



Undesired Sidetracking in Virtual Classroom Systems

Mrs.Rachana S. Jaiswal*
Computer Science & Engg.
C.O.E.T.
Akola (MS) India
rashmi_ramdhani@yahoo.co.in

Prof. A. S. Alvi
Computer Science & Engg.
PRMIT & R
Amravati (MS) India
abrar_alvi@rediffmail.com

Abstract: Universities are faced with a difficult problem of simultaneously keep pace with increased number of students and increased extent of knowledge that is to be delivered to students. And students expect to be taught by excellent teachers who have deep understanding of the subject. A Virtual classroom concept is a possible solution to the problem of increased number of students, when a set of smaller classrooms is interconnected and a lecture is given from one site to all connected sites. But because of wide variety of information on the Internet, students taking on-line courses can easily be distracted by netsurfing onto unrelated sites either accidentally or purposely. This undesired sidetracking is hard to supervise by instructor in remote location. Here we propose an Internet Based virtual classroom model that features a centralized mouse control mechanism to provide the instructor with capability to call remote student's attention to class and to synchronize class activities. Also included in the model is an FCFS floor control to regulate participants engaged in audio conferencing in an orderly fashion.

Keywords: Virtual Classroom, mouse control, floor control

I. INTRODUCTION

Virtual Classroom is a simulated classroom via Internet, which provides a convenient communication environment for distance learners.

The generalized virtual classroom system has following features:

- *Removal of geographical barriers (Anywhere learning):* A virtual classroom will allow learners and teachers to attend a single live training session from any place in the world, provided they have a computer and Internet connection.
- *Sessions can be recorded:* If learners miss a traditional classroom-based training session; they have very little opportunity to engage in the learning experience that took place. The implemented virtual classroom system will have a facility to record the session so learners or teachers can replay it afterwards. Teachers get an opportunity to review their own or their colleagues' performance.
- *Quicker to organize:* Training can be organized more quickly than traditional classroom-based training. Classrooms and projectors do not need to be reserved; materials do not need to be distributed. The sessions will be easier to schedule or reschedule since attendees will not be traveling to the venue of the session.
- *One to one communication:* In a virtual classroom environment, learners can talk to the teacher and to each other, and although this communication is not as rich in a traditional classroom, it still can help learners, since it is one to one.

Two areas that face almost all virtual classroom systems that provide real-time interactivity with students over the Internet but have not been given due attention are a) controlled activities for remote students that are out of the reach of direct supervision from the instructor, and b) coordinated interaction among participants while using audio tools for interactive dialogs. Here we propose a virtual classroom model that features a centralized mouse control

mechanism to provide the instructor with the capability to call remote students' attention to class and to synchronize class activities, and FCFS (First-Come First-Serve) floor control to regulate participants engaged in audio conferencing in an orderly fashion.

In a conventional classroom, the instructor can actually oversee student activities. This situation is quite different in a virtual classroom. A student can be temporarily absent or engaged in netsurfing on a totally unrelated Web site. Our Virtual classroom model builds into itself a unique feature of checking and controlling the student activities at a remote place. This feature is called Mouse Detect. Consider a scenario in which the instructor expects all students to pay attention to what he/she is demonstrating. The instructor will then request the students to place their mouse in a specific area on their screen. Our Virtual classroom model will detect these activities and notify the instructor of the students' current status.

Floor control is a mechanism that allows the proper use of a shared resource. These shared objects may include video conferencing, audio conferencing, or whiteboard type of applications where more than one participant can have access at a time. Floor control can be implemented using many different algorithms. The instructor always has the authority to speak. A student user is allowed to speak only when he/she is given the permission of floor control by the instructor. This type of control is necessary to avoid chaos and confusion in a conferencing environment and it helps to structure the interaction and reduce the bandwidth requirement.

II. RELATED WORK

Various virtual classroom systems have been developed so far [1, 2]. Each system may have its own features differing from others. In essence, they all have one common goal – to educate students who are motivated to learn but are blocked by their geographical locations and/or working schedules. The following are examples of representative

virtual classroom systems: Virtual Classroom at New Jersey Institute of Technology [3], Virtual Classroom at Cornell University [4], Saddle Project at Boston University [5], Collaboratories at the US Department of Energy [6], Albatross Project at National Chiao Tung University, Taiwan [7], and Interactive Remote Instruction System at Old Dominion University [8].

