

[P5] To Flash or not to Flash: the use of Macromedia Flash as an effective tool for the production of learning objects in higher education

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Macromedia Flash started its life back in 1997 as a simple onscreen animation package called FutureSplash. Since then, it has successfully matured into an extremely powerful tool for designing and deploying a whole range of media content both online and offline. With the onset of Flash MX in 2002, the programme has expanded its features and enhanced the tools to allow the production of extremely effective learning objects (LO) (Reinhardt and Dowd, 2002).

Some of the benefits of the program can be summarised as:

- **Small file sizes:** Flash has the ability to maintain small file sizes while producing high quality animation. This allows for quick access to LO even for students on modem connections. This can be further enhanced through the program's ability to stream only relevant information, and only as and when this information is needed.
- **Integration of the majority of multi-media file formats:** Rich interactive learning experiences can be built due to the program's ability to import and seamlessly integrate video, sound, graphics and images in a multitude of formats. Flash files can also be embedded inside other flash files allowing smaller LO to be produced and shared between larger LO or programs.
- **Precise layouts:** The program's authoring environment contains a number of tools similar to those found in graphics programs. For example, several objects in a resource can be quickly aligned and resized by selecting the align and match size tools.
- **Advanced graphical representation of complex concepts:** Due to the quality of the drawing tools and the ease with which onscreen graphics can be animated, Flash gives the user a realistic way of representing complex subject concepts.
- **Advanced visualisation of abstract data relationships:** Flash has the ability to produce unique navigational structures allowing for large amounts of abstract data to be accessed and related effectively.
- **Compatibility and Consistency:** LO produced in Flash will not only display consistently across different screen resolutions, browsers and operating systems but also on different devices ranging from the desktop computer to the mobile phone.
- **Re-usability:** The program has several attributes that speed up the e-learning production process while maintaining a consistent look and feel to the LO produced. Symbols and components,

the building blocks of any flash file, can be reused in several LO while still maintaining design flexibility. Several e-learning templates and components have already been produced and are freely available on the web. All assets of a Flash file are stored in the file's library allowing for easy access to the file's resources.

- **Accessibility:** The program provides features to support compliance with W3C's Web Accessibility Initiative priority 1 guidelines by allowing for auto-labelling of buttons, tab-order controls and access to assistive technologies such as screen readers (MacGregor et al., 2002). The program's flexibility in learning object design means that the end user can have the ability to choose how they want the information to be presented.

When producing Flash learning objects, there are a number of issues that need to be considered. These can be summarised as:

- **The plug-in:** In order to view Flash LO, a browser plug-in (or player) is required. In the latest survey, 98% of all connected web browsers have the flash plug-in loaded (Heins and Himes, 2002). However, although it is free to download, problems arise when the computer user lacks the administration rights to their computer and thus is unable to download the plug-in.
- **Learning curve.** Although the program gives the developer great freedom in the production of LO, this freedom comes at a price. Learning how to design and develop LO can take a while, especially when using actionScript, Flash's programming language.
- **Abuse of freedom.** Following on from the last point. Due to the ease with which animations can be produced and the

freedom that Flash gives to the developer, there has been a mass of gratuitous animation and unusable resources created that serve little purpose for the end viewer. This has caused influential usability pundits to criticise the benefits of using Flash stating that it hinders more than it helps (Nielsen, 2000). Although, this is mainly directed at website production, it is an important issue that needs to be considered when producing any type of Flash resource. The main question being; 'Is Flash the best tool for the production of my LO?'

- **Development time.** Flash includes several attributes (symbols, components and templates) that speed up the development of LO. Nevertheless, when comparing Flash against Microsoft Powerpoint for the production of animations to help the students visualise subject concepts better, then using Powerpoint is likely to require less time and effort. However, when considering the effectiveness of the animation for the student, then using Flash is likely to produce a more effective result.

In summary, Flash offers e-learning developers many possibilities for producing a whole range of LO. These can be broadly summarised as:

- Intelligent formative assessment exercises (directing learning back to content the viewer still needs to learn).
- Interactive presentations
- Animations of complex subject processes
- Case studies based on live data
- Role-playing games and exercises
- Interactive simulations (although this process has really been automated though Macromedia Captivate)

- Synchronous and asynchronous workshops
- Access and navigation of content based on learning styles preferences
- Peer-to-peer chat and data sharing (Bardzell, 2003, Castillo et al., 2004)

The University of Wolverhampton Biosciences Division has successfully produced a number of LO using Flash that demonstrates the effectiveness of the program for learning and teaching. Please have a look at the link below to view Flash learning and teaching resources produced both within the University of Wolverhampton and externally.

http://wolf-nt.wlv.ac.uk/wlv2052/flash_learning_objects.htm

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