Using Computer Imagery and Visualisation in Teaching, Learning and Assessment

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Abstract

Construction is an intrinsically visual discipline as many construction processes are underpinned by an understanding of how structures are constructed and how constituent components fit together. This paper describes CAL-Visual - a project funded by the Teaching Learning and Technology Programme, Phase 3. It aims to implement the use of computer imagery to support teaching, learning and assessment in subject areas where the visualisation of objects and processes is an intrinsic part of the educational experience. Project partners include Loughborough University, De Montfort University, University of Westminster, University of the West England and an industrial partner (Tarmac Professional Services). In addition The Chartered Institute of Building (CIOB) also actively supports the project.

The main objectives of the project include:

• making effective use of existing image archives as teaching, learning and assessment aids for undergraduate and graduate use and CPD programmes.
• promoting the wide use of these archives in teaching building design and construction by embedding the project deliverables in “Construction” programmes.
• promoting deep learning by using improved visualisation techniques.

The deliverables and outcomes expected from the project are:

• a report detailing methodologies for the use of images in teaching and assessment applicable to the construction sector.
• a set of CD-ROMs for undergraduate, graduate and CPD use in the field of building design and construction.
• training packs for academic and CPD tutors.
• transferable methodologies for using images in other disciplines.

The deliverables and outcomes of the project have direct application in all Higher Education Institutions offering construction related courses (in the form of CD-ROMs, and teaching and training packs). In addition we argue that these are equally relevant to other disciplines which use images in teaching (such as Chemical Engineering, Mechanical Engineering, Pharmacology, Art and Design and so on).
This paper describes progress on the CAL-Visual project so far. The partners are currently providing the project with their existing archives of construction images. When these have been classified and entered into CAL-Visual, they will constitute a comprehensive databank. To date we have found that these images are used in an uncoordinated manner. A significant task addressed by our project has thus been the development of a digital framework to support the efficient use of existing and new imagery.

The framework development has involved investigating a number of classifications systems for the indexing of visual material and a review of hybrid systems for publishing visual material on the Internet, intranet and CD-ROM.

Finally, the project is investigating the use of virtual reality (VR) models as teaching aids in lectures and as exploratory tool for students to use in place of construction site visits. These VR models represent a type of building through which tutors and students can navigate and access the information in the databank.