Using Inexpensive Collaboration Software for Delivering Effective Online Synchronous Training

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Abstract – In an attempt to reduce costs, many organizations are using collaboration software tools (such as NetMeeting, Agillion, CentraNow, Done.com, HotOffice, eRoom, MagicalDesks, TeamWave Workplace, and Vicinities.com) for delivering synchronous online training. Such applications, offer a variety of interactive features that can be used for training purposes but are not fully equipped to provide an instructionally sound learning experience. This paper presents the drawbacks of inexpensive collaboration tools and provides solutions for how to overcome technical and instructional limitations of such software applications when used in training.

Keywords: collaboration software, synchronous training

I. INTRODUCTION

Recent Internet-based technology has revolved around creating interactive meeting (or collaboration) software, which allows geographically dispersed individuals to work together on the Web. Anyone with a decent Pentium processor or PowerMac, an Internet/Intranet connection, and a browser can use such software that provides an array of collaboration features, ranging form simple chat rooms to complex audio, streaming video and multimedia interaction (Webb, 2004).

The most frequently used and inexpensive collaboration tools are NetMeeting, Agillion, CentraNow, Done.com, HotOffice, eRoom, MagicalDesks, TeamWave Workplace, and Vicinities.com. These software tools allow users from remote locations to share and work on the same applications in real time, exchange ideas during threaded discussions and white boards, and even answer polls on critical issues (Webb, 2004).

Due to the large range of interaction capabilities and information sharing that these Web-based interactive meeting software offer, and particularly because of their low costs, training organizations have started to use them for providing online synchronous instruction to students. Most of this software is either entirely free (e.g., NetMeeting), free for a minimum of users (e.g., Done.com, eRoom, and Vicinities.com), or offered at a very low price (Agillion, CentraNow, MagicalDesk, TeamWave Workplace, HotOffice).

Synchronous learning, which implies the simultaneous presence in time of students and teachers at a training event, is considered a popular instructional method due to the ability to provide student-student interaction (peer-learning), student-instructor interaction (mentored learning), while offering a more solid framework for calibration and expectations to keep students on track. Synchronous distance education draws from the solid foundation of traditional instruction, while reaching a geographically dispersed student population (Christensen & Cowley-Durst, 1998).

While synchronous distance education appeals to educators and trainers, its implementation requires expensive equipment, complex infrastructure, and technical support personnel with specialized skills. Such requirements lead to increased costs of operation and ownership.

Corporate training departments and academic training organizations prefer to maintain the benefits of synchronous instruction yet implement it at reduced costs due to constantly decreasing budgets allocated to training endeavors. Consequently, many trainers prefer to use low-priced live meeting software for training purposes (Sherry, 1996).

The problem of using inexpensive collaboration tools for providing synchronous training is that such applications are not properly equipped to produce and provide a sound instructional experience for students. This paper outlines the features and limitations of inexpensive collaboration tools and how technical and instructional drawbacks can be avoided. The paper also presents ideas for using inexpensive collaboration tools not only during training delivery, but also for training planning and development.

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II. FEATURES OF INEXPENSIVE COLLABORATION SOFTWARE

Below are listed the most commonly available and used features of low-cost collaboration tools (e.g., NetMeeting, Agillion, CentraNow, Done.com, HotOffice, eRoom, MagicalDesks, TeamWave Workplace, and Vicinities.com).

Program Sharing. This feature allows sharing of multiple programs between a virtually unlimited number of participants. During a training event, the instructor can enable students to view shared programs in a frame, which makes it easy to distinguish between shared and local applications on students' desktop. Instructors can also switch between multiple shared programs, approve students' requests to work in a program, and allow or prevent others from working in an application. Form an instructional perspective, this feature promotes learning because it allows students ample opportunities for hands-on practice.

