Jon Witts

Process report on the design and development of a Digital Learning Object.

Introduction

This report looks at the processes that I have been through to design my Digital Learning Object. It considers the reasons for choosing the object I did; the methods I used to develop the DLO, including software used; the considerations I took whilst making the DLO in terms of accessibility and the under-lying learning theory.

The Learning outcomes of the Digital Learning Object I designed are that:

- Students can understand and apply technical terminology appropriate to the study of film.
- Students can identify and evaluate the effect of different camera shots on an audience.
- Students can recognise how themes, atmospheres and genres are communicated by a director's vision.
- Students can learn at their own pace and return to previous points for reiteration.

The Digital Learning Object was designed for a mixed ability, mixed sex Year 11 (age 15 – 16) GCSE English class at the secondary school in which I work.

Discussion

The first stage of designing my Digital Learning Object was to decide what the subject and content of it would be. I discussed this with one of the English teachers at our school, to see if there was a particular unit that the department felt a digital learning object would enhance, thus helping the students to understand the concepts of the unit. The teacher agreed that a digital learning object could be helpful for a number of the units that the students have to cover at GCSE, and we settled on creating an object to help the students with their Media unit.

An area that the students have to understand whilst studying the GCSE English Media Unit is camera angles and film shots, so this is what we decided would be the focus of the DLO I was to design.

The next stage was to look at the learning theory that would under-pin the digital learning object. This was an important stage, as the learning theory would influence the latter stages of the design process, from the methods in which it was delivered to the software used to create the digital learning object.

On looking at the unit's syllabus and discussing the matter further with the teacher I decided that the most suitable learning theory to under-pin the design would be the behaviourist theory. There were many reasons for choosing this theory, the first reason was because the students would have had very little contact with or knowledge of the subject before studying the unit. The theory behind behaviourism states that the learner is a blank canvas and the teacher must provide the instruction and information to enable the learner to learn. The idea of a student being a blank canvas fits well when the students have very little prior knowledge of the subject they are to study. As the theory states, the teacher should provide the information, this is an instructor lead theory; the teacher must guide the learners through the materials. Due to this, behaviourist learning leads very well to linear presentational devices and direct instruction. Behaviourist learning also works best when the learners have little or no knowledge of the subject and when the information must be learnt in a short space of time. The study of the GCSE English Media unit fits both of these criteria. The English Media Unit is taught over 5 weeks, with just 3 lessons a week. This equates to 15 hours learning for the students in which they must learn completely new terminology, practise comparative skills in essay writing and also watch the films to understand the terminology and identify techniques used by the director.

Having decided upon the learning theory that would under-pin the digital learning object, I could then begin to think about the structure of the object and choose the software I would use to create the resource. As mentioned earlier, the behaviourist theory lends itself well to linear presentational devices, so I thought that I would use Microsoft's PowerPoint software to create the digital learning object with. I had recently completed some training at work using the Macromedia Breeze Presenter plug-in, for Microsoft's PowerPoint, and felt that this digital learning object could be built using this extension to PowerPoint. The Breeze Plugin allows you to add an audio commentary and insert Shockwave Videos into a PowerPoint presentation, as well as create interactive quizzes that conform to the SCORM standard of reporting results to VLE's.

Using the Breeze Plugin, I decided that I would create the linear presentation describing various camera angles and film shots. I decided to give video examples of these shots and a description of how the cameras are set up to achieve each shot. In order for students to be able to assess their own learning, I also decided to have an interactive quiz that the students could take, and the schools VLE could then report the students results back to the teacher of the unit.

Whilst developing the presentation, the first stage was to get the objectives and the text content of the presentation written. I considered the font size of the text I would use, as students would be expected to read the text from a screen; and I also considered the colour of the text and the background colour, as both of these play an important role in the accessibility and readability of the resource. I decided upon quite large text that contrasted vividly with the background colour, so that it would appear clear and easy to read for as many students as possible. I felt that if I introduced one film shot at a time, described when it would be used and why, then showed the students how the camera is set up to record the shot, followed by a video example of the shot being used, I would be able to explain each shot in the clearest fashion. These considerations allowed me to write the text for each different shot I would use in my resource.

Having written this, I then asked two of the school's A-Level Drama students if they would read the text from each slide and let me record it with a mini-disc player. I used a male and female student, who both had clear enunciation and recorded the narration of my slides. I spoke with the two students about the necessary pace of the spoken word, and ensured that they were speaking at the same sort of speed. If they said any of the narration too quickly or unclear, I asked them to repeat the slide in the manner I required. Once they had recorded all the slides I captured the audio on to my computer using Audacity. I choose Audacity as it is a very good package for editing audio and is also released under the GNU GPL license, meaning it is free to download, use and distribute. In Audacity I edited the audio so that I had an MP3 file for each slide. I then inserted this narration into my presentation using the Breeze Plugin. The audio formed the timing of the presentation, with each slide advancing to the next when the audio had finished.

