

A Higher Education Academy ESD Resource

Title: Developing e-Learning Materials for Sustainable Construction Management

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AUDIENCE

This information will be of interest to anyone teaching sustainable construction management or wishing to use a wiki for teaching materials.

SUMMARY

Teaching of sustainability issues in Construction and Civil Engineering is currently being achieved fragmentally, and lacks broadness and depth in terms of the issues covered. The aim of this project was to develop e-learning materials to effectively equip learners with essential knowledge and skills in assessment of sustainability within the built environment, through the creation of a wiki ('what I know is') interface.

THE APPROACH

A series of learning outcomes were devised to act as objectives for developing the teaching materials to be accessible via the wiki. The tasks carried out during the project were the development of a knowledge repository of information relating to the field, the development of learning materials based on this information, the conversion of these materials into an electronic web-ready form, the evaluation of the wiki through consultation with a wider body of experts, and the publication of the wiki on-line.

The teaching materials were developed under the thematic headings of 'Sustainable Development Indicators', 'Environmental Management Systems', 'Environmental Impact Assessment, Strategic Environmental Assessment and

Sustainability Appraisal', 'Life-Cycle Assessment', 'Sustainable Construction Tools', and 'Sustainability Accounting and Cost Benefit Analysis'.

The materials developed have been converted to an HTML format using the TeamsLX wiki development tool. Feedback from the wider group of experts has so far been limited, but it is anticipated that more detailed feedback will be forthcoming. The wiki has been trialled as part of teaching modules delivered by the Division of Civil Engineering at the University of Dundee. An editable form of the wiki has been published within the University of Dundee's e-learning facilities. A non-editable, stand-alone form of the wiki is publicly available on the internet.

THE OUTCOMES

Task 1 – Development of Knowledge Repository

The information gathered and teaching materials developed can be divided into six themes, plus a short section describing and providing access to a previous research project carried out at the University of Dundee. These themes are discussed in the downloadable report (see bottom of document).

Task 2 - e-Content Development

The conversion of the materials collated during Task 1 was carried out via the University of Dundee's e-learning system, which is based on a Blackboard platform. Information was entered via the HTML editor interface of the TeamsLX wiki development tool. The wiki currently consists of 107 pages (including the home page). Much of the activities relating to sustainability assessment and environmental management relate to the sourcing and use of environmental, social and economic data. For this reason the wiki also acts as a launch pad to various websites which provide access to data on a range of aspects of environmental impact..

Task 3 - Evaluation

Feedback from the wider group of experts has so far been limited, partly due to work commitments of this group. However, expressions of willingness to provide feedback have been received and it is anticipated that more detailed feedback will begin arriving in summer 2008. The wiki has been trialled as part of teaching modules delivered by the Division of Civil Engineering at the University of Dundee, namely the MSc modules CE50019 – Concrete: Sustainable Use and Environmental Impact Assessment, CE50004 – Sustainable Construction, and CE52002 – Health, Safety and Environmental Management. Specifically, the wiki has been used to complement lectures on both environmental impact assessment (EIA) and life-cycle assessment (LCA) and to act as a procedural guide and data-locating gateway for carrying out EIA and LCAs as coursework assignments. Based on student feedback and trends in assignment submission content, modifications have been made to the wiki.

Task 4 - Publish

The editable form of the wiki is held in the University of Dundee's e-learning facilities, and is accessible with login and password that can be supplied to persons wishing to become contributors. Each page of the wiki can be accessed for editing, and comments can be left on each page for contributors. The wiki development environment used in this case also has a discussion board facility and a repository for relevant documents. The platform permits the export of the wiki in a non-editable, stand-alone html form. The wiki will also be made available from an easier to remember URL in the near future. This page also gives contact information to people wishing to become contributors to the wiki. The editable wiki is converted to a stand-alone form and uploaded on a weekly basis.

TAKING IT FURTHER: LESSONS AND SUGGESTIONS

- By definition, a wiki will continue to change beyond the completion of this project. The nature of a wiki means that it is a constantly developing body of work whose extension and expansion is controlled by the community of contributors. However, certain major objectives have been set for the enhancement of its function. And these are discussed below.
- The majority of evaluation sought on the wiki is still outstanding. Thus, a near future aim is to call in this feedback and to act on any comments or recommendations.
- The quantities of data available, particularly in terms of emissions factors and 'state of the environment' information useful for establishing environmental baselines are immense, and it is conceded that the wiki currently only scratches the surface. For this reason, sourcing of data will be an ongoing process.
- Most of the social aspects of environmental impact dealt with by the wiki currently place emphasis on socio-economic aspects of impact, with only minor discussion of aspects such as quality of life and happiness. Thus, the expansion of this aspect of the wiki is a priority.
- The wiki interface is currently text-based, with diagrams used where these assist in understanding. However, there is a strong argument for enhancing its visual appearance through the use of photographic material. Inclusion of such materials has been flagged as an important part of the wiki's further development.
- One major aim for the future development of the wiki is to ensure accessibility to people with disabilities and for people using mobile devices. This further development is likely to be carried out in collaboration with the University of Dundee's Information and Communication Services.

FURTHER INFORMATION

The full report is available:

http://www.heacademy.ac.uk/assets/York/documents/ourwork/tla/sustainability/esd_dyer.pdf (PDF336KB)

The public version of the wiki: <http://www.personal.dundee.ac.uk/~tddyer/wiki.htm>