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
- 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

- 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
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
  - Széchényi 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 integration 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