Effective e-learning course with web conferencing

Veselina Nedeva, Snejana Dineva, Svetoslav Atanasov

High quality of education is a main goal of any institution, formal or informal organization for education. The ability to improve quality of education by sharing audio, video, any combination of media, or lessons and in that way to expand the level of acquired knowledge is explored by many organizations and can be obtained using web-conferencing systems. Web-conferencing is a system that performs live meetings between participants from different locations over the Internet and in that way expand communication, sharing of knowledge and experience.
Key words: education, distance education, e-learning, web-conferencing systems

INTRODUCTION

In the building of knowledge society, it is expected teenagers and students to be high educated according to the requirements of the new technologies and to continue improvement of their knowledge and skills. That can be obtained, as in the university, thus and by self-preparing through e-forms for distant education, providing access to educational resources designed as training and practical complexes.

The e-learning may be delivered as *synchronous* and *asynchronous.* The asynchrony communication applies different media as e-mail, discussing blocks and other, which may be held with the supporting of the tutor or teacher, or alone by himself. The distinguishing trait in these cases is that the participants cannot be on-line by the same time that is the main characteristic of providing flexible training. The synchronous e-learning may be conduct by web conference connection or chat that has high potential for expansion of the power of e-training. Learners and teachers experience synchronous e-learning as more social and avoid frustration by asking and answering questions in real time [1].

The higher education institutions are increasingly employing web-conferencing systems in their educational settings [2]. According to the National Center for Education Statistics (2008), 31% of the postsecondary institutions offering online courses in 2006-2007 are using synchronous Internet-based technologies in online courses. Instructors have also used the web-conferencing systems to simulate face-to-face classroom experiences [2]. Adult learners in higher education, professional development and continuing education form the main contingent of learners who prefer web-based online courses because of their advantage [3] of eliminating time, money and travel expenses [2].

Web conferencing is a system to perform live meetings between two or more participants from different locations over the Internet. The system could be a web-based application in which participants attend the meetings by clicking the website of the meeting room or could be a software required download (Wikipedia). There are assigned web pages to hold meetings in which participants can share audio, video, files and whiteboards. Participants can attend the meeting from their own computers via the internet. Web conference connection is one the most employed methods for synchronic communication between lectures and students by using discussion forums. The abilities of web conference technologies made them available for communication in real time directly by PCs, tablets and mobile devices.

The synchronous web conference communication can gives many advantages and to fill the gap between digital technologies and face-to-face teaching. That can encourage students to be attracted toward learning and in support of their self-working. The aim of paper is to show the advantages of the web conference communication for achieving effective e-learning, to provide trends for good experiences and recommendations of lectures for using the web-conference communication.

Web conferencing system include built-in audio and video conferencing tools, chat rooms or shared whiteboard, which allows people simultaneously to share data files, whiteboard or information through video and audio [4]. Video conferencing allows students or participants to speak with journalists, politicians, scientists, and a variety of other influential people, allowing teachers and professors to interact with students who are in classrooms at different schools or sometimes even in different states or countries [5]. All that support real-time collaboration, instant interaction and feedback [4, 6].

According to the literature, web-conferencing can be either *asynchronous* or *synchronous* conferencing.

Synchronous online meetings have been called various names in reviews:

- *webinar* - one way from the presenter to the audience with limited interaction opportunities;
- *virtual meeting, virtual conference, web conference* [7];
- *e-conferencing* [8], online conferencing, etc.

Synchronous web meetings with VOIP (Voice over Internet) or advanced video capabilities enable such interactions that resemble closely face-to-face class experiences.

Asynchronous conferencing allows learners to access learning materials anytime and gives time to learners to response to questions or assignments before posting them to the discussion forum [9, 10]. On the other hand, synchronous conferencing provides immediate interaction between students and instructors with audio, video and chat features, but limited time flexibility (scheduled meeting times) is still an issue [10].

Web conferencing has definitely attracted a lot of attention from corporates, businesses, SMB`s, IT companies etc. There are various web conferencing tools such as WebEx, gomeetnow, gotomeeting, on premise RHUB appliances etc. which one can use in order to conduct webinars, web conferences, online meetings etc. [12]. Video conferencing drives distance learning and opens up collaborative learning opportunities [13].

