

The e-MapScholar Project: GEES-e resources



The e-MapScholar team

Abstract

This article brings you up to date with progress on the e-MapScholar project, which is creating a range of materials to support learning and teaching with geo-spatial data, including digital map data available from the EDINA Digimap service. The project is producing interactive learning units, which can be customised by tutors using a simple online Learning Content Management System. A novel aspect is that maps within the units are produced in real-time from the Digimap server. This allows localisation of the maps by the tutor. Other materials are geared towards the support of teaching. There is also a proof-of-concept virtual work placement, using a real-life workplace issue and a problem-solving approach. The project is based on the idea that the skills gap between creating online digital maps, and downloading/use of data in local software packages, can be bridged using new software tools and learning materials to support the learning of concepts and practice of skills. This article will be of interest to all GEES academics who use geo-spatial data and digital map data in their learning, teaching and research.

Introduction

Since the beginning of 2000, the EDINA Digimap¹ service has allowed subscribing HEIs online access to a number of different Ordnance Survey (OS) digital map data products. These products are free at the point of use for learning, teaching and research. Users can view maps online and print high-quality cartographic products, and they can also download data for use in local systems, such as Geographical Information Systems (GIS).

From January 2001, a team of teachers, software developers and evaluators from around the UK has been working on the provision of a range of materials to support the use of geo-spatial data, including that available from Digimap, in learning and teaching. The materials are being provided under a project funded by the Joint Information Systems Committee (JISC)² called e-MapScholar³, which finishes in April 2003.

Skills Gap and Resource Development

A skills gap has been identified amongst spatial-data users, especially undergraduate students. Accessing and printing online digital maps does not generally require specialist knowledge (although a more advanced online mapping service is available through Digimap, which does require a higher degree of expertise), whilst knowledge of how to download data to local software packages requires skills development to enable students to undertake this work. The e-MapScholar project is developing innovative, interactive learning materials that bridge the gap between obtaining digital maps online and using geo-spatial data locally. It will offer elements of GIS functionality, without providing a full GIS online (see Figure 1 for screenshots of the user-interface).

From discussing the project with teaching staff, and running beta tests with several institutions, we believe that the resources will support both undergraduate and postgraduate teaching in a range of subject areas, including those within the remit of the LTSN Geography, Earth and Environmental Sciences (GEES) Subject Centre.

An online user-needs survey conducted in the first months of the project, and a subsequent workshop, helped inform the design and development of the project deliverables⁴.

Three types of resources are being developed:

- A range of teaching case studies;
- Online, interactive learning materials;
- A proof-of-concept virtual work placement.

The project is also developing an online Learning Content Management System (LCMS) that allows customisation of the online learning materials by tutors for their students. Tutors will be able to create new resources from existing learning units, customise the geographic area of maps, change the text of the learning units, and also alter the parameters of the software tools within the units that provide the interactive experiences for the student learners.

To ensure that the deliverables are pedagogically sound and fulfil project objectives, an evaluation team based at the Open University is evaluating software and tools directly with users and feeding back their findings to the developers and authors.

Teaching case studies

The teaching case studies will include work of interest to staff in the GEES disciplines. Examples include "Exploring spatial decision making through online GIS", "Modelling Site Suitability for Wind Farms" and "Use of Mobile Technologies". They are being authored by teaching colleagues from around the UK and consist of the data and materials used by the learners, along with descriptions of the uses made of the data and learning materials, and evaluations by staff and students, where available. It is hoped that the case studies will inspire educators to use the data in similar ways in their own coursework and will demonstrate the potential advantages of using these data, while helping to avoid mistakes and streamline teaching preparation by others. By the time you read this article, some of the teaching case studies should be available. (See the EDINA website references in this article for further details.)

Online learning materials and software tools

Customisable online learning materials, which incorporate software tools, are being developed in three areas: (1) working with digital map data, including concepts within areas such as understanding maps and working with maps; (2) data integration, including point, line and area digitisation and uploading of data from other sources, and (3) data visualisation, including 2D and 3D visualisations and problem solving.