There are various available virtual classroom systems that are recently developed. Some of these systems namely HP Virtual Classroom, IBM Lotus Virtual classroom and Elluminate Live Virtual classroom are compared on [9].

A. HP virtual classroom

Features

The basic features that the user can see when they enter the HP Virtual Classroom can be listed as:

1. Hands-Up button displays names in the order of hands raised by the participants.
2. The Attendee List shows the names of all attendees.
3. Highlighting one or more names and then using the Private Chat button initiate Private Chat.
4. Similarly, Group Chat can be used to send messages to all attendees in the classroom.
5. Clicking the Stop Incoming Chat checkbox makes you unavailable for private chat messages.
6. The Offline checkbox turns an attendee's name gray. This feature shows others in the room that this person is temporarily unavailable for participation in the event.
7. The Content button allows participants to view URL's, uploaded files and other content in a separate pop-up window.
8. The Review button allows participants or presenters to review slides separate from the presentation. Presenter notes are also included in the review window.
9. Some of the tools that a participant may use can have a Print icon and save to Disk icon associated with it. Print icon allows the participant to print the content of the tool they are using. Save to Disk icon allows the participant to save to a file the content of the tool they are using.
10. To load a PowerPoint file into the room, Drag and drop files icon is used. The Option button changes to a status window and shows the status of the upload. By clicking the Options button size of presentation file can be changed.
11. Print and Save Feature of this virtual classroom is useful. Using this data in session can be printed or saved for later use.
12. It would have been useful if this virtual classroom has provided additional functionalities like session recording, ability to create breakout rooms.
13. To use this virtual classroom, it has to be purchased. It is not available freely.

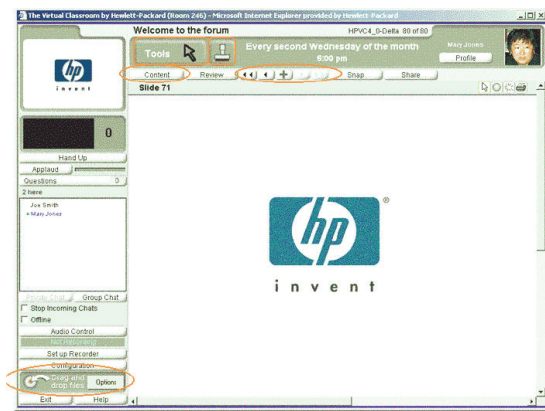


Figure 1: HP Virtual Classroom Presenter Interface



Figure 2: HP Virtual Classroom Participants Interface

B. IBM lotus virtual classroom

Features

The features of IBM Lotus Virtual Classroom are:

1. IBM Lotus virtual classroom supports real time Audio as well as Video.
2. Virtual classroom sessions can be recorded. The sessions can then be replayed as if they are videos. Learners or instructors can replay a session at any time after the session has finished.
3. The Outline function allows the teacher to define the agenda of the virtual classroom session. The outline is usually defined before the start of the meeting.
4. The presenter can send Web pages to class participants. This results in a new browser window opening on each person's machine. Participants can then independently view the Web page and navigate through it.
5. Breakout sessions allows presenter to divide the participants into groups to discuss a specific topic or to work on a group assignment. After participants have entered the breakout session, it is as if they are in a different room.

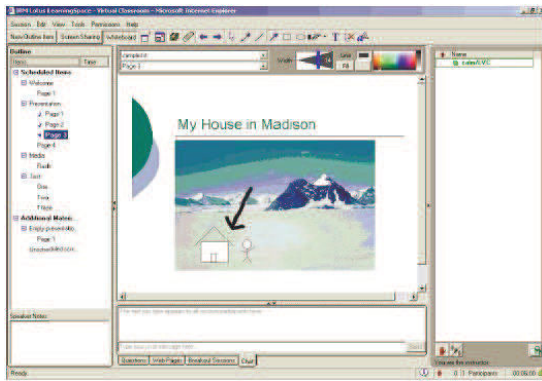


Figure 3: IBM Virtual Classroom Presenter Interface

6. IBM virtual classroom has many useful features such as outline, screen-sharing, breakout rooms that add greater interactivity between presenter and participants.
7. One can use its license copy or can buy it, which costs lot. Also if user wants to add more functionality from his end, he is not able to do so.