White boards. The Whiteboard feature allows real-time collaboration with others via a graphic interface, which is typically similar to Microsoft's Paint program. When the whiteboard feature is invoked, it will typically appear in a window that can be seen by all users, and all users can collaboratively work on the document/object. Using the Whiteboard feature, students have the ability to:

- Review, create, and update graphic information (e.g., artwork, GIFs).
- Manipulate contents by clicking, dragging, and dropping information on the whiteboard with the mouse.
- Cut, copy, and paste information from any application into the whiteboard.
- Use different-colored pointers to easily differentiate between students' comments.
- Save the whiteboard contents for future reference or for distribution amongst the students in the class.

Real-Time Chat. This feature supports real-time typed (text-based) conversations among an unlimited number of people. The chat feature allows students to type text messages to communicate with others during a class session, or to chat with one person or a group of people across multiple computers. The instructional value of this feature is that students can send a private message to instructors, therefore avoiding the potential pressure of revealing their question to the entire class. Students may also exchange private opinions and/or questions amongst themselves. In short, the real-time chat feature mimics the traditional classroom environment and it enhances it by providing better student privacy.

Audio/Video Conferencing. This feature allows the sharing of training content and applications using video and audio. Even though most inexpensive collaboration software tools do not provide optimal video/audio capabilities, at the bare minimum they do offer the ability to:

- Send and receive real-time video images at small resolutions.
- Send video and audio to a user who doesn't have video hardware.
- Use a video camera to instantly view objects, such as hardware devices, that are displayed in front of the lens.
- Ensure that people hear each other by adjusting the automatic microphone sensitivity level setting.

From an instructional perspective, the use of video may be effective when presented in the beginning of the training, to enable students and instructors to connect and give each other a visual reference. Video may also help when used to demonstrate psychomotor skills (e.g., repairing a piece of equipment), or when used to motivate and change someone's attitude (e.g., presenting the story of an expert performer who is monetarily recognized for top behavior on the job).

File Transfer. This feature allows the instructor to send one or more files to everyone attending the class, or to one or more selected participants. A practical example of the instructional value of this feature is that a teacher can send a file to a student who can work on it and send it back during the class session.

File Storage. Using this feature, students and teachers have the ability to store and access information and create a secure, shared space that holds documents. Some collaboration tools will even allow version control features and keyword search. This feature is instructionally practical because students may work on documents simultaneously, save their work, and retrieve it when back on their jobs.

Security. Most inexpensive collaboration applications provide user authentication, password protection, and data encryption. Consequently, students and teachers are able to store and access data in a secure manner.

Some of the aforementioned collaboration software tools provide unique features, such as the ability to poll participants (CentraNow), schedule sessions automatically (Done.com), route documents through a pre-defined cycle (eRooms), password protect documents for certain users (HotOffice), offer multiple language capabilities (MagicalDesk), and the ability to customize the look and color of your workspace (Vicinities.com). All these features have the ability to boost the instructional experience during a synchronous online class.

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III. LIMITATIONS OF COLLABORATION SOFTWARE WHEN USED FOR SYNCHRONOUS TRAINING

The limitations of inexpensive collaboration software, when used for synchronous training, are noticeable in two areas: technical and instructional.

A. Technical Limitation of Inexpensive Collaboration Software

Low-cost collaboration software tools do not provide the ability to quiz students and check their comprehension levels. In addition, they do not allow instructors to use any pre-test options, which would indicate the current level of students' knowledge/skills. Pre-tests features would enable instructors to adjust the pace and flow of the class such that it matches students' current experience and expertise (Auerbach, 2004).

When using inexpensive collaboration software, students do not have the ability to "raise their hands" (in more expensive virtual classroom software, students can do this by pressing certain icon options provided in the application). This feature would enable students to ask the teacher to modify the pace or flow of the instruction, which have a direct impact on training effectiveness.

The aforementioned live meeting software tools do not enable the "breakout groups" capability, which allows students to be divided into teams and interact around a specific issue. Being able to divide students in small teams and assign to them varied group tasks rests at the foundation of collaborative learning (Vygotsky, 1978).

Scheduling, tracking, and/or recording mechanisms are also missing in inexpensive live meeting software. Such tools do not have the capability to link to a learning management system (LMS) and do not allow the storing of students' training history (e.g., course completions, scores/grades, training path, need for re-enrollment, etc.). In addition, these tools do not enable the recording of a class session so that students who are absent can re-play it or so that the instructor can include pre-recorded sessions in new classes when taking a break.

