Interactive Maps in Online Educational Technology Courses

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Interactive Maps in Online Educational Technology Courses

Interactive geographic maps are a form of dialog used to:

• reduce students' sense of transactional distance

• build skills with Web 2.0 media

• increase motivation.

To develop shared course maps, instructors needed:

• a tool that identified longitude and latitude

• a shared spreadsheet for the longitude and latitude data

• the map that displayed the data

Interactive Maps in Online Educational Technology Courses

Using the dynamic map and spreadsheet, the students interacted spatially. The maps supported active participation in the course and put the students in control as they visualized the relationships between other course members' locations and themselves.

Online course maps use GIS technology

- Geographic Information Systems (GIS)
- A mapping system that uses computers to collect, store, manipulate, analyze, and display data.
- Students created the map through a system that transposed lat/lon data to GIS data

customers

streets

parcels

elevation

land usage

real world
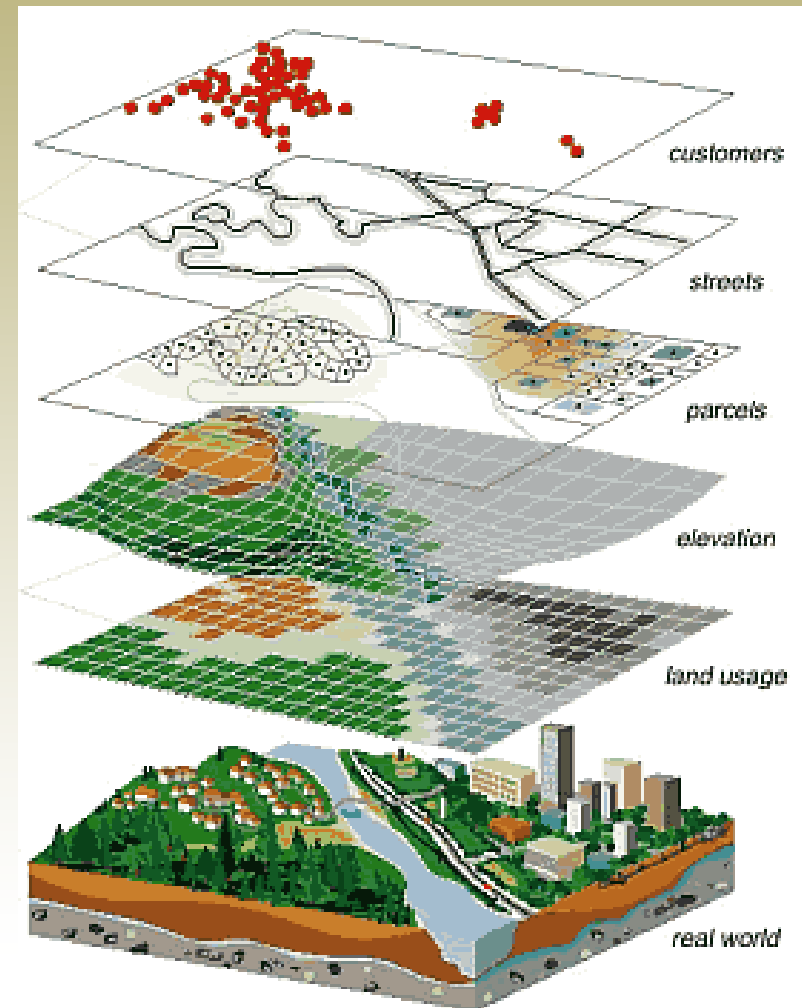
"Geospatial" technologies

Include

- geographic information system (GIS),
- global positioning system (GPS), and
- remote sensing (RS) tools

These technologies use "smart" maps that can display, query, and analyze geographic databases; receivers that provide location and navigation; and global-to-local imagery and tools that provide context and analysis.

