Online Video Resources to Enable & Enhance Experiential Learning

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ABSTRACT
This paper describes the implementation of an online video resource for undergraduate students with the aim to improve the experiential learning. As part of the final year project for the last two academic years, presentations were recorded at the start of the second semester of 2007-2008 academic year. These were then made available to the students during week eight of the semester over the web via student specific portal pages. The student's marks and feedback from the lecture assessors on the presentations were also made available online. The students were also recorded during their final presentations at the end of the semester. The changes in student grades were examined and compared to those over the previous five years when such feedback was not available. The resource was also designed to aid lecturers in order for them to view presentations they may have missed and enter marks for their allocated students.

KEYWORDS
Final year project presentations, online video feedback, experiential learning.

1. INTRODUCTION AND RATIONAL
This project was implemented in the first semester of 2007/2008 academic year in Dublin City University. Development began with the design of the EngPresent software and the recording of the first set of final year project presentations. Assessment of student presentations is currently implemented in various undergraduate modules in second, third and fourth year. Students' presentations were recorded and made available online. Although the students all present in the lecture theater in front of each other, each student's presentation was only accessible to them via personal portal page using their own personal username and login. By having the presentation available to them they can see what was good and bad with their individual style. They can also see the lecturers marking for the various aspects of the presentation, including preparation, opening, closing, rapport, and ability to convey the technical content. Comments on good and bad aspects of the student's performance were also provided in this feedback.

Different students have different learning styles. These include visual, auditory and kinesthetic. The provision of video learning resources has been shown to improve student learning as it targets the auditory and visual learner [1]. The provision of a variety of

learning media has also been shown to better engage students than conventional single mode delivery [2].

2. RESOURCES AND METHODS

2.1 Recording with camcorder

Presentations were recorded using a Sony Handycam SR190 which produces high quality MPEG-2 video, at a resolution of 720x576. Sound was recorded using a built in microphone on the camera. A typical presentation video file size is approximately 42Mb/minute. For online streaming, compression was recommended. In order to provide a front-end Graphical User Interface (GUI) for the work SUPER (Simplified Universal Player, Encoder and Renderer) was used. SUPER is a freeware application which acts as both a player and encoder for virtually all popular video formats [3]. The format chosen was to produce the videos as Flash video (FLV). The converted video produced with a resolution of 384x288, resulted in the average file size approximately 2.5MB/minute, good Video Quality and high Browser Compatibility. A third party player (JW Player), which operates transparently to the client browser [4], has been used to have a video navigation capability. A screenshot of the SUPER application is shown in Figure 1.

