TOWARD THE INTERDEPENDENTAL SPATIAL ANALYSIS AND DESIGN EDUCATION

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1. Introduction

Now, GIS stands for not only capitals of Geographical Information Systems as computer application software but also implication of Geographical Information Science. This new territory, so called GIScience, is related to physical and human geography, cartography, topography, architecture and urban planning, civil and social engineering, landscape and environmental ecology, spatial econometrics, socioeconomics, sociology, statistics, operations research, information and cognitive science, etc., and there is a real need for reinforcement of the mutual cooperation. But we still remain in a situation of highlighting the utility of GIS as tools in individual research fields, and lack comprehensive perspective of their organic linkage.

2. GIScience

GIScience is to quest for a versatile method to store, manage, analyze, synthesize, and transfer spatial information systematically, and to apply this method to various branches of science. Of course in architectural design process, integration of spatial information is increasingly important to meet the complex requirements for our century of the environment, and GIScientific knowledge and skills shall be required of architectural professionals. But many valuable resources are still scattered and bounded in individual departments of universities, although cross-disciplinary activities have expected to been expand and deepen. We have not sufficiently prepared to support advanced educational programs of spatial analysis and design either in the hardware level or in the software level.
3. Educational Foundation

To overcome these problems, the interdepartmental research group is organized to promote GIScience education in the university, and the information infrastructure were improved to serve every teacher and student who wishes to study this frontier. In the new environment, all identified users in the university campus are able to download and install the up-to-date ArcGIS software freely, and get its license without limitation through the wired and wireless network connection. The data clearinghouse, called the Geography Network, is also prepared on the SQL Server, and accessible through the web-interface. This clearinghouse is the repository which collects metadata of spatial information stocks scattered in numerous computers of different departments, and utilized to facilitate search and exchange of actual datasets. These datasets are generally coded according to the national grid system, and difficult to identify without expertise in cartography. But by using the Geography Network, teachers and students of architecture and urban planning can easily refer and gather geographic information related to a planning site.

4. E-Learning

In addition to the physical information facilities, the construction of the web-based e-learning system about GIScience is in progress to be used in interdepartmental curricula. The individual documents, instructions, and assignments used in the many traditional courses are converted to the WebCT environment, which was introduced as the common framework to promote e-learning in the university, and will be reconstructed as the new coursework to be able to use the interdepartmental spatial analysis and design education. The coursework under consideration consists of the following materials, foundation of spatial models, operation of graphic objects, management of spatial database, search and queries in space, data acquisition and transformation, location analysis, network analysis, overlay analysis, three-dimensional visualization and communication, and others. This coursework is also complementary to other design programs in the architecture and urban planning department. The developed e-learning system will be tried and tested in the practice of several departments as a benchmark, and expected to be published like OCW (MIT OpenCourseWare) in the future.
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References


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