The course map study used a smart map with online student-created data

Online learning tools

Chat
Virtual world

Voice over IP

S Y N C H R O N O U S

Web conference
Application sharing

DEMOCRATIC

Interactive map

Collaborative documents

Social bookmarking

Email

Wiki

A S Y N C H R O N O U S

Discussion forum

Blog

Podcast

Live streaming

AUTHORITARIAN

Static web pages and media

Collaborative development

- Students make the technology based maps in cooperation with other students.

- Social interaction is a part of learning, and students are often motivated by social interaction with their peers in their performance (Oblinger 2005).

- Interactive maps embody the central Web 2.0 capacities for **social networking** and user-created content for collaborative knowledge-building in distance education (Moore, 2007)

Transactional distance…

- …is the cognitive space between learning peers, teachers and content in a distance education setting.
- …is a function of dialog and structure in distributed learning settings.
- Distance decreases with dialog
- Distance increases with structure so that a classroom with high interaction and less rigid format will be more engaging to learners. (M. G. Moore 1980)

The map as visual dialog was hypothesized to reduce transactional distance during the course and increase motivation to complete the course.

Instructional design: Analysis

The students were enrolled in a graduate Educational Technology degree program, were educators in K-adult organizations.

They lived in the same state as the university. However, some traveled outside of the state and the country during the courses.

In addition to developing media skills through the use of the course map, the students learned a research-based teaching strategy. When students use geographic maps as adjuncts to text, they recall more text information than they would if they studied the text alone (Vekiri 2002; Schwartz et al. 1998).

Instructional design: Design

Using Google Maps and related online editable database, interactive digital maps were added to the LMS (Blackboard, Moodle).

Students interacted spatially with other members of the course.

The maps supported active participation in the course and put the students in control as they visualized the relationships between other course members' locations and themselves.

Complete class map in Blackboard

Class map in Moodle

9 Course Map!

Let us follow your travels!

1. Find your Latitude and Longitude by typing in an address or city at a website like http://www.maporama.com

2. Go to the online spreadsheet at:
http://www.editgrid.com/user/cathycavanaugh/6458classmap

3. Add your name, location information, latitude and longitude as decimals into the spreadsheet. After adding your information, click the close button above the spreadsheet.

4. Use the class map link below can click on any map pin to see

📑 View the Class Map!

Instructional design: Development

Three components were needed:

- a tool that identified longitude and latitude from a street address, *Maporama*

- a shared spreadsheet for the longitude and latitude data, *EditGrid* with *Grid2Map,* to create KML data and generate HTML code for adding the map to a web page

- the map that displayed the data in the LMS, *Google Maps*

No single service was located that would handle the entire map process from start to finish.

Student data input

Instructional design: Implementation

A link to the class map was posted in the opening "Announcements" area of the CMS. (Some browsers produced a Security Information pop-up stating that "this page contains both secure and non-secure items.")

Students were instructed to add a location to the map to represent them. Some posted their work locations, others posted their current home addresses, and others posted their previous hometowns. Students and the instructors updated their location postings to indicate their travels during the course.

Instructional design: Evaluation

A survey deployed within the LMS used a Likert scale and asked students to rate the extent to which each course component reduced their sense of transactional distance.

