Reaching Distance Learners’ Future Needs in E-Learning

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Abstract—This paper describes a mini pilot project, using web-meeting software, to deliver live lectures at a distance. For this study, a few lectures were delivered during the evenings to a small number of campus-based students. Thus they could join the lectures from their place of residence via the Internet. The mini pilot project went well despite a few technical problems. Students found that the on-line live lectures were useful, effective and the sound quality was good. However, the lecturer found that delivering a live on-line lecture required tight planning and organisation compared to a face-to-face lecture. The overall outcome of the mini pilot project was positive and therefore it is anticipated that a series of live on-line lectures will be delivered using the same method in the coming academic year to workplace-based part time distance learning students.

Index Terms—Distance learning, E-learning, Web-conferencing

I. INTRODUCTION

As an effort to integrate available technologies to reach distance learners at their home or at their workplace, a mini pilot project was conducted to investigate the effectiveness of delivering lectures over the Internet by using the web-meeting software, DimDim. This mini pilot project is the initial step that will lead to a pilot project whose aim is to deliver a series of on-line lectures in the coming academic year for workplace-based part time distance learning students on the Automotive Systems Engineering MSc programme at Loughborough University. Developing distance learning material can be time consuming and costly. However, if live classroom lectures are available for distance learners, the need for developing distance learning material can be reduced and the learning experience for students enriched.

For this study, a few lectures were delivered to a small number of campus-based students during the evenings so that they could join the lectures from their home via the Internet. In this study, it was also expected to acquire experience of the process of using the DimDim software so that effective teaching material can be developed.

II. USE OF WEB-MEETING SOFTWARE

A screen shot of a live lecture screen within the DimDim web-meeting environment is shown in Fig. 1. The blank box on the bottom left page normally displays the live image of the lecturer. Students communicate using the ‘Public Chat’ area shown in the right hand side of the screen. Students can post messages at any time during the session enabling student/student and student/lecturer interaction. The lecturer who has the control over the presentation can use the microphone to speak as well as using the ‘Public Chat’ area for messages. The middle part of the screen is the presentation area that can display either a computer screen or a presentation or be used as a whiteboard for writing.

Invitations to join the session are sent to students via e-mail through the DimDim system. Students join the session by clicking on a hyperlink in the invitation e-mail. Once a student has joined the session, a message appears in the ‘Public Chat’ area to indicate that the particular student has joined the session. Similarly, a message will appear when a student leaves the session.

A. Delivering Live Lectures

Students on the Automotive Systems Engineering MSc programme are required to use Matlab for their coursework, Matlab being the designated programming language for the MSc programme. Online Matlab lectures will be provided to industry-based part time distance learning students during their first month of study on the MSc programme. Therefore, the suitability of DimDim software for teaching Matlab online was investigated in this mini pilot project by delivering a live lecture to a small number of campus-based full time

Figure 1. A screen shot of DimDim web-meeting environment in shared presentation mode
students. The lecture was delivered in the evening so that the full time students could join the live lecture from their residence.

The online lecture session went well as an interactive session. The students were keen to raise questions and to make comments through the ‘Public Chat’ area. Similarly, the lecturer raised questions during the lecture requiring all participants to respond through the Public Chat area.

At the end of the lecture, while still connected to the live session, students were asked to write a short Matlab program and to run the program so that they could practice the commands they had just learnt. The session remained live until all the students had completed their task. Thus, the students were able to communicate with the lecturer and fellow students as they would in a classroom environment. Feedback was obtained from students before the closure of the live session.

An effort was made to conduct preliminary investigations to identify the suitability of DimDim web-meeting software in providing tutorial support at a distance. For this a project management tutorial was conducted online with a few full time MSc students. However, project management is a very small part of the full time MSc programme in Automotive Systems Engineering. The material associated with the majority of MSc modules consist of mathematical expressions and diagrams. Therefore, the experience obtained during the mini pilot project is not sufficient to judge fully the suitability of the DimDim software to provide tutorial support for mathematically biased modules. Further investigations are being planned to take place in the near future.

Similar to the Matlab session, the tutorial session on project management was interactive. Students conducted a network time analysis for a project. To use the tutorial time effectively, blank network diagrams were sent to the participants by e-mail prior to the session. They were required to print those before the start of the tutorial session so that they could fill in their answers during the live session once they have done the calculations individually. The lecturer shared the intermediate results with students at certain stages so that students could check their results. It was interesting to see that some students were helping their fellow students by answering their queries.