Furthermore, when using inexpensive live meeting tools, instructors do not have the ability to "see" who is absent (which student has either left the learning space or is not paying attention to the class). This defeats the purpose of an instructor-led environment, which is supposed to offer better class control and the assurance that everyone leaves the classroom with improved knowledge/skills.

Audio and video capabilities are under-developed in most inexpensive collaboration software. In order to avoid the stilled nature of online training and mimic the traditional classroom atmosphere, a lot of instructors would like to take advantage of video conferencing capabilities with collaboration software. Unfortunately, the poor visual quality of video does not currently attract or hold interest among the student population (Aldrich, 2004). Research shows that video conferencing capabilities are not that popular yet due to bandwidth and resolution limitations. Educators use them more than corporate training departments; both are waiting for the technology to be optimized before complete adoption (Mael, 2003).

In addition, most inexpensive collaboration software tools do not allow students to engage in asynchronous activities (e.g., starting threaded discussions prior to the live meeting and continuing them after the training is complete). A balanced combination of asynchronous and synchronous training options would benefit students who are not always able to align their schedules so they can be present with others in a training event at the same time.

B. Instructional Limitations of Inexpensive Collaboration Software

Even though collaboration tools may offer enough interaction features that accommodate teaching certain instructional objectives (e.g., how to manipulate data in an Excel spreadsheet, how to repair a network element, etc.), they are still inappropriately used because the instructors are either not trained on how to use such tools effectively or instructional designers who develop classes that are to be delivered via such media do not possess enough instructional design experience to recommend and develop successful instruction.

There are currently several providers of virtual classroom solutions that do offer students the optimal classroom experience from a distance, overcoming most of the limitations listed in this section: impeccable video and audio quality, taking control of the classroom, accessing administrative software on a Web-server, etc. Examples of virtual classroom providers are Centra, Interwise, Lotus Learning Space, Avalon Information Technologies, Pathlore, Horizon Long Distance Learning, and others (Wells, 2004). However, these sophisticated options for synchronous distance education come with very high price tags, mainly due to the high costs for servers and access license fees.

As previously mentioned, training organizations undergoing austere financial times are currently striving to avoid increased costs related to adopting sophisticated distance learning technology. The following section outlines ideas on how to overcome limitations of inexpensive collaboration software when used for training purposes.

IV. SOLUTIONS FOR THE EFFECTIVE USE OF INEXPENSIVE COLLABORATION SOFTWARE IN TRAINING

Even though economical collaboration technology may be instructionally imperfect, it may still be engineered to provide active student participation, engage deeper levels of thinking, and, in short, positively transform educational practices at low costs.

A. Overcoming technical limitations

Whenever possible, if using inexpensive collaboration software in training, the classroom even should be delivered via high-speed connections to ensure seamless voice and data transmission (preferably a corporate intranet or LAN) or, at a minimum, offered via DSL and high-speed cable. Fortunately, current technology is advancing and soon training providers will have access to increasingly sophisticated wireless connection schemes. Such capabilities will offer smoother video and better-synchronized audio over digital phone lines and LANs.

The following recommendations revolve around sound instructional design and assume that no video is used when hosting an online course using inexpensive collaboration software.

B. Instructional improvements

Superior technology is not the only ingredient in a robust instructional experience. Technology needs to be balanced by solid instructional design theory and principles and it needs to match the instructional goal that a class is set to accomplish.

To overcome instructional limitations of low-cost collaboration software, both instructional designers and instructors need to attend specialized training for learning how to create and deliver training delivered via such media. It is essential that instructors and instructional designers know how to best choreograph an entire classroom event using new technology, from figuring out the right proportion between lecturing, application sharing, to offering students ample 'question and answer' opportunities as well as chances to effectively use available interactive features.

Following are several suggestions for overcoming technical and instructional limitations of low-cost collaboration software. These suggestions assume that during class event students and instructors connect via a separate audio bridge (conference call) and no video conferencing is being used.