THE ADVANTAGES AND DISADVANTAGES OF SYNCHRONOUS WEB-CONFERENCING

Web-conferencing system is a remarkable opportunity for online courses within higher education.

There are many benefits of using web conferencing in higher education:

- *Significant time and cost savings* [10, 13] - no physical travel involved, not requiring: travel, food and drink, accommodation, and ect.;
- *The event can be made available through social media* using sites like Vimeoto embed the video recording for delegates.
- *The online event can be revisited; delegates or students can go over materials at any time* [2,13];
- *No paper is needed* - everything is made available online;

- *Many systems have in-built evaluation tools* and can link into a customer relationship manager (CRM) [13];
- *Events are easier to organize compared to a physical event* [13];
- *High level of participation* [13];
- *Reaches a wider audience* [13];
- *It allows exchanging knowledge in real time and accessing the instructor immediately to ask questions and get prompt feedback* [10];
- "*It provides a suite of tools within one environment*" [14];
- *It is a cost-efficient technology which is quite affordable* [10].

Disadvantages [13]:
- *Lack of training and knowledge* of the system – delegates or students cannot hearing the audio or seeing any content, including lack of computer skills;
- *Audio issues can cause major problems* if the equipment used is faulty;
- *Any technical issues can affect* and damage the reputation of the individual/organization holding the event;
- *Less personable* - physical events allow people to engage in more social conversation;
- *Some people prefer physical events*, not willing to engage online out of choice or through a lack of understanding of the technology.
- *Some speakers may not be experienced at running an online* event.

There are many different systems with varying costs and options that can be used for web conferencing. Some systems are more popular than others, some offer free services, with a limited user capacity.

LIST OF FREE WEB CONFERENCING SOFTWARE

In evaluation of the free conferencing applications the following criteria are analysed: features & functions, usability, meeting setup, security and system requirements. We have made comparison Open source web conferencing tools with GPL license for e-Learning (Table 1):

Table 1: Open source web conferencing tools with GPL license for e-Learning

	Li-cense	Real time users	Key features
BigBlueButton open source web conferencing for distance education	GPL	1-80	✓ Record and Playback ✓ Whiteboard ✓ Desktop Sharing ✓ Integrated VoIP ✓ Presentation ✓ Web Cam
openmeetings Open-Source Web-Conferencing	Apache	1-125	✓ Audio and Video Conferencing ✓ Meeting recording and Screen sharing ✓ File Explorer ✓ Moderating System ✓ Multi-Whiteboard and Chat

			✓ User and room management ✓ Private message center ✓ Plan meetings with integrated calendar ✓ Polls and Votes
	GPL		✓ Use any Java-enabled computer ✓ No installation needed -- client runs in web browser ✓ Thin client (about 125 KB) ✓ All data encrypted by HTTPS protocol
	Free edition	10	✓ Browser-based ✓ Always-On ✓ External Publishing ✓ Broad File Type Support ✓ Real-Time Desktop Sharing ✓ Built-in Screen Capture tool ✓ White-boarding & Drawing Tools ✓ Embedded Comments ✓ Useful Plug-ins ✓ Built-in Voice Over IP (VOIP) ✓ Built-in Webcam Video ✓ Voicemail directly in sticky notes ✓ No hassle behind firewalls ✓ Multi-Lingual Support ✓ Change Notifications
	Free edition	10	✓ synchronized live presentations, whiteboards and web pages ✓ sharing your voice and video over the Internet – with no download ✓ 1 way video, ✓ standard support, ✓ Dimdim branded rooms ✓ public meetings.

THE RECENT MODULES IN MOODLE THAT ALLOWS WEB CONFERENCING:
- *Adobe Connect* - created by Remote-Learner.net and sponsored by Adobe. It is a full integration between the Virtual Classroom system Adobe Connect Pro and Moodle to provide room creation and scheduling [16].
- *BigBlueButtonBN* (BBB) - an open source web conferencing system for distance education. The BigBlueButton project have been started in 2007 by Blindside Networks, with the main goal to enable universities, colleges, and K12 to deliver a high-quality learning experience to remote students by sharing of slides (including whiteboard), audio, video, chat, and desktops [17].
- *OpenMeetings* - allows using microphone or webcam, share documents on a white board, share screen or record meetings, i.e. instantly to set up a conference in the Web [18].