The second stage was to source the video clips that I would use to illustrate the camera shots I was talking about in my presentation. I talked with the English teacher I was developing the digital learning object with, and we decided that it would be best if all the clips came from one film and if it was a film that we could be fairly sure all of the students had seen. We choose Disney's film version of Louis Sacher's Holes, as this is a book that the students all read at Key Stage 3 in English, and most classes are shown the video. I captured the video to my computer's hard drive using Adobe Premiere and then looked through the file to find examples of the camera angles I was describing in the presentation. Having selected the camera shots I would use, I then exported the sections of the film from Premiere as smaller AVI files so I could use them in my presentation. To embed movies into a Breeze presentation they have to be in the Macromedia Shockwave format, so I had to then take these AVI files and import them into Macromedia Flash, to then export them as Shockwave Flash format. Having done this, I then worked with Will Slater, (the school's Digital Learning Resource Technician) to create some 3D models that would illustrate the camera set up for each film shot mentioned in the digital learning object. He produced these using 3D Studio Max software, and exported the files as Shockwave format for me.

I was then ready to start importing all the video, audio and other files into my Breeze presentation. Whilst doing this, the file size of my presentation kept growing to such an extent that my computer would crash and become unresponsive. I continued to try and use the functionality of Breeze until I became so frustrated with the way it kept crashing my computer, that I decided I would use Microsoft's PowerPoint on its own and not include the quiz section of the digital learning object.

I successfully completed the digital learning object using PowerPoint and created a presentation that ran on its own with narration and video examples of the camera angles I was talking about. However, when I packaged the presentation up to a CD-ROM and tried to run it on another computer, none of the video examples would play properly, so it was back to the drawing board to select which software I could use to make the digital learning object. I decided that I could use Adobe Premiere to create the presentation, enabling me to create a DVD of the presentation as well preparing it for the web by saving it as a Quicktime Movie[i]. To do this, I saved all of my slides from PowerPoint as TIFF [ii] image files and then imported these images, the MP3[iii] audio, the 3d Shockwave[iv] files and the AVI[v] video clips into Premiere. Using Premiere, I reconstructed the presentation and ensured that the video clips and audio narrations were in the correct place and would play as required. Once I was happy with the time-line of my presentation I saved the whole project as a DVD[vi] video from Premiere and then converted the final AVI file from Premiere into a Quicktime Movie using Apple's Quicktime Pro software. This Quicktime Movie can be played over the Internet or downloaded to any computer running a Quicktime player.

The final result, although missing the originally intended quiz functionality, is a very accessible resource. The DVD can be played on any DVD player, be that in a computer or on a stand alone DVD player connected to a TV, and the web version of the DLO is in Apple's Quicktime format. This format is a free cross platform format, meaning that any computer operating system can play Quicktime Movies by downloading the free Quicktime Movie Player from Apple's website. The areas that this digital learning object is not so accessible in is the fact that a blind or poor sighted student would not be able to see the video examples or they pictures that describe the camera set ups for the film shots. This is why the audio narration was so important. If further levels of accessibility were required, I would probably look to developing the object as a web-based presentation, using HTML[vii], movies, sound and highly descriptive alternative image descriptions, so poor sighted users could gain more information about each camera angle through these descriptions, hence maximising the accessibility of the resource even further.

I have learnt quite a lot about different pieces of software and their limitations whilst completing this project. I had not used the Macromedia Breeze plug-in to the extent which I used it in this project, and on its performance I do not think I would use it again for anything other than simple quizzes. Microsoft's PowerPoint, although a good presentational device, is severely limited in terms of its cross platform use, reliability in importing video and the size that files become when a lot of multimedia content is added. I have found that working with video is perhaps the best way to deal with linear presentations where no interaction is required, as they are truly platform independent and can be converted into formats that can be accessed by all users over the Internet with out too much trouble.

In future DLOs that I build, I am interested in developing greater interaction for students and adopting other learning theories as the basis for the DLOs. Although I feel that the theory I adopted for this DLO was suitable, there will be many areas where the behaviourist theory would not be the most suitable. I would like to look at using DVD software to create a more interactive resource and also look into using web technologies, i.e. PHP[viii] and MySQL[ix] with HTML to create truly interactive web resources.

Testimonies

> *"I would never usually have considered teaching in this way, but this is a bright, engaging and student friendly resource, which I feel has improved my delivery of the media unit and inspired my students. The information is well paced and structured, and accessible by students of all abilities. I would love to see a larger resource, with perhaps combinations of different shots, but as a pilot version, I am very impressed."*

Sally Evans – Gifted and Talented Coordinator and teacher of English and Drama.

i Quicktime Movie – A video format developed by Apple to enable video and audio to be seen over the Internet
ii TIFF – An image format and an acronym that stands for **T**agged **I**mage **F**ile **F**ormat
iii MP3 – An audio file format and an acronym that stands for MPEG level 3
iv Shockwave – A web based file format developed by Macromedia that allows video and animation to embedded into a web page
v AVI – A video format developed by Microsoft and an acronym that stands for **A**udio **V**ideo **I**nterleaved
vi DVD - **D**igital **V**ersatile **D**isc
vii HTML - The document format used on the Web and an acronym for **H**yper**T**ext **M**arkup **L**anguage
viii PHP - A scripting language used to create dynamic Web pages and an acronym for **P**HP **H**ypertext **P**reprocessor
ix MySQL – A popular and open source database management system that is widely used for web applications