

# Harnessing the Power of the Internet: Developing Courseware Using Dynamic HTML and Multimedia Applications

Colin Fryer

Colin Fryer  
School of Engineering  
University of Derby  
Kedleston Road  
Derby DE22 1GB

Tel: 01332 622739

Fax: 01332 622789

Email: [c.fryer@derby.ac.uk](mailto:c.fryer@derby.ac.uk)

## Keywords

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- Dynamic HTML (DHTML) is an emerging Web standard that revolutionises how Web authors add interactive dynamic features to their Web pages. At the same time, DHTML relieves a Web server's load by shifting the processing demands for animation, data processing, and other interactive features to the client machine. The advent of DHTML has provided the infrastructure for Web pages to go beyond static text, images, and hyperlinks and become truly dynamic. Unlike previous multimedia technologies that required complex plugins or Java applets, DHTML capabilities are built into the next generation of 4.0 browsers. These technologies, however, while providing an implementation toolset for dynamic interactivity, do not provide a high level interface such as that implicit in HTML and its authoring software. If the benefits of DHTML are to be enjoyed by the wider community of Web Designers and not to a small subset of programmers, there needs to be a fusion of DHTML using JavaScript coding, and the application of more accessible multimedia software through the use of plugin technology. The benefits of dynamic courseware are many. Information can be presented in a more compelling manner, interfaces can be more responsive and easier to use, and new types of applications previously found only on CD-ROMS are made possible.

The software demonstration presents current research projects that incorporate Dynamic HTML and multimedia applications. The ATLAS Project (Academic and Technical Laboratory Assistant) provides students with a virtual Materials Testing laboratory that enables them to visit the facilities in a highly interactive and information-rich environment - before, during and after the experimentation period. It incorporates JavaScript programming and the seamless integration of browser plugins to bind the various pieces of the Web site into one cohesive information source. Javascript programming has been utilised to enable students to navigate through the virtual laboratory with images and textual information being dynamically loaded into frames and autonomous browser windows in a highly interactive manner. The multimedia applications allow students to carry out virtual experiments (using drag and drop techniques), undertake self-assessment tests and to identify the various testing equipment, including an overview of their particular application.

Interactive spreadsheets and scrollable tables are also a feature of the courseware, considerably enhancing the functionality of the Web site. The second project is concerned with the design of a home page template that simulates a Windows environment, including a menu bar with a fully functional drop-down sub-menu structure. This menu structure, together with its associated hyperlink button objects, allow the user to dynamically select and view information in frames or autonomous window browsers. The ability of these embedded multimedia objects to communicate with each other, load web pages and to send JavaScript commands, provides the Web Designer with a rich environment for developing highly interactive courseware.

It is the intention, not only to demonstrate the research projects and what it is that they do, but also to disseminate how DHTML and plugin technology may be utilised for developing interactive courseware. Additionally, the problems encountered in the development of these projects, and how these were solved will be discussed.