Generally the capacities of the software products for web conference communication included:

· *Audio and video conferencing (two-way video);*
· *One can share and co-browse web pages, computer screen, documents and whiteboard;*
· *Public and private chat;*
· *Video recordings of the meetings;*
· *Pass control to attendees with video and audio;*
· *Add a survey or poll in a meeting;*
· *Secure your meeting room;*
· *Customize the teleconferencing;*
· *Get a clear picture from the drawings on whiteboard with built-in laser pointers and zoom tools.*

In BBB there are three different roles that can be changing and after starting the session: **Viewer, Presenter** and **Moderator** [19].

Viewer are the participants that are not authorized to have active role in the conference connection, their main role are to watch and listening the presentation, to participate in chat with other participants and with the presenting person. In our courses Viewer are the students.

In our courses Viewer can: *Raise Your Hand; See all Participants; Watch presentations; Public and Private Chat; See each other; See the Presenters cursor.*

Presenter has the same possibilities as the participants but also can upload the presentation and share the desktop with others.

Presenter can: *Mute or Eject Participants; Share any PDF or Office documents; Share your Desktop.*

Moderator has the same characteristics as Presenter. As a moderator the person can make anyone (including himself) a presenter by clicking the participants name and then clicking on the presenter icon.

BBB satisfied the requirements that stand up in front of Trakia University – Stara Zagora with the new platform for distant and e-learning. By the new platform on-line conference connections can be realized, to be recorded by making choice which conference connections and groups of students will be recorded at given moment (Fig. 1); to organize Meetings; Webinars and Video Chat.

