

The Open University Research and Development SusTEACH

Section 1 About the project

Summary

The SusTEACH project developed an innovative suite of online Sustainability Tools for the Environmental Appraisal of the Carbon Impacts of Higher Education (HE) Teaching Models. This followed a carbon-based environmental assessment and data analysis of 30 courses and modules using a range of traditional face-to-face teaching and more online teaching delivery methods across several UK institutions. This led to the design of the SusTEACH toolkit to help lecturers, students and senior managers reduce the negative environmental impacts of teaching and learning.

Project partners

Team: Andy Lane, Sally Caird, and Ed Swithenby

Advisors: Robin Roy, Stephen Potter, Carol Morris

Sponsors: JISC Greening ICT Programme, The Open University

Participants: Cranfield University, Loughborough University, The Open University, Oxford University

The problem

Sustainable, low carbon Higher Education teaching systems are part of the carbon reduction strategies needed in the UK. Few studies have considered the whole system environmental impacts of different systems of delivering HE, which are being transformed by the use of Information and Communication Technologies. The project undertook a detailed carbon-based environmental assessment and analysis of 30 courses and modules across several UK institutions, and set out to develop a methodology and various tools to provide support for low carbon teaching and learning.

The approach

To address this complex area, SusTEACH developed a robust, reliable environmental assessment methodology suitable for HE courses/modules in the UK. The environmental assessment covered staff and student travel, purchase and use of ICT devices and educational materials, residential energy consumption, and campus site operations and analyzed questionnaire data collected from 375 lecturers and 1551 students, as well as additional data from Estates Departments, the Higher Education Statistics Agency, and other databases. Data was analyzed using carbon conversion measures to provide the average energy consumption and CO₂ emissions of a course/module per student per 10 CATS credits/100 study hours.



Profile

- The Open University
- 250,000 students +
- 11,700 staff
- Distance Education with supported learning

Our goals

- Understand complex higher education teaching models and their environmental impacts
- Develop a robust environmental assessment methodology suitable for HE courses/modules
- Provide evidence to support policy-targeting of the key sources of environmental impact
- Identify the significance of HE teaching models using ICTs for carbon reduction
- Develop a suite of sustainability tools for the environmental appraisal of the carbon impacts of teaching models to support HE institutional transformation and carbon reduction practices
- Contribute to evidence-based sustainability policies on 'greening' HE institutions

Obstacles and solutions

No agreed conceptualization of the role of ICTs in higher education teaching models	Conducted workshops and consultations across several UK universities
Complexity of carbon-based assessment of HE teaching models	Developed a reliable methodology. Supplemented primary data collection with reputable sources of statistical data. Reviewed well-researched, recent sources of energy consumption and carbon emission data

Performance and results

Research analysis showed that the main sources of carbon impacts in HE teaching models were associated with travel, residential energy consumption and campus site operations. This explained why distance education systems had lower carbon impacts than campus-based systems. Comparative analysis identified higher average impacts of 262Kg CO₂ per student per 10 CATS credits/100 study hours in the campus-based system compared with 43Kg CO₂ in the distance education system. Teaching models using ICTs to provide online learning achieved significant carbon reductions when used to effect changes in the requirement for students to travel to classrooms, take additional residential accommodation away from home and use campus facilities.

The SusTEACH project methodology and findings led to the Toolkit development which includes various tools designed to support the planning and modelling of more sustainable HE teaching on courses/modules and qualification programmes, as well as carbon assessment and data collection within institutions (available at <http://www9.open.ac.uk/SusTeach>).

Lessons learned

The project has demonstrated the significance of different systems of delivering HE and the use of ICTs in teaching models for achieving carbon reduction. The SusTEACH toolkit, which is freely available, is being implemented at the Open University within a number of initiatives to transform the delivery of teaching and learning on qualification programmes, as well as informing the university-wide curriculum to support education for sustainability. The toolkit provides support for embedding sustainability practices, institutional transformation and 'greening' HE institutions. Wider promotion of this innovative toolkit to support transitions within HE towards sustainability is currently underway.

What has it meant to your institution to be a Green Gown Award finalist?

The SusTEACH project was selected as a finalist for the Green Gown Award 2012 for Research and Development. The judges stated that SusTEACH was 'A *project with some potential for the HE sector in encouraging consideration of the carbon emissions of different tuition styles.*' This has helped to publicise this original and innovative research and development project and promote the adoption of SusTEACH tools and resources to help achieve low carbon teaching and learning in higher education.

Further information

- www.open.ac.uk/blogs/susteach/ and www9.open.ac.uk/SusTeach/
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