Key features of these resources are:

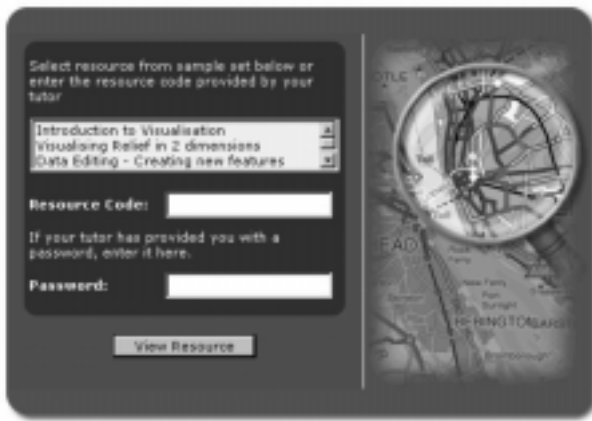
- A core set of learning materials is being developed at unit and resource level. Teaching staff can create and customise learning resources for their students from the learning units, which each address particular concepts or skills practice;
- Teaching staff can customise the resources and units through the e-MapScholar Learning Content Management System;
- The learning units contain interactive tools that are generic and can be used in different learning materials;
- The tools and learning materials are online resources that access maps and data from the EDINA Digimap service in real-time;
- Learning resources include self-assessment exercises for the students to test their own learning;
- A glossary of commonly used words and phrases will be accessible at any point;
- Students are invited to submit comments and feedback on the learning units to EDINA using online forms.

Virtual Placement

Problem-based learning represents a powerful pedagogic tool to develop student confidence and problem-solving skills. The team is now developing a proof-of-concept 'virtual placement', a real-life problem from an outside partner organisation, through which the learner has to work in order to arrive at a reasoned solution. During the placement, a student will carry out an assessment of the visual impact of wind turbines at the Nant Carfan development in Wales, using material provided by the Macauley Institute in Aberdeen.

In addition to using Digimap data to satisfy various elements of the placement work, the student will be provided with land cover data (Land Cover of Great Britain), wind turbine locations and height details (Countryside Council of Wales), road network (interpreted from

P L A N E T



(a)



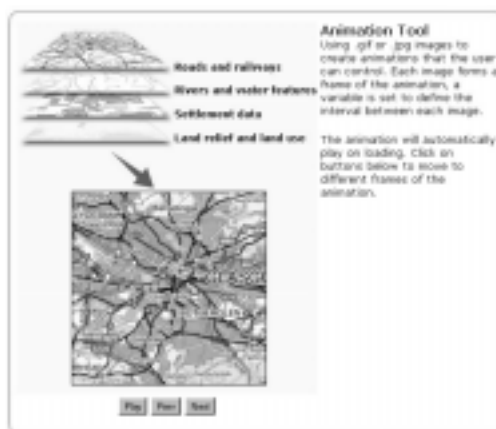
(b)



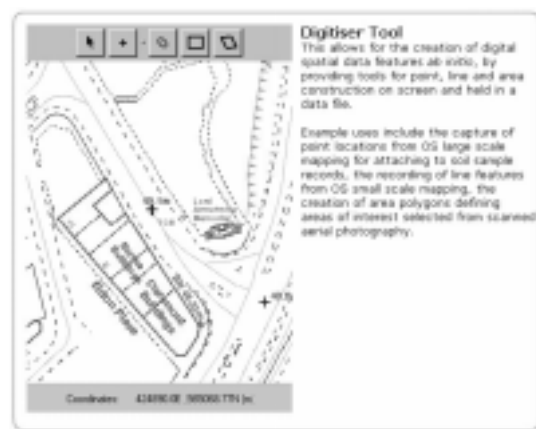
(c)



(d)



(e)



(f)

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Figure 1. Screenshots from the e-MapScholar project. (a) Resource selection from the opening page of the Learning Resource Centre (b) Introduction page for a learning unit. (c) Page from a learning unit, showing the digitising tool alongside text and self-assessment question. (d) Opening page for the e-MapScholar Content Management System. (e) Animation tool. (f) Digitiser tool.

Ordnance Survey Strategic data) and data on the boundary of common areas (Countryside Council for Wales).

Tutors will be able to set up the placement to control release of information to students and plant 'bombshells' to mimic real-life work problems through which the students must work. Students will have access to an online portfolio, in which they can store their work.

Project Team

The project is led by the EDINA UK National Data Centre in association with three partners: Institute of Educational Technology, Open University; Department of Geomatics, University of Newcastle; and Department of Geography, University of Edinburgh. The team also includes a number of associates from LTSN Geography, Earth and Environmental Science, LTSN Centre for Education in the Built Environment and Learning Technology

Unit, University of Aberdeen; and a number of individual advisors with experience and expertise in geo-spatial data, including advisors from City University and Ordnance Survey.

For further information, please use the contact below.

Moira Massey
e-MapScholar Project Manager
Moira.Massey@ed.ac.uk

EndNotes

- 1 See <http://edina.ac.uk/digimap> This reference also allows you to check whether or not your institution subscribes to Digimap.
- 2 See <http://www.jisc.ac.uk>
- 3 See <http://edina.ac.uk/projects/mapscholar/index.shtml>
- 4 See <http://edina.ed.ac.uk/projects/mapscholar/consultation.shtml>