The advantage of BBB (Fig.2) conference software is open code that allowed supplying to the students by eDuTrU, based on MOODLE. It is preferable to the other mostly used free software's because there are no license requirement, even for large groups (in difference to Skype), integrated in MOODLE (unlike TeamViewer). BBB will be sustainable for long time through the collections of audio and video resources, created during lessons, by development and transfer of expertise for using of web conference communications between different departments of Trakia University – Stara Zagora.
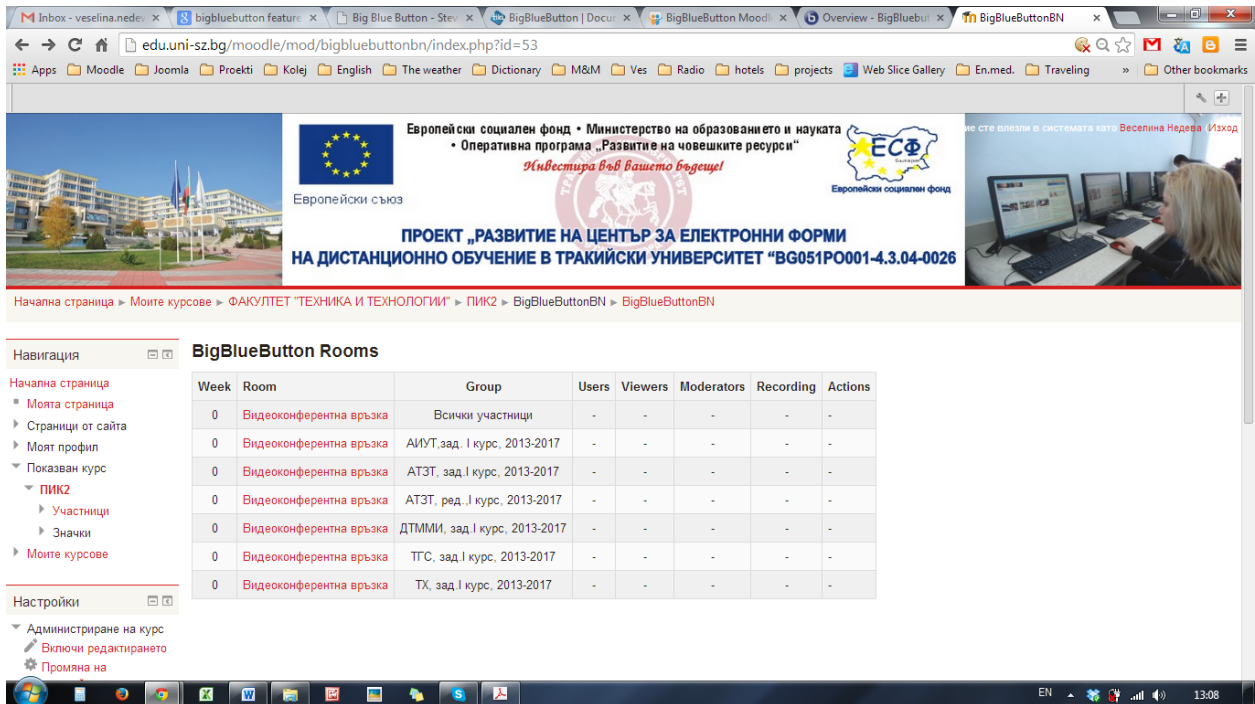
Fig.1. Big Blue Button Rooms - Conference connections and groups of students
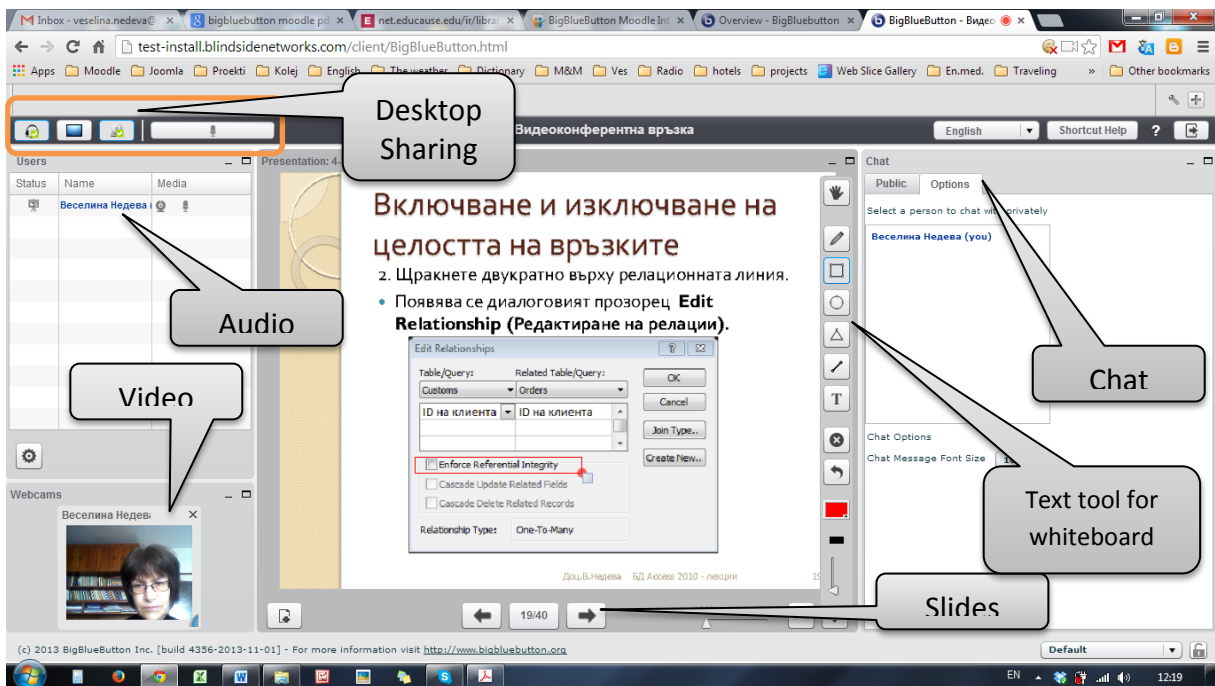

Fig.2. Big Blue Button panels

CONCLUSIONS

Video conferencing expands educational horizons. It is a technology which helps in talking to anybody, anytime and anywhere the person is located [20]. By video conferencing students from different countries and cultures can learn from one another, especially those that are either isolated geographically, or economically disadvantaged, also graduating students can effectively answer interview questions for a possible job after school. In all ways possible, video conference is actually helping students learn more [21].

The involvement of Web-conferencing systems in education depends on an appropriate pedagogical approach to the use of technology [10, 4]. "New approaches to instruction must accompany new technologies, adjusting to the changing teacher's role, motivating learners, and preparing learning materials to fit the synchronous conferencing" [10].

