



GIS education in European upper secondary schools: a need for curriculum support?

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Outline of the presentation

- Setting the scene
- GISAS project in a nutshell
- A need for curriculum support to introduce GIS into schools?
- Findings and suggestions



Setting the scene

- Geographical Information Systems (GIS) are currently infiltrating into the European schools
- national and international initiatives and projects (EduGIS, AEGIS 3, WebGIS-Schule, eMapps, GISAS, etc.)
- GIS in upper secondary school curricula (Finland, Poland, Turkey, Belgium, etc.)
- educational GIS resources increasingly available in the internet
- INSPIRE directive

Setting the scene

- internet-based GIS mapping environments have tried to surpass a number of barriers identified to the implementation of GIS into schools
- access to hardware and software, pre-processed data and technical support (Bednarz, S.W. & Van der Schee, J. 2006, *Technology, Pedagogy and Education*, 15/2, 191-205)
- internet-based mapping interfaces can be less complex and suit better to school classrooms than some professional desktop GIS software (Baker, T.R. 2005, *The Professional Geographer*, 57/1, 44-50)

Setting the scene

- importance of local maps and databases
- although teachers in the U.S.A. engaged GIS in a variety of ways without any standard practice, they shared one common activity, which was to collect localised data to be used with GIS

Fitzpatrick, C. 2001, International Research in Geographical and Environmental Education, 10/1, 85-87)

- similar findings in Finland where GIS was introduced to the national curriculum for the upper secondary schools in 2005

Setting the scene

- the availability of data often dictates the nature of classroom inquiry, especially in student-centered approaches (Baker, T.R. 2005, *The Professional Geographer*, 57/1, 44-50)
- the usability of internet-based mapping interfaces is limited to a small number of countries
- schools can be equipped to create their own local databases like we did in the GISAS project

GISAS project in a nutshell

- European Commission Socrates/Minerva – programme (2003-2006)
- Education and research project
- introducing GIS-supported education into the European secondary schools
- in-service teacher training (blended learning) > hands-on training courses and e-learning tasks