C. Elluminate live virtual class room

Features

The Elluminate Live virtual classroom is divided into four main windows:

1. The Participant Info window provides a list of all participants in the session and their current privileges to speak, send direct messages, and to use the whiteboard, application sharing and calculator.
2. The Direct Messaging window is where participant send and receive text messages.
3. The Audio window lets participants to participate in conversations during the session. Their computers must have a soundcard, microphone and speakers (or a headset) to use the audio feature.
4. The Whiteboard is the main presentation window. You can also use the whiteboard tools to draw or write. You can print the whiteboard screens or save them to a file to review later.
5. This virtual classroom is very easy-to-use virtual classroom with two way audio, chats, share whiteboards, breakout rooms, built-in calculator, and application sharing.
6. But again to use this one has to purchase this virtual classroom.

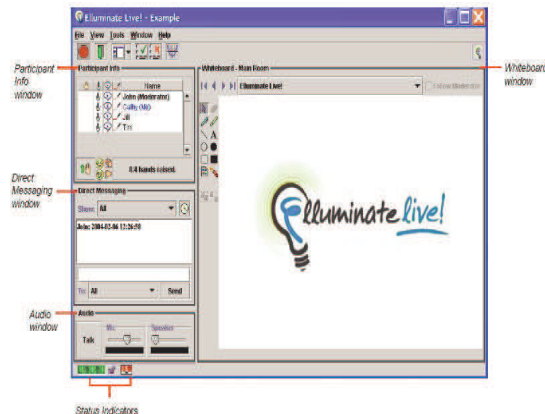


Figure 4: Elluminate Live Virtual Classroom Interface

III. VIRTUAL CLASSROOM OVER THE INTERNET (VCOIN)

The major features of VCOIN include the following:

1. Uses the Internet as its networking infrastructure for information distribution.
2. Uses existing video/audio conferencing tools for interactive real-time communication.
3. Uses standard web browsers for graphical user interfaces.
4. Employs a mouse control technique to prevent students from conducting unauthorized surfing in cyberspace.
5. Employs a floor control algorithm that allows the instructor centralized floor control while students are allowed to access the floor in an FCFS fashion.
6. Introduces the concept of virtual experimenter.
7. Provides a chat tool to enable interactive text-based communications between the instructor and the students.

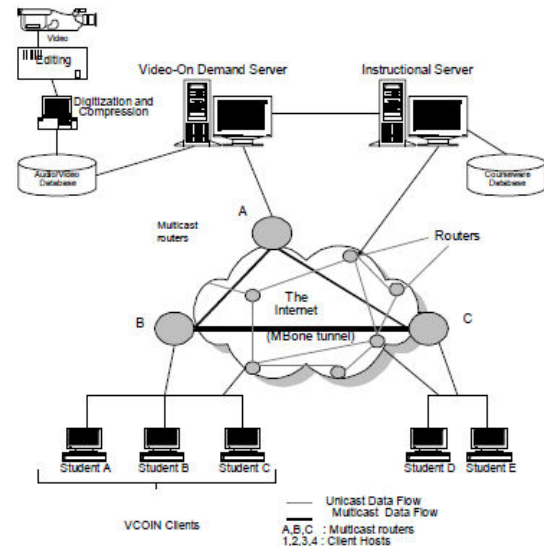


Figure 5: Conceptual View of VCOIN System

IV. COMMON FEATURES OF VIRTUAL CLASS ROOM

We can extract the following common features of Virtual classroom from the above systems studied:

1. Directing Messaging among participants or between presenter and participants is possible using chat feature in virtual classroom.
2. Audio and Video can be used in session. Using audio, presenter can deliver voice-based lectures in a classroom.
3. Shared whiteboard, are used by instructors and students to view images, presentations, or other application.
4. Resource sharing is possible between presenter and participants. Presenter uploads files (notes) to the session. Participants at their end can download these resources.
5. Presenter creates polls. These polls are useful for presenter to get feedback from participants.
6. Virtual hands up, to indicate that participant has questions to ask. When participant does his hands up, presenter can chat with him.

