up to three presenters, five participants, and two hours of recording time.

Join.me interface is sleek and streamlined, making it easy to host events without having to shift through a variety of different functions and buttons. For the Pro plan, they offer a 14-day trial that does not require any payment information. Another perk is their whiteboard integration, which is available via an iPad application.

Adobe Connect is another web conferencing tool that excels when it comes to personalization. In fact, you can fully customize your meeting space to reflect your brand image. However, you need to use a VoIP or other third-party service for the audio components. You don't need to provide any payment information to take advantage of their free 30-day trial, and after that there are various plans, starting at $45 per month depending on your corporate needs. Adobe Connect also provides for both mobile and computer access to the virtual events, as well as a customized URL, storage, and recording. You can even edit your recordings directly in the tool.

The WebEx Meeting Center from Cisco stands out from the crowd for two very important reasons. First of all, it boasts an impressive array of features. Secondly, it's free! If you do want to give their premium plan a try, you can sign up for a free 14-day trial that gives you access to all of the upgrades. However, the free plan is even top notch. It includes: a host license, VoIP audio connection, document and screen sharing, whiteboard integration, SD video, and 250MB of storage on the Cloud. If you want to take advantage of the premium free trial, you'll get to host up to 25 attendees, HD video quality, and dial-in number support.

Citrix GoToMeeting is one of the most intuitive and user-friendly platforms available. Citrix offers a free version that includes up to 3 participants. However, you can also sign up for a free 30-day trial to get upgraded features. One of the most notable highlights of GoToMeeting is that it offers a 60-day refund policy, just in case you're are dissatisfied with the platform.

eVoice is a great tool for eLearning professionals who need VoIP in combination with video conferencing. It features toll-free dial-in numbers to boost your professional image, screen sharing which supports up to 2,000 users, and a free trial so that you can try out all of its features. The only downside is that they don't offer whiteboard integration.

5. VIDEO CONFERENCING IN EDUCATION

New technologies such as video conferencing brought new ways for teachers to work with students and encouraged the development of strategies more consistent with the emerging technology. [12]

Video-conferencing provides an interactive teaching session in three basic forms:

- lecturer in the studio teaches a group of remote students
- lecturer teaches a local group of students with the transfer of remote students
- lecturer at the same time teaches a local and remote group of students with full interaction

Figure 10. *Video conference lecture*

Selection of lectures, as well as equipment depends primarily on the possibilities and the aim of solving the real problems in the classroom.[4]

Video conferencing improves work and classes enabling the connects to a variety of sites, media, learning, audio and video files, graphics, animations, computer applications.

Experienced trainers around the world are saying that technology video conference meets the learning and education of students in the following directions:

- increasing significantly the level of communication. The experiment with the use of new technologies and interaction with other students increases the level of awareness and motivation. It happens that students give up the break so that they should follow this program that provides them with an unusual atmosphere, and further participate in it.
- improving communication, quality of presentation, the level of knowledge and skills. It is much better to accept the communication of students than in live communication, and by planning and participating in the video conference, students gain important communication and managing knowledge and skills.
- increasing the level of connection with the outside world because, when a live communication is not possible, video conferencing creates and implements the only possible communication "face-to-face." Video conferencing is easier and less demanding than the actual physical visits and ensuring that training is more frequent while preserving time

and resources. Students now have the ability to create relations with others, who are very different from them, and whom, otherwise, in the real world, they would never have met. The richness of communication reinforces the connection between students and mentors.

- expanding the scope of learning results in the student developing skills to ask the right questions and to arrive at the required information and develop the ease of communication. Instead of learning from the book it provides learning firsthand of what students show more interest in and depth of understanding. Learning and experience video conferencing also leaves a deeper impression of the lecture,which is long remembered

6. THE REASONS OF APPLIED VIDEO CONFERENCING FOR EDUCATION

Education across the world has a changed character, where reaching out to substantial knowledge isn't impossible. Video conferencing has made classrooms walls invisible, allowing students to have the entire world as their learning resource. Moreover, this technology has also helped in easy retention of knowledge in learners as visuals are always better remembered than words. Visual communication has double-fold benefits, both for the teacher and the taught as it opens up the door towards global learning. Here are some impending reasons to invest in video conferencing for education. [11]

- Reading begets knowledge while visualizing help in understanding. Virtual field trips, face-to-face collaboration with the Subject Matter Experts, virtual classrooms, all these can be made possible through the effective use of a standardized video conferencing solutions built for the learning sector. This encourages cross-cultural bonding among students and assists them to mutate into more tolerant global citizens.
- Rural students often have lesser learning options due to the lack of infrastructures and resources. A video conferencing solution can help them get access to some great learning materials. They can get enrolled in a course of their choice, communicate with tutors, participate in group discussions, refer to the prerecorded resources from the digital library and remarkably improve their learning experience.
- High definition videos have now replaced chart and presentations, teachers are sharing their screens with the students for better and more life-like experience. An improved pattern of interactive learning suddenly opens up a wider spectrum of a subject that engages the students even more.

- Students may not alone refer to teenagers; some of them may be professionals or even stay-at-home parents, who struggle hard to fit education into their busy schedules.Video conferencing for education promotes self-paced learning for all such knowledge aspirants. Education can now be scheduled. They may learn when they wish to, time is longer a constraint. Prerecorded videos, archives are great student aids that add to their self-paced learning spree.

- Video conferencing for education isn't just restricted to imparting knowledge alone; it acts as a great admin tool for educational institutes as well. Circulating administrative updates, holding an interactive parent-teacher meeting, training sessions for teaching and non-teaching staffs without the requisition of the physical presence of the attendees, are some added advantages of the video conferencing solutions for the education industry.

7. CONCLUSION

The benefits of video-conference communication methods are reflected in the fact that: connecting people who are separated by time and space, sharpens the sense of meaning as commonly it requires a greater concentration and greater discipline, increases objectivity, eliminating the cost of travel, accommodation and meals, minimizing the discomfort of work that is constantly interrupted, reduces downtime and increases productivity.

In the context of video conferencing, the term "success" means that the videoconference technology enables communications between the companies to do their job without having the technology as the disturbing factor and that is not destructive, and second, that it is not an end in itself and that it does not not interfere with the goals and outcomes of the communication process. From the perspective of the video conference managers, the term "effective" should be understood that the technology functions in the way it is designed. The question is, however, how to define the "successful" communication process accomplished through video conference system? What criteria is it determined by, whether or not they have technical features (profile of attendees, topics being discussed, etc.)?

Bearing in mind that, the communication aspect, the shortcomings in the work of the video conference system can be both technical and non-technical in nature.

Technical problems can be divided into three categories, namely: sound problems, problems with video, network protocols and architecture.

Problems of non-technical nature can be divided into two types, namely: eye contact, the question of confidentiality and security of information.

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