B. Delivery of Existing Multimedia Teaching Packages

In the past, several multimedia teaching packages were developed using Macromedia Authorware software as distance learning material [1]. These packages were delivered as CD-ROM material. Previous students found that these packages were very useful. These teaching packages are computer simulations of classroom lectures that consist of screen animations and lecturers’ voice overs. A considerable amount of time was spent developing these teaching materials. Due to software compatibility issues, these packages are not functional on most computers now. However, it was found that if a package was run on a compatible computer with sharing of the computer screen using DimDim, students could see the computer simulation of lecture presentations and listen to the integrated voice-overs on the Internet.

DimDim web-meeting software has the ability to record meetings. This facility was used to record the multimedia lecture presentation on vehicle dynamics so that students could access the recorded lecture at any time over the Internet. A screen shot of the recorded lecture is shown in Fig. 2. This shows that the quality of the recorded lecture is good. A drawback is the loss of the navigation facility imbedded within the original teaching package. Therefore, to replay a section or a page of the recorded lecture students had to replay the whole recording. However, this problem can be addressed to a certain extend by recording individual sections of the teaching package separately so that the students can replay the section they require. Also, this will give students more freedom to navigate through the teaching material. Since the audio files are integrated within the Authorware flow lines, the recorded lecture will have the voice overs synchronised with the screen animations.

III. TECHNICAL ISSUES

Some technical problems were identified during this mini pilot project. It was learnt that on a few occasions, some students did not receive the e-mail invitation to join the lectures. This resulted in a delay in starting the
lectures since new invitations had to be sent. However, the most significant problem was the sudden appearance of lines and symbols on the presentation screen. Even though these disappeared after a short time, the lectures were interrupted either by students inquiring about the alien symbols or by the lecturer informing students to ignore them. The other significant issue identified was the font size when the Matlab environment screen was shared. The font was too small and unreadable. Therefore it is not effective to use DimDim web-meeting software to teach Matlab programming by sharing Matlab screens. Instead, content must be copied onto a Word document or PowerPoint presentation before sharing with students. Use of a different screen-sharing application such as TeamViewer to display Matlab screens could be another solution.

IV. DISCUSSION

Despite the technical problems encountered, the mini pilot project was successful in recognising some strengths and weaknesses of the DimDim web-meeting software as a means of delivering online lectures to distance learners in the coming academic year. The students who participated in this study were positive and felt comfortable with attending interactive lectures. They found that the on-line live lectures were useful, effective and that the sound quality was good. They liked the opportunity to attend a live lecture from their residence. One negative comment made by some students concerned the delay in starting the lecture once they entered the session.

The lecturer found that delivering a live on-line lecture required tight planning compared to a face-to-face lecture. Since the students were not visible during the lecture, it was necessary for the lecturer to interact with students frequently by asking questions to make sure students were engaged with the lecture. However, both students and the lecturer felt that for an effective, interactive on-line lecture, the class size should be small.

Further, it is essential to conduct a trial run of a lecture if a new technique is to be used so that any issues can be recognised and rectified prior to the live session. A recent unpublished study on the use of similar software for providing tutorial support for distance learners suggests that where there is dissatisfaction from students, competent use of software and general preparedness for the tutorial are contributory factors [2].

A slight concern over the power of the software manufacturer to modify software remotely was raised after such modifications affected a scheduled lecture session. For example, the mechanical vibration lecture was successfully delivered to the first group of students but the scheduled session for the second group had to be cancelled because of a system failure that arose due to the introduction of software updates. However, given the benefits offered by DimDim web-meeting software, it is decided that the software is suitable to deliver online lectures on Matlab to part time distance learning students in the next academic year. This future work will be carried out as a full pilot project to investigate the effectiveness of the web-meeting software in delivering online lectures further. It will also be investigated whether the DimDim web-meeting software can be used for formative assessments on Matlab programing.

V. CONCLUDING SUMMARY

Web-meeting software DimDim was successfully used for delivering live lectures over the Internet. More effort must be expended during lesson planning to minimise loss of time during the interactive live lecture sessions. The overall outcome of the mini pilot project was positive and therefore it is anticipated that a series of live on-line lectures on Matlab will be delivered using DimDim in the coming academic year to workplace-based part time distance learning students.

REFERENCES


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