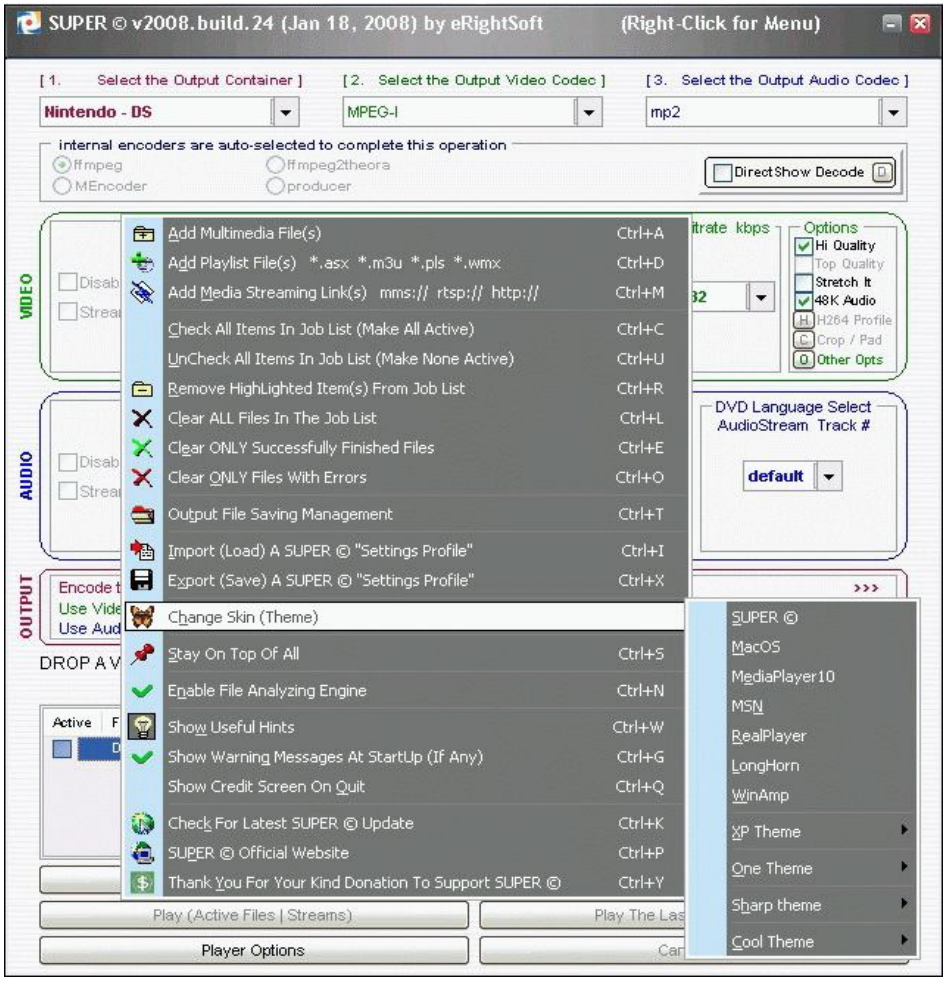

Figure 1 Screenshot of SUPER compression and conversion video application.

2.2 Recording with webcam

Presentations were recorded, starting from the first semester of 2008/2009 academic year, using a Logitech QuickCam Sphere. This USB HD video webcam was carefully chosen for this project as it has the auto focus, motorised auto, QuickCam® application is the OEM user-friendly video recording software. Sound was recorded using student's lapel wirelessly attached to a microphone receiver box connected to the PC. The produced video was of Windows Media Video (WMV) format with a changeable video resolution up to two megabyte. 640*480 resolution has been chosen as a trade off between video quality and file size with approximately up to 6Mb/min. For online streaming, SUPER was used for conversion into (FLV), as this format is viewable on most operating systems. A screenshot of the QuickCam® video application is shown in Figure 2.