Using web conference module on the platform for e-learning education gives new trends of the system and allows successful and fulfill usage at organization of distant learning. The implementation permits to achieve the advantages of synchronous e-learning:

- *Students become more committed and motivated because a quick response is expected;*
- *Discussing less complex issues;*
- *Planning tasks;*
- *Use synchronous means such as videoconferencing, instant messaging and chat;*
- *Use complement with face-to-face meeting.*

The further investigation on the impact of different factors influencing on the development and improvement of electronic and distance education are under construction. By implementation of web conference communication the focus of attention is drawn not only to the separated participant in the electronic education but and also as social object.

REFERENCES:

[1] Hrastinski, St., Asynchronous and Synchronous E-learning, http://net.educause.edu/ir/library/pdf/eqm0848.pdf, 01.02.2014

[2] The Horizon Report. (2006). Stanford, CA. Retrieved from http://www.nmc.org/pdf/2006_Horizon_Report.pdf

[3] Skylar, A. A. (2009). A comparison of asynchronous online text-based lectures and synchronous interactive web-conferencing lectures. Issues in Teacher Education, 18(2), 69-84

[4] Reushle, S. & Loch, D.B. (2008). Conducting a trial of web-conferencing software: Why , how , and perceptions from the coalface. Turkish Online Journal of Distance Education-TOJDE, 9(3), 19-28.

[5] Trinidad R., 2007. The Impact of Video Conferencing on Education. Article Source: http://EzineArticles.com/565784

[6] Wilkinson, K. L., & Hemby, K. V. (2000). An examination of perceptions of the use of virtual conferences in organizations: The organizational systems research association (OSRA) and the association for business communication (ABC) members speak out. Information Technology, Learning, and Performance Journal, 18(2), 13-23.

[7] Stephens, K. K., & Mottet, T. P. (2008). Interactivity in a web conference training context: Effects on trainers and trainees. Communication Education, 57(1), 88-104.

[8] Shi, S., & Morrow, B. V. (2006). E-conferencing for instruction: What works? Educause Quarterly, 4. Retrieved from http://www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolum/EConferencingforInstructionWha/157428

[9] Knapczyk, D. R., Frey, T. J., & Wall-Marencik, W. (2005). An evaluation of web-conferencing in online teacher preparation. Teacher Education and Special Education, 28(2), 51-61.

[10] Grant, M. M., & Cheon, J. (2007). The value of using synchronous conferencing for instruction and students. Journal of Interactive Online Learning, 6(3), 211-226.

[11] Roehrs B., 2013. Providing online classes with big bluebutton 2013-09-30a. http://www.slideshare.net/roehrsb/providing-on-line-classes-ith-big-bluebutton-20130930a

[12] Babat A., 2012. http://www.slideshare.net/rscsw/web-conferencing-a-practical-guide-12254626

[13] Web Conferencing A Practical Guide, 2012. http://www.slideshare.net/rscsw/web-conferencing-a-practical-guide-12254626

[14] Loch, B., & Reushle, S. (2008). The practice of web-conferencing: Where are we now? *Proceedings ascilite Melbourne 2008.* (pp. 562-571).

[15] http://webconferencing-test.com/en/rankings/free-conferencing-tools; Retrieved at 01.02.2014

[16]http://www.somerandomthoughts.com/blog/2011/05/22/review-remote-learner-adobe-connect-pro-module/

[17]https://moodle.org/plugins/view.php?plugin=mod_bigbluebuttonbn&moodle_version=8

[18] https://moodle.org/plugins/view.php?plugin=mod_openmeetings

[19] https://www.linux-etc.com/bigbluebutton-features

[20] Nene Pam, 2010. Video Conferencing Expands Educational Horizons. Article Source: http://EzineArticles.com/4183439

[21] The Influence of Video Conference Today, 2012. http://school-education-in.blogspot.com/2012/10/the-influence-of-video-conference-today.html

For contacts:

Associated professor Veselina Nedeva, Faculty of Engineering and Technology of Trakia University, Gr.Ignatiev str. 38, Yambol, Bulgaria e-mail: vnedeva@yahoo.com

The paper has been reviewed.