When using inexpensive collaboration software for providing synchronous training, the instruction should be divided into the following (Wells, 2004):

- Activities led by the instructor, which include clear visuals, brief presentations, prepared questions.
- Activities initiated by participants, which include questions and discussions.
- Activities practiced by the group, which include case studies, role-plays, and collaborative application of ideas to real job issues.

Each training segment provided via collaboration software should be kept relatively short (no more than 1-2 hours). Students grow weary of just watching the screen while listening to a "disembodied voice." In addition, participants learn and retain more when training is scheduled in small chunks rather than in day-long sessions (Wells, 2004). Keep students to no more than 15 per session.

Due to the fact that students and facilitators cannot "see" each other, emphasizing the relevance of the course materials to recipients becomes even more critical than in traditional instruction. Course relevance is inherent to instigating and sustaining student motivation. In an environment where students cannot get a visual of others, it becomes even more important to keep them motivated. The course design should contain frequent references as to how materials can be easily and immediately transferable to students' jobs or real life situations. Including student-suggested activities is also a great idea for maintaining their motivation and ensuring course relevance.

Instructors should clearly organize and streamline course discussions. In an electronic learning environment, students may become quickly overwhelmed by too much information. Clear organization of course materials eliminates confusion and builds students' confidence.

Classes delivered via collaboration software should provide structured activities (e.g., courses should provide guidelines for posting material, how often to comment, length of comments and what to say in them). This will avoid the situations when students may be stumped by online tasks, may lack Web expertise, misunderstand directions or are unsure what is expected of them.

To overcome the lack of quiz abilities in low-cost collaboration software, the course could point to independent online quizzes for practice and to final reviews that are developed via tools that enable a link to an LMC. This way, at the conclusion of a NetMeeting-based course, for instance, students may be asked to access a URL to a final review that has the ability to submit results to an LMC.

One of the reoccurring complaints from students when using inexpensive collaboration software for training is that peer camaraderie is lacking. Students

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tend not to reach out to each other online as fully online as they do face-to-face. To overcome this complaint, teachers should assign online buddies and pair up students to help each other troubleshoot software problems and respond to questions about course content.

Another difficulty that stems from using inexpensive collaboration software is the inability to form "community of learners" online. Because students cannot see each other, it takes time for them to build trust and speak freely. Instructors should encourage students to interact casually and enable them to create discussion threads or areas for hanging out and hold personal introductions.

The course design should ensure that instructors cannot fall into lecture mode. Instructors should be required to ask students to initiate discussion topics and take turns in running discussion threads. They should also stop regularly during the presentation to ask if there are any questions since the presenter has no visual clues for judging whether students understand the content.

Instructors also need to work on their facilitation skills. Given the fact that, when using collaboration software, students cannot be seen most of the times, they have the tendency to ask more questions and comment on other participant's suggestions (Jones, 2004). An instructor should be prepared to balance such interaction and fit it within the class schedule and flow. Instructors should also know that preparing for delivering synchronous online courseware may require 20-30% more time than preparing for a traditional class (Jones, 2004).

Inexpensive collaboration tools may often be based on shaky technology. This is why instructors should be prepared for technical errors. Students' computers or Intranet connections may malfunction, or glitches may plague online discussion software. Instructors should check in regularly to see whether students need help using the discussion software or whether you need to call technology support personnel about more serious software problems. Instructors should also have a backup machine ready to deliver instruction in case of a computer crash.

V. REMARKS

If these suggestions are taken into consideration, using inexpensive collaboration tools for synchronous training may be a sound solution to fixing performance problems. Compared to standalone Web-based training for instance, a synchronous session is scheduled as part of a student's day (thus guaranteeing commitment) and it also offers personal contact with peers and students. When used effectively, it can change attitudes, motivate mastery,

and encourage more effective behavior on the job. IT can also ensure thoroughness of material coverage and spontaneity of ideas, which feeds creativity; Socratic questioning, considered one of the most effective teaching strategies in leader-led situations (Stamps, 2004).

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