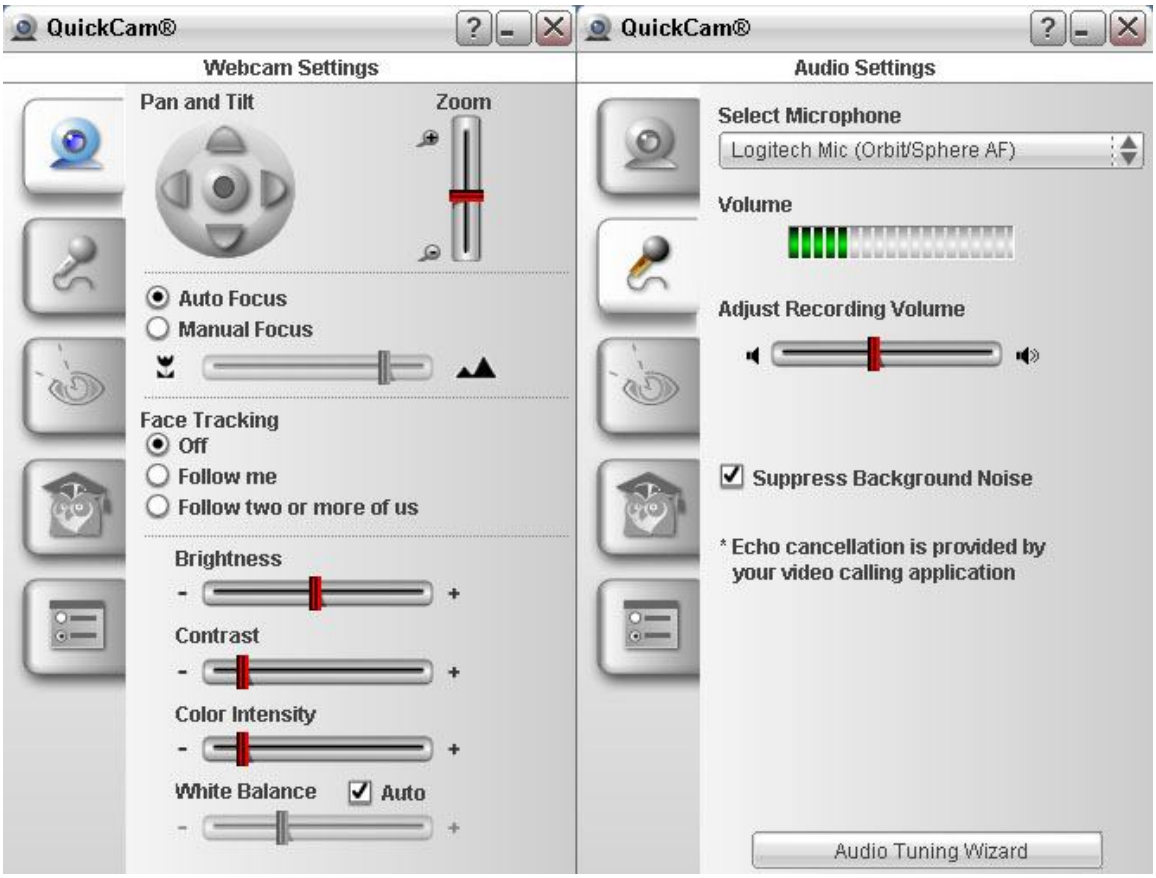

Figure 2 Screenshot of QuickCam® video application.

2.3 Embedding the videos

The output presentation videos were uploaded to a web application called EngPresent, which was developed using Apache Struts open source web application framework. Another Java application used as Pages container developed by the Apache Software Foundation (ASF) called Apache Tomcat. Tomcat provides the "engine" to host the business logic of the EngPresent application. It provides a number of services such as hosting, communication, security, database connection pooling and authentication. The

core business logic of the EngPresent application provides implementation for the central aspects of the EngPresent system:

a) Authentication, role management and login
b) Personalised pages for both staff and students
c) Facility for searching, viewing and assessing recorded presentations
d) Facility for viewing assessment marks for individual presentations

Persistent data storage is handled via a pool of open JDBC connections communicating with an Oracle database. Since the overall application should function on base installs of typical browsers, such as Internet Explorer, Firefox, Opera and Safari, the client user interface was developed using a combination of XHTML (eXtensible Hypertext Markup Language) and CSS (Cascading Stylesheets).

Once the entire student marks were uploaded to the system, students could view the recording of their presentation/questions and could then see their associated results for each graded section and overall. Also students were given critical breakdown of their presentation as a whole. Suggestions on how to improve their presentation technique accompanied this breakdown and it was hoped would lead to an improved performance in their second presentation on the same topic later on in the academic year. Figure 3 shows a screenshot of the current setup of the EngPresent application.

Figure 3 Screenshot of the EngPresent web interface for students.

3. RESULTS

Feedback from staff who used the system was very positive and many believe that the system had great potential to become a powerful tool for them and the students to utilise. They believed that it was a good investment to develop such an application and that student grades would improve in terms of the quality of their presentations. Figure 4 shows the actual results for the average percentage awarded for quality of presentation only over the last six years. Diamond points represent the overall first semester presentation mark and the square markers represent the overall second semester presentation results. From this graph we can see no clear difference after the implementation of the new system in 2007/2008. Further analysis with larger sets of students will need to be carried out to understand why this is so and also a larger group of students in subsequent years will be examined.

