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Comparative Analysis of Asynchronous and Synchronous Technologies

Interaction between the instructor and students is a critical part of distance education. Improvement in technology has opened up more options for communications.

Synchronous technologies

In synchronous communication, trainer and participants are in real time but in different locations. Video teleconferencing is commonly used to deliver lessons. Some programs also offer document sharing and editing feature. This allows all the participants to partake actively in the conference.

Synchronous training offers the following salient features:

- Teaching occurs in the real time. The information flows from the instructor to students. According to Pullen & Snow (2007), it is "virtual extension of a traditional classroom" (p. 142) as method of delivery is traditional lecture style.
- Students can ask their questions immediately either over a microphone or via chat. This clears any doubts and helps trigger further discussion.
- Preparation and maintenance cost is less.
- As the training is live, updates can be easily made.

WebEx is a video conferencing program by Cisco. It offers a reliable way of sharing and editing documents online through audio and /or video chats, for a monthly fee.

WebEx: (http://www.webex.com)

WebEx offers two types of programs:

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- Cisco WebEx Meeting Center
- Cisco WebEx Training Center

Cisco WebEx meeting center has the following features:

- Real time presentation and application sharing.
- Ability to pass control to other trainers.
- Crossed platform support is available for windows, Mac, Linux, and Solaris
- Mixed mode Audio and VoIP in the same session
- Ability to record sessions for on demand playback.
- Up to 25 participants (can be available for up to 500 participants)

In addition to the above features, Cisco WebEx training center offers the following:

- Break -out sessions and hands on lab functions.
- Integrated testing and LMS integration.
- Learner registration, tracking and reporting.
- Credit/ debit card and PayPal support
- Up to 1000 participants.

Technology

WebEx supports most operating systems including Windows, Macintosh, Linux, UNIX and Solaris. It also supports 3G supported phones like Blackberry and iPhones.

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Technological requirements for Windows and Macintosh are:

Table 1.1

Requirements	Windows	Mac
Browser	Internet Explorer 6/7/8 Firefox 2/3.X Chrome 4	Safari 3/4 Firefox 2/3. X
	Java script and cookies enabled	Java script and cookies enabled
	Requires Active X for IE	Requires Apple java 5
Processor	Intel / AMD	Intel / Power PC G4/ G5
RAM	512 MB or higher	512 MB or higher
Remote access	No support for 64 bit Windows 7 / Vista	No support
Internet	56 K or faster	56 K or faster

There are different requirements for an instructor or a participant. Participants receive an email from the trainer. They join the meeting by clicking on the link provided in the email or they can directly go to the host's meeting page and join the meeting. Trainers receive an email to

start the meeting and they do so by going to their meeting page. They are required to enter a password as well as their credit card information.

Pedagogical View

Real time teaching is possible via synchronous training. Interaction between instructor and students is instant. File sharing and editing are the features that help access and modify information immediately. Video conferencing makes it possible to see the instructor and classmates. This helps minimize the loneliness effect often found in distance education students and helps in social interaction (Lee & McLoughlin, 2010).

Shulman (1999) describes "Fantasia" as one of the learning pathologies which is "the absolute certainty that one's knowledge about something is true when it really isn't." (Kurtz & Sponder, 2010, p. 2). Instructor can minimize this problem by responding to any queries immediately.

Some of the strengths and limitations of WebEx are:

- Participants can interact through video, voice or text chats.
- Participants can share and edit documents instantly.
- Participants can record and replay the conference and save it.
- Participants can access WebEx from various operating systems and 3G phones.
- Real time conferences are not convenient to everyone.
- Requires an Internet connection, microphone, speakers.
- Has a monthly fee.

Asynchronous technologies

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In asynchronous communication, the trainer and the participants are in different place and different time.

Blackboard is a learning management system used by many educational institutions for asynchronous learning. Blackboard 9.1 is the latest version. (www.blackboard.com) or a demo is available at (http://online.msbcollege.edu/online-support/blackboard/)

Technology

Blackboard 9.1 supports Windows XP and Vista with Internet Explorer 8/7 and Firefox 3.6/ 3.5 web browsers and Apple Mac Leopard with Safari 4.0/ 3.2 and Firefox 3.6 /3.5 web browsers.

Users

Tools like Syllabus, Assignments, Quizzes and tests, Announcements, Grades, Email, class discussions, class expectations, Instructor information and Personal information are available to students to navigate through the course.

In addition to the above tools, instructors have a privilege to add, delete, and modify the content. They can also upload and share the documents, create quizzes and assessments, manage the grade book and grade the work.

Pedagogical View

Blackboard 9.1 has included many Web 2.0 features. Wikis, blogs and journals allow participants to express their views and share their ideas. "Blogs provide students with experience in real-world digital knowledge management, working with groups and information sharing."

(McGreal & Elliot, 2008, pg. 154) This also helps the instructor to better assess students' work.

Students can also contact via emails or chat live in synchronous mode.

Instructors need to develop a course material and update it periodically which requires considerable amount of time and input. It is also necessary to keep in contact with the students on a regular basis via emails or chats.

Blackboard 9.1 offers the following strengths and limitations

- It offers flexibility and convenience. Students do not need to follow a real time schedule and this can benefit students from the different time zones.
- Students can learn on their pace.
- Course announcements, grading, assessments are easily available and accessible.
- Lack of interaction results in lack of socialization which lowers the students' motivation.
- Design, production and maintenance of the course are challenging and needs more research.

Conclusion

Both synchronous and asynchronous technologies have their own advantages and disadvantages. Careful planning and development is necessary to create a combined course. Synchronous course can be supported by adding asynchronous components like online quizzes and tutorials (Pullen & Snow, 2007). Thus, Web 2.0 technology will be very effective in the shaping of Distance Education.

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