European Commission
Education and Training

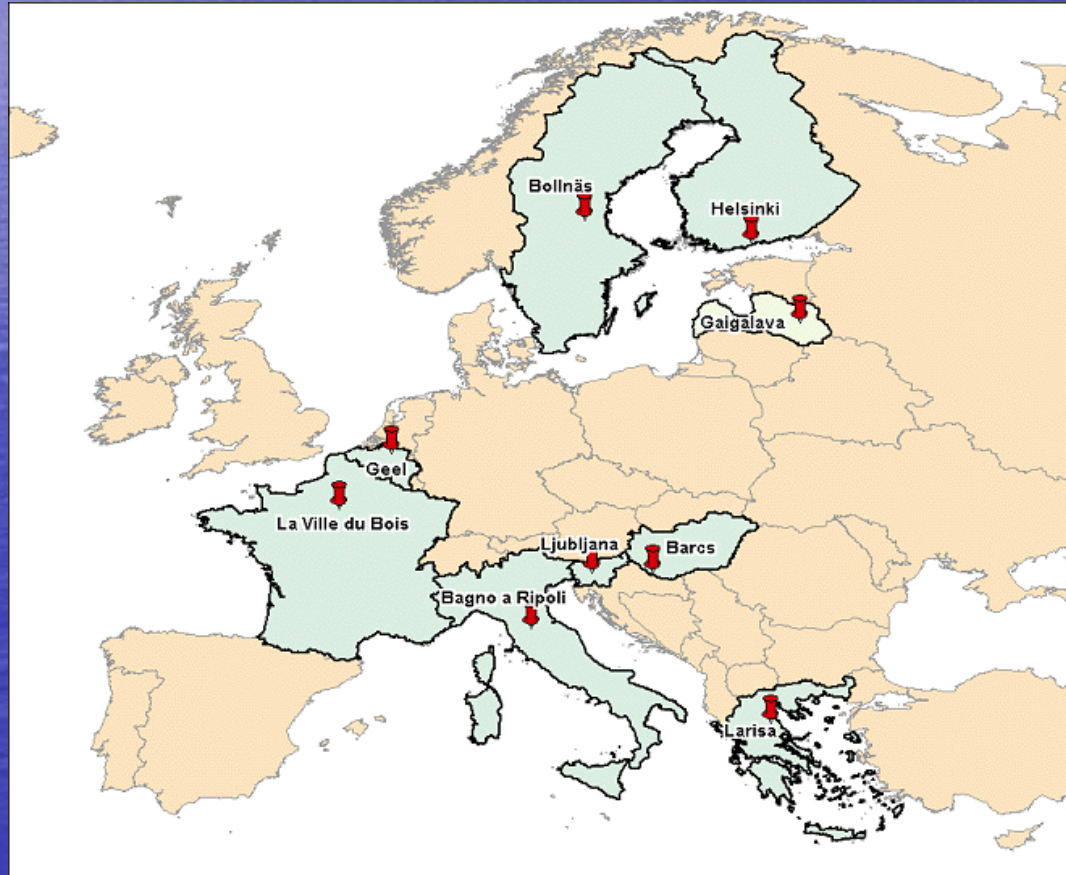


SOCRATES Programme 2000-2006



GISAS project in a nutshell

- 10 partners from nine European countries



GISAS project in a nutshell

- Partners:

- Department of Geography, University of Helsinki, Finland
- Jozef Stefan Institute, Ljubljana, Slovenia
- National Board of Education, Helsinki, Finland
- KOGEKA 6, Sint-Dimpnacollege, Geel, Belgium
- Institute du Sacré Coeur, La Ville du Bois, France
- 2nd Lyceum of Larisa, Larisa, Greece
- Széchenyi Ferenc Gymnasium, Barcs, Hungary
- Scientific Public Lyceum 'Piero Gobetti', Bagno a Ripoli, Italy
- Gaigalava Elementary school, Gaigalava, Latvia
- Torsberg Gymnasium, Bollnäs, Sweden

GISAS project in a nutshell

- Aims

- teachers and their students learn to use desktop GIS software and internet-based mapping interface for studying the water quality of local rivers and canals
- produce locally collected GIS databases and materials in different languages for educational use
- to introduce inquiry-based learning approach to schools with GIS
- to study how GIS can be integrated into the schools with different curricula, educational cultures and languages
- interdisciplinary approach to learning

GISAS project in a nutshell

- challenges
 - no supportive curricula available
 - participants from several subjects (languages, geography, biology, social science, physics, etc.)
 - the use of professional desktop GIS software
 - English as a working language
 - long-term adoption of the GIS-supported education in the schools
 - spreading the ideas and practices locally, regionally and nationally

A need for curriculum support to introduce GIS into schools?

- lack of supportive curriculum clearly hinders the goals of educational GIS initiatives at schools
 - investment of time and resources
 - content of the lessons
 - preparation of students for final exams
- GIS implementation model presented by Audet and Paris, 1997 *Journal of Geography*, 96 (6), 293-300
- a desired goal is GIS enhanced curriculum

A need for curriculum support to introduce GIS into schools?

- curriculum support is just one side of the coin
 - appropriate GIS tools, databases and resources must also be available
 - broadly-based group of teachers involved
 - justification of the use of GIS as an interdisciplinary tool
- the use of GIS in education requires a reformulation of the existing teaching and learning approaches
- EURYDICE (2006): to develop a holistic understanding of scientific activities and procedures

Findings and suggestions

- role of geography in the curriculum often defines the framework for the introduction of GIS into schools
- a need to change the marketing strategy
- a narrow focus on an individual subject does not give enough grounding for the intergation of GIS into the educational practices at schools
- GIS and new interdisciplinary curricula?

More information from...

- GISAS book (printed copy and a .pdf)
<http://ethesis.helsinki.fi/julkaisut/mat/maant/sarjat/julkaisuja/a/141/>
- GISAS web site
<http://www.edu.fi/gisas>
- ArcIMS
<http://hmaa04a37.geography.helsinki.fi/gisas/viewer.htm>