V. SPECIAL FEATURES OF VIRTUAL CLASS ROOM

Unique features that are available in some of the virtual classroom can be listed as:

A. Screen sharing

Screen sharing is a powerful feature of virtual classroom used for demonstrating software procedures. It allows all class participants to see an application that is opened on any given presenter's or participant's PC. Everyone can see the shared application or screen as if it were running on their own machine. Control of the application can also be handed over, so others can use the application from their own machine. This feature is available in IBM Lotus Virtual Classroom.

B. Breakout rooms

In a traditional classroom, a teacher often divides the learners into groups to discuss a specific topic or to work on a group assignment. The same way, a breakout session can be started in virtual classroom, using which different group of users can be created in same virtual classroom session. After learners have entered the breakout session, it is as if they are in a different room. This feature is available in IBM Lotus, Elluminate Live Virtual Classroom.

C. Session recording

Using this feature, virtual classroom sessions can be recorded. The sessions can then be replayed as if they are videos. Presenter or participants can replay a session at any time after the session has finished. This feature is available in IBM Lotus, Elluminate Live Virtual Classroom.

V. CONCLUSION AND FUTURE REASEARCH

The findings suggest that students enrolled in the instructional technology sections taught online preferred the features and characteristics of the virtual classroom, when compared to their peers in the blended sections. Students in the online course perceived the virtual classroom more favorably than the other students, which may underscore the power of this innovative technology to transform course delivery, particularly through predominately electronic means. The virtual environment provided much desired interaction and synchrony. It may be necessary to use new instructional resources as alternative supports for student learning needs in online courses. The virtual classroom may be better suited to particular types of audiences or courses.

Further research is necessary to determine if the findings of this study are replicable for this course. An expansion of this study can examine the use the virtual classroom across a variety of populations, levels (undergraduate and graduate) and disciplines (math,

communication, etc). In addition, studies on the virtual classroom in fully online environments can incorporate learning styles or personality. To strengthen the conclusions of future studies, the researchers suggest that the same instructor teach each class and that the groups have similar online class experience prior to using the virtual classroom. Once researchers have determined which course delivery method, disciplines, and levels are ideal for virtual classroom use faculty can use this information to design instructional methods to improve course effectiveness.

VI. REFERENCES

- [1] Sam Hsu, Abhi Pandya and Rajesh Patel, "Yet Another Virtual Classroom over the Internet", IEEE Intl. Conf. on Multimedia and Networking, Nov. 2005.
- [2] Matyska, L., Hladká, E., Holub, P. "Virtual Classroom with a Time Shift", Kumamoto, Japan: Kumamoto university. Proceedings of the Eighth Conference on International Technology Based Higher Education and Training, Kumamoto, Japan. p. 131-135 Dec 2007.
- [3] Turoff, M., "Designing a Virtual Classroom," 1995 International Conference on Computer Assisted Instruction ICCAI '95, Mar. 7-10, 1995, Hsinchu, Taiwan, <http://www.njit.edu/CCCC/VC/Papers/Design.html>.
- [4] Dwyer, D., Barbieri, K., and Doerr, H.M., "Creating a Virtual Classroom for Interactive Education on the Web," the 3rd International WWW Conference, Darmstadt, Germany, Apr. 10-14, 1995, <http://www.tc.cornell.edu/~dwyer/Overheads/VirtualClassroom/ctc.virtual.class.html>
- [5] Little, T.D.C., and Venkatesh, D., "The Use of Multimedia Technology in Distance Learning," Proc. IEEE Intl. Conf. on Multimedia and Networking, September 1995, pp. 3-17.
- [6] Kouzes, R.T, Myers, J.D., and Wulf, W.A., "Collaboratories: Doing Science on the Internet," IEEE Computer, Aug. 1996, pp. 40-46.
- [7] Lai, M-C, Chen, B-H, and Yuan, S-M, "Toward a New Educational Environment," the 4th International WWW Conference, Boston, Massachusetts, Dec. 11-14, 1995, <http://www.w3j.com/1/lai.238/paper/238.html>.
- [8] Maly, K., Abdel-Wahab, H., Overstreet, C., Wild, J., Gupta, A. Youssef, A., Stoica, E., and Al-Shaer, E., "Interactive Distance Learning over Intranets," IEEE INTERNET COMPUTING, Vol. 1, No. 2, Jan/Feb 1997, pp. 60-71.
- [9] "Whitepaper: Comparison of Available Virtual Classroom Systems", 2007.