

Synchronous Collaboration and Instruction

S

Hélder Fanha Martins

Lisbon Polytechnic Institute, Portugal

INTRODUCTION

Some of the very first Internet technologies to be used for learning or distance education and training were the World Wide Web and e-mail. The World Wide Web allowed multimedia or hypermedia-based instructional content to be loaded on a Web server and browsed using HTML-based browsers, and Internet-based e-mail systems allowed learners and facilitators to correspond asynchronously—anytime, anyplace.

However, one of the most significant contributions of Internet-based technologies toward training and collaboration in the last few years has been the introduction of synchronous collaboration technologies. Synchronous collaboration technologies truly create a new medium that brings facilitators and participants together in a dynamic and live environment through which highly interactive communication can occur—closing down the barriers for communication and learning.

The introduction of the telephony allowed participants to connect and communicate via voice over great distances. Today, Internet-based synchronous collaborative technologies create a multidimensional and multisensory environment for communication through voice, multimedia and interactivity—the right medium for learning and knowledge transfer. Furthermore, advances in Internet technologies and availability of sufficient bandwidth allow synchronous collaboration to occur among a very large number of participants.

Thousands of organizations—business, academic, and governmental—are exploiting synchronous collaboration and live e-learning technologies successfully to revolutionize enterprise learning, and demonstrating tremendous and immediate return on investment. In addition, the usefulness of synchronous collaboration technologies is certain to expand from an innovative technology applied to selected learning and training initiatives to a mainstream delivery platform for broad-based, ongoing and corporate wide initiatives, especially when it is blended with other forms of learning and knowledge delivery options and offerings.

Synchronous collaboration leverages a fundamental principle that each knowledge worker is a learner and a

knowledge expert and it is the ability of an organization to tap into that expertise at the right place and right time that creates the ultimate competitive advantage.

BACKGROUND

Asynchronous and Synchronous Learning and Collaboration

Traditional distance corporate training has been typically constrained by the limitations of time and location, making it difficult for instructors and learners to perform the training and educational activities satisfactorily (Moore, 1990; Javis, 1996; Peters, 1998; Sauve, 2000). The recent advances in distance education, however, have potential to fill the gaps between time and location constraints. According to the time component, distance learning could be divided into asynchronous and synchronous learning. Asynchronous learning allows instructors and learners to interact and participate in the educational process at different time irrespective of their locations; synchronous learning requires the instructors and learners to interact at the same time though they may be dispersed geographically. In the recent years, Internet technologies have matured significantly. They provide a uniform access media for both asynchronous and synchronous learning. This phenomenon has significantly increased the popularity of online learning.

The technological advances include not only the rapid growth of information technologies but also the increasing availability of the broadband Internet access, hence solving the problem of the lack of enough bandwidth. This technological growth has also resulted in bringing a variety of applications for online learning. For example, instructors can now depend on the different characteristics of courses to design integrated online instruction methods and use synchronous or asynchronous instruction methods in the courses as deemed appropriate. Furthermore, one of the traditional teaching activities, namely ‘office hours’, can now be performed over the Internet, resulting in enhanced and

timely learning interactions and better online classroom management.

The mode of interaction for online instruction can be categorized into asynchronous and synchronous. Asynchronous learning allows the sequence of interaction between the instructor and the learner to happen at different times. Asynchronous learning usually involves tools such as course management software, e-mail, and discussion forums. Synchronous learning requires the presence of both parties at the same time for the learning to take place. Therefore, it is also referred as live or real-time interaction. The most important advantages of synchronous learning are immediate feedback and more motivation and obligation to be present and participate. Evidence is also available in the literature supporting that fact that synchronous instructions over the Internet can not only facilitate the tasks of traditional face-to-face learning environment, but it has some distinct advantages over the traditional approach. These advantages can be grouped into three major categories: logistical, instructional and economic.

It seems, at the surface level, that synchronous learning imposes more restrictions on both the instructor and the learner in the time dimension, but its similarity to the traditional classroom interaction in both time and psychological dimension endows it with many benefits that asynchronous learning could hardly achieve. Actually, the trend of online learning is toward the blended mode with flexibility of combining asynchronous and synchronous delivery. Without synchronous learning, this blended mode would not be possible.