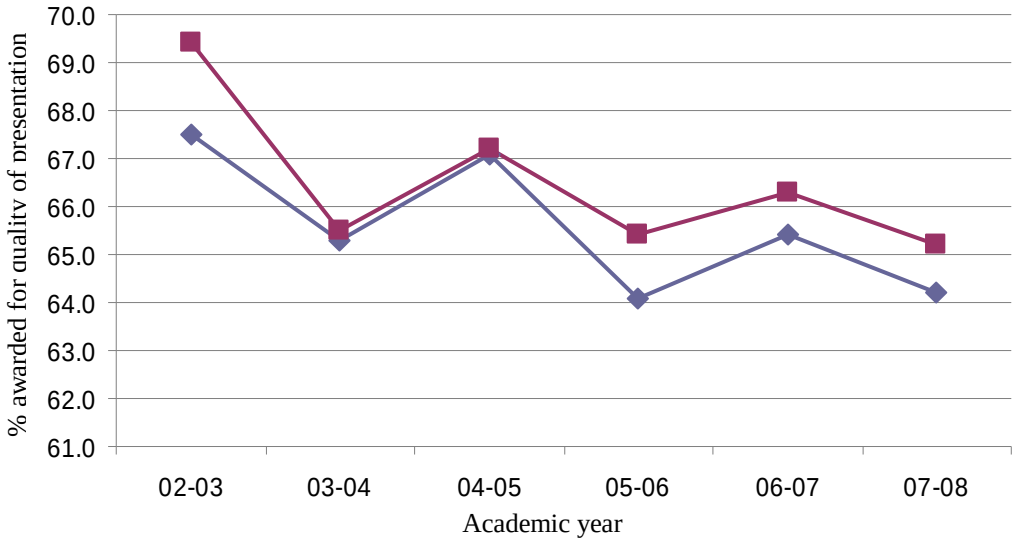

Figure 4 Shows the total average marks awarded for Quality of presentation for first (blue) and second (red) semesters for all disciplines from 2002 to 2008

4. DISCUSSION AND CONCLUSIONS

Figure 5 shows the earliest version of the EngPresent system as it existed 2007-2008. Major limitations associated with using camcorders for presentations' recording, which is the need of Camera operator for the camcorder system, have been solved as one of the assessors is needed only to start/stop recording for the webcam system. Figure 6 shows the current version of the EngPresent system. The assessors can input their marks and comments on presentations directly to the system. In effect, the current system provides a software front-end to what is reasonably a manual process. Figure 7 shows the future development on EngPresent. This includes a more rounded fully automated system, that is going to address the manual file uploading and conversion to the EngPresent system.

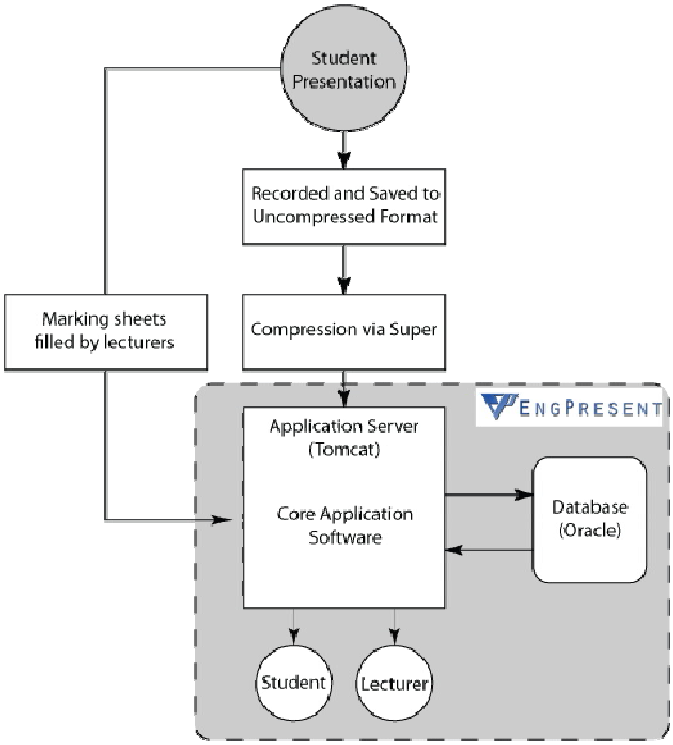

Figure 5: System overview of EngPresent as it existed 2007-2008 (camcorder system).

