GISAS – Geographical Information Systems Applications for Schools

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SUMMARY

GISAS (Geographical Information Systems Applications for Schools) is an educational and research project funded by the European Commission Minerva program during 2003-2006. The project has focused on the incorporation of basic desktop GIS technology into geography and environmental education at the European secondary and upper secondary schools. The project has used water quality as a unifying topic for the seven pilot schools, which have collected local GI databases, visualized their data and analyzed the interrelationships of different variables and map objects on the water quality through inquiry-based learning. The GISAS project has used action research to find out the possibilities and obstacles of using GIS at the European schools. This paper introduces the GISAS project with its objectives, partners, tools, methods and pedagogical framework. The empirical data analyzed in this paper was collected from the pilot schoolteachers with a questionnaire study in November 2005.

KEYWORDS: GIS, secondary school education, action research, European pilot project

INTRODUCTION

GISAS (Geographical Information Systems Applications for Schools) is an educational and research project (2003—2006) funded by the European Commission Socrates/Minerva programme. The project involves 35 in-service teachers and over 220 students from eight pilot schools in Europe. The represented countries in the project are Belgium, Finland, France, Greece, Hungary, Italy, Latvia and Sweden. GISAS project is coordinated by the Department of Geography at the University of Helsinki, Finland.

The pilot schools have used ArcView 8.3. desktop GIS software for creation, management, visualisation and analysis of locally collected databases on water quality of the nearby rivers and canals. The students, together with their teachers, have studied the water quality with biological and chemical methods and located the sampling points with GPS receivers. The desktop GIS software was used for creating new feature (vector objects) layers on land use, drainage systems, wildlife habitats, soils and other geographical variables that may have an effect on the local water quality. The created GI database was studied by overlaying and querying the map layers and by selecting the variables, which best explain the variation in water quality along the studied river, for the final results. GIS was primarily used as a tool for inquiry-based learning at the pilot schools, allowing the students to study their local environment in a new way.

The GISAS project organized both hands-on training and e-learning for the in-service teachers of the pilot schools. The participating teachers were not all from the field of geography but represent physics, languages and computer science, as well. This cross-disciplinary use of GIS provided important findings and results for the project. The teachers disseminated educational materials, exercises, results and innovations at their own schools. Pilot schools cooperated with the municipal authorities and regional environmental agencies and at the same time tried to involve other schools

from their countries into the project. GISAS project operated in close cooperation with the pilot schoolteachers and places emphasis on their feedback and needs in the creation and planning of the educational materials and outputs of the project.

The schools also participated in testing and developing a new educational web-based GIS atlas, produced by the Jozef Stefan Institute in Ljubljana, Slovenia. This learning environment allowed the pilot schools to upload their local databases into the server for sharing the data and maps with the others. They were also able to study the data and maps created by the other pilot schools for educational purposes. The cross-cultural group of schools from different countries and educational settings allowed the project to create a model on the incorporation of GIS into secondary education, which can later be extended to other European countries, too. The know-how and technical preconditions of using GIS in education differed a lot among the pilot schools and teachers in Europe. Availability of resources and in-service training are fundamental issues in incorporating GIS into secondary school education. Different curricula in the partner countries will make the task even more difficult.

The Finnish National Board of Education carried out pedagogical research and support for the GISAS project and was also responsible for disseminating the project outputs, educational model and its activities in Europe and the rest of the world. The outputs of the project will be available in the project web site at http://www.edu.fi/gisas before the end of 2006.