Currently, the majority of the research in the literature has focused on the asynchronous mode of instruction, with very little discussion on the issues related to online synchronous instruction. However, with increasing possibilities of online synchronous instruction, the effective and efficient utilization of the benefits of the Internet in designing online synchronous instruction has become a critical issue.

MAIN FOCUS

Synchronous Online Instruction

Synchronous Web-based instruction has seen little study. Most research on synchronous distance education and training has been done in courses utilizing tools such as: (a) textual chat, (b) MOOs, (c) non

Web-based audio and video conferencing and (d) audiographics. Other non Web-based interactive tools such as interactive television and satellite broadcasts in conjunction with a two-way phone bridge have also been reported in the literature. Some researchers have investigated the use of electronic meeting places and low end synchronous systems (Mark, 1999; Jancke, 2000; Farnham, 2001). Others have studied instructional strategies in synchronous online systems (Hofmann, 2000; Knolle, 2000).

A synchronous online system combines many different tools into one interface creating a Web-based environment where a whole class or a group within a class can interact in real-time. This system can be used by as few as two people or as many as feasible with the content, connections and bandwidth available. These systems have tools such as textual chat, two-way Voice Over Internet Protocol (VOIP) audio, real-time presentation and whiteboard areas, application sharing and more. The next few paragraphs will take a look at the research that has been conducted in the area of synchronous online systems.

Research on Synchronous Online Systems

An extensive search of the literature was carried out. Terms used in the search included synchronous online learning, synchronous online classrooms, synchronous Web-based instruction, synchronous distance education, synchronous distance learning, synchronous training, HorizonLive, Elluminate, vClass, Centra, LearnLinc, Interwise, LLinc and WebEx, all combined with the term research. This covers most of the major synchronous companies' products as well as most of the terms currently being used in this area. The search resulted in a few research articles (Ellis, 1997; Danchak, 2000; Evans, 2000; Knolle, 2000; Blakeslee & Johnson, 2002; Frank, 2002). Most of the research found was conducted by Microsoft researchers (Mark et al., 1999; Cadiz, 2000; Jancke et al., 2000; White, 2000; Farnham, 2001) and borders on usability research rather than pedagogical research. Other resources discussed the features of synchronous systems and how they may be used (Ellis, 1997; Hofmann, 2001; 2004; Hyder, 2002).

An ethnographic case study by Microsoft researchers in conjunction with Boeing (Mark, Grudin, & Poltrock, 1999) examined how desktop conferencing with application sharing was used routinely by four

6 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/synchronous-collaboration-instruction/17797

Related Content

Virtual Informatics Museum

José Maria Fernandes de Almeida (2008). *Encyclopedia of Networked and Virtual Organizations* (pp. 1785-1791).

www.irma-international.org/chapter/virtual-informatics-museum/17822

Smart Classroom-Based Innovative Solution Toward Uninterrupted Education: Perspective

Sudhir K. Routrayand Sasmita Mohanty (2022). *International Journal of Virtual and Augmented Reality* (pp. 1-14).

www.irma-international.org/article/smart-classroom-based-innovative-solution-toward-uninterrupted-education/306689

VR Presentation Training System Using Machine Learning Techniques for Automatic Evaluation

Yuto Yokoyamaand Katashi Nagao (2021). *International Journal of Virtual and Augmented Reality* (pp. 20-42).

www.irma-international.org/article/vr-presentation-training-system-using-machine-learning-techniques-for-automatic-evaluation/290044

Mediacommunication Based on Application-Layer Multi-cast

Gábor Hosszú (2006). *Encyclopedia of Virtual Communities and Technologies* (pp. 302-307).

www.irma-international.org/chapter/mediacommunication-based-application-layer-multi/18090

Teaching and Learning Abstract Concepts by Means of Social Virtual Worlds

David Grioland Zoraida Callejas (2017). *International Journal of Virtual and Augmented Reality* (pp. 29-42).

www.irma-international.org/article/teaching-and-learning-abstract-concepts-by-means-of-social-virtual-worlds/169933