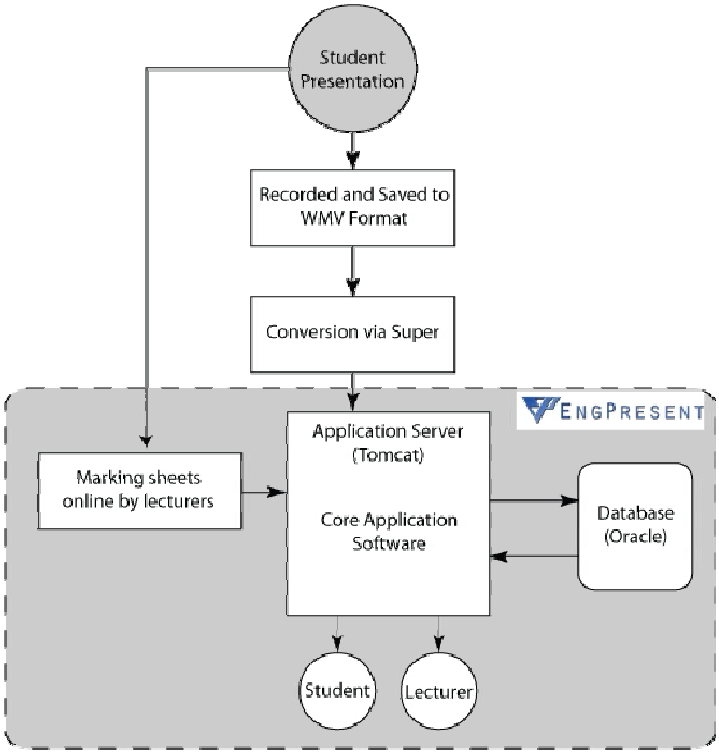

Figure 6: System overview of EngPresent current system (webcam system).

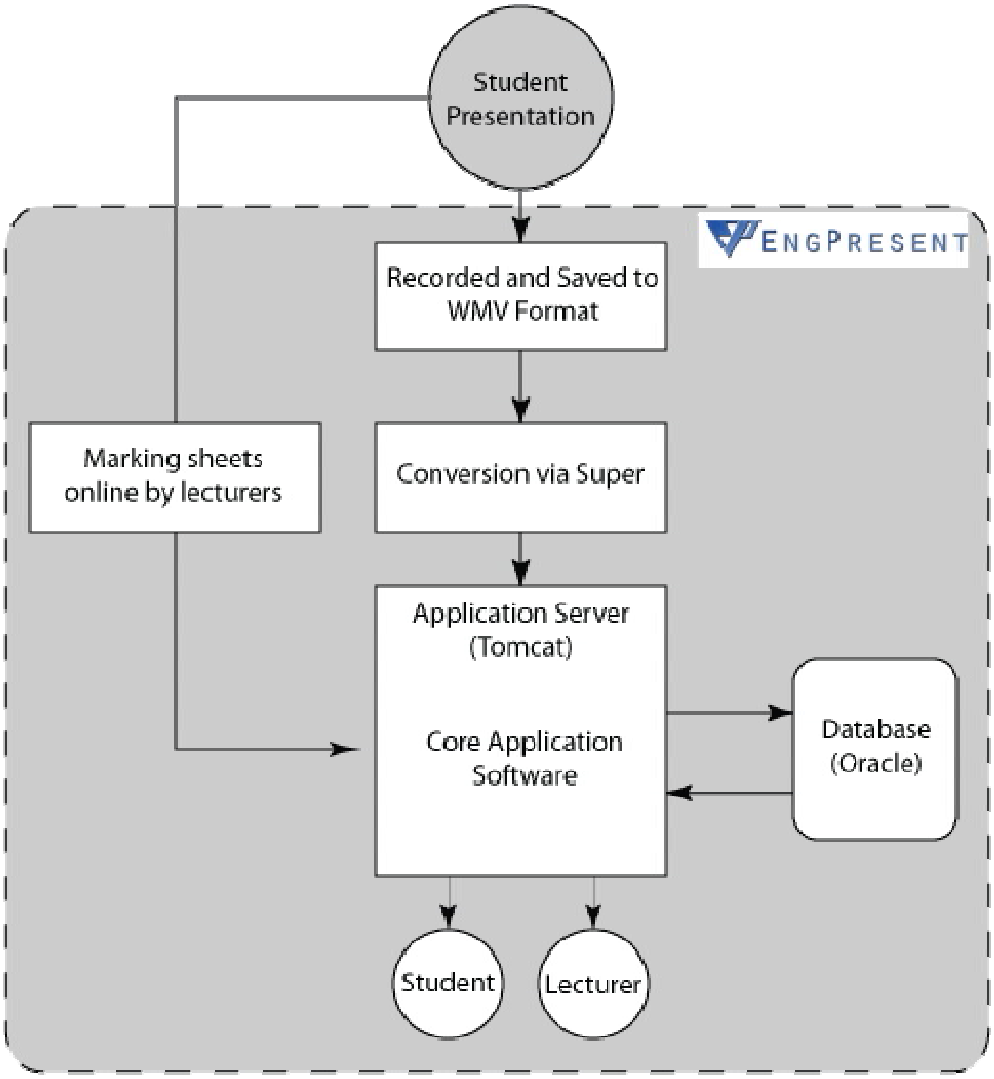

Figure 7: System overview of future development on EngPresent.

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