All students indicated that the map reduced their sense of transactional distance at least slightly, 25% of the students indicated that the map reduced their sense of transactional distance to a moderate or great extent.
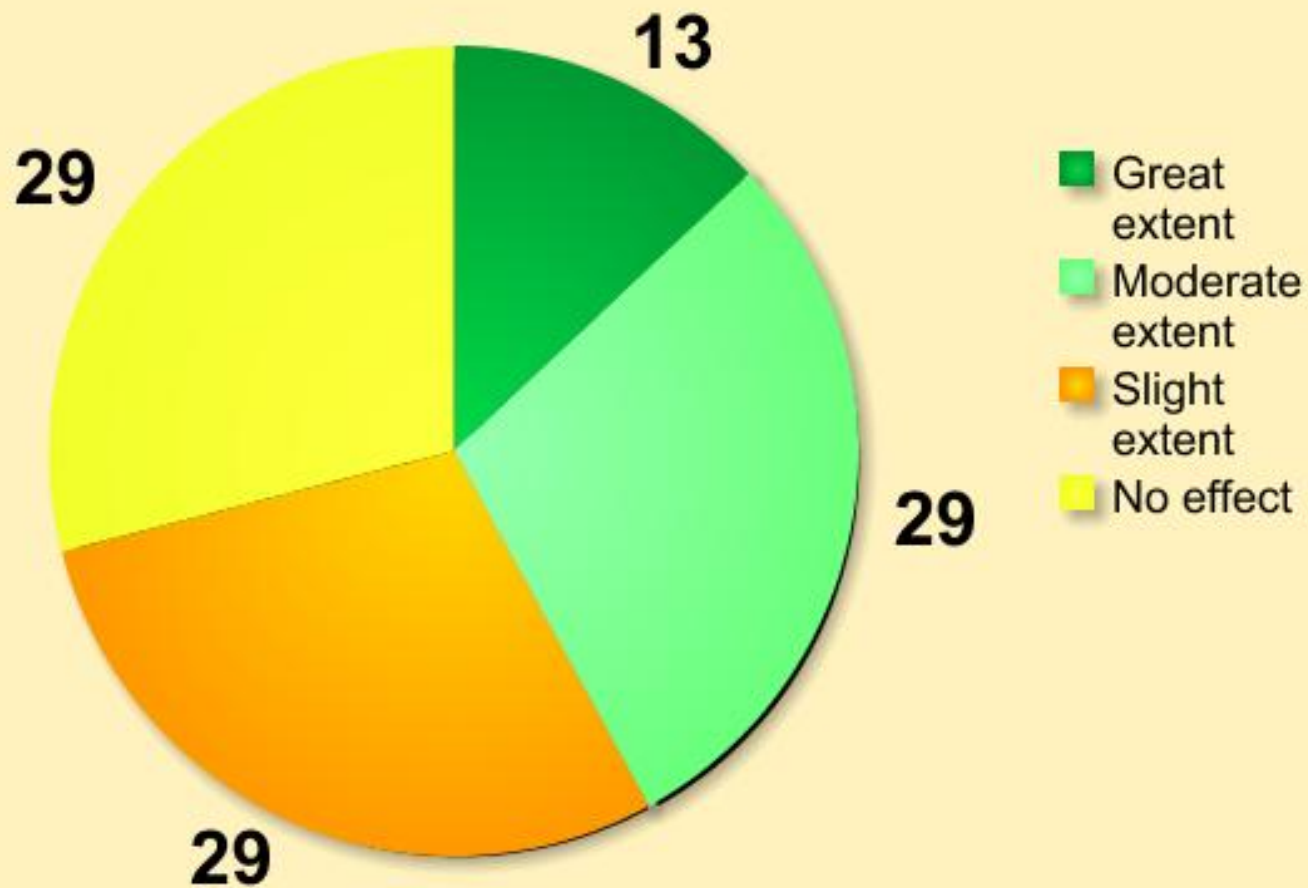
Assisting 25% of the students in the online courses with a map is a worthwhile return for a small investment of resources.

Some students indicated that the map was their first use of a Web 2.0 application for learning.

Instructional design: Evaluation

The map reduced my transactional distance

13 Great extent
29 Moderate extent
29 Slight extent
29 No effect

Instructional design: Evaluation

A follow-up survey asked specific questions about student perceptions of autonomy, dialog, and structure among 10 online course elements. The map ranked the highest of the non-text elements.

1	Assignments
2	Text in LMS
3	Textbook
4	Discussion forum
5	Syllabus
6	**Interactive map**
7	Media
8	Podcast
9	Audio greetings
10	Live office hours

Implications

The use of interactive maps embody the central Web 2.0 capacities for social networking and user-created content that hold potential for collaborative knowledge-building in distance education, especially collaborative tools that reduce isolation.

Further study: effects of student age and sensory preferences on perceptions; role of maps in perceived sense of community.

More information

A more detailed article about the interactive course maps appears in:

Cavanaugh, T. & Cavanaugh, C. (2008). Interactive maps for community in online learning. *Computers in the Schools 25*(1).

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