
Business Geographic Information Systems

A Course in Business Geomapping

Steve Reames, Ph.D.
Management Information Systems
Department of Management and Marketing
School of Business
Angelo State University

GIS and Business Curriculum

- Less than 10% of business schools have geographic information systems (GIS) available in the classroom for students in any discipline (Murphy, 1996)
 - Few universities offer courses in the application of BGIS as a tool for business analysis (McNally, 1999)
 - Until recently, only a handful of business schools are beginning to respond to incorporating Geographic Information Systems (GIS) into their management business curriculum (Boasson, 2004)
-

GIS and Business Curriculum

- The size of the GIS market –was estimated at \$5 billion in 2002 and will grow to \$30 by 2005 – (U. S. Department of Labor)
 - Globally– GIS market growth in Russia was about 4-5% per year starting from 1998, but in 2002 growth exceeded 50% (<http://gislounge.com/II/gisindustry.shtml>)
 - The numbers alone, highlight the importance of this technology as a business decision support tool like:
 - Marketing research
 - Retail trade area analysis
 - Site selection
 - Real estate development
 - Land use planning
 - Land value assessment
 - Media targeting for advertising
 - Transportation planning
-

GIS and Business Curriculum

Recent advances made by the Open GIS Consortium(OGC) suggest that the powerful distribution of corporate assets utilizing customer relationship management (CRM) systems and enterprise resource planning (ERP) systems will incorporate a standard for enterprise wide geospatial databases (Limp, 2005)

GIS and Business Curriculum

Incorporating the extraordinary power of GIS technology into the business curriculum is such that it is rapidly becoming an emergent requirement in any serious program that deems to be current (Boasson, 2004)

Basic Concept - Students

- Apply to a multidisciplinary business audience with interest in:
 - Data visualization
 - Data analysis
 - Display and create information for planning and decision making
 - Student takeaway:

How to store, manipulate, assemble, and display a map, and extract information from data that were referenced spatially.
-

Basic Concept - Students

- Students must learn to capture data, manipulate data, and manage data that will ultimately support data analysis and decision making (Mennecke, 2004)
- GIS and Internet technologies are moving closer together (Krumme, 2005)

Combined use of Internet and computer mapping, data base-technologies, and location-allocated modeling techniques are particularly important skills for graduating business students involving:

- Real estate
 - Urban demographic
 - Retail
 - Marketing
 - Environmental, transportation, and international trade and investment analyses.
-

Project Objective

- The objective of this project was to develop a business geographic information systems (BGIS) course. The BGIS course provided the students with the knowledge and skills to utilize spatial information in a wide variety of business and organizational applications. Students that completed the BGIS course were expected to:
 - demonstrate understanding of fundamental BGIS principles,
 - be prepared for entry-level jobs or career advancement in BGIS-related fields,
 - develop verbal and written communication skills in presenting BGIS findings, and
 - learn problem-solving skills utilizing problem-solving software.
-

Project Overview

- To develop a course that...
 - Placed emphasis on the interdisciplinary application of this technology to make sound business decisions.
 - The design and development of the course was not to develop BGIS experts, but rather to expose the technology to business students and other majors and to educate them about its use.
 - The focus was on using simplified desktop mapping software suitable for demographic and business analysis.
 - Provide an introduction to business geographic information systems (BGIS)
 - How to use the software to analyze various technical problems in various types of organizations including business, government, military, not-for-profit, and others.
-

Course Development

The course development contains multiple contexts for the student; their pace of development was largely determined by three considerations:

- ❑ ability to structure and manipulate multiplying sources into useful information,
 - ❑ development of computer software to handle different classes of geographic problems,
 - ❑ and prospects for disseminating developments in spatial data handling.
-

Course Development

- During the course development process a decision was made to utilize BGIS as a technology to interpret demographic trends, manage resources, and model trends. Student learned how to manage spatial data within a relational data base management system utilizing hands-on projects. Upon completion of the course students were able to:
 - assist direct marketing efforts, understand distribution logistics, plan merchandising, and develop site selection schemes
 - demonstrate competitive analysis that in turn reduce the competitive threat and enable one to understand the relationship between competitors.
 - pinpoint the a profitable location
 - utilize trade area analysis to understand where customers are coming from
 - demonstrate how financial service organizations analyze property management systems, and to identify regulatory compliance, risk management, target marketing and branch locations
 - introduce distribution planning by effective routing of products from the warehouse to distributor.
 - analyze the demography of any region to ensure a business targeting the right customer base
 - assisted in network maintenance in fields of insurance, municipal planning, disaster management, emergency services, public safety, census analysis, land use profile, and environmental planning.
 - how to lower overhead costs, etc.
-

Course Application

- **The semester was divided into two segments.**
 - **The first six weeks focused on the specialized Arc View 3.3 Business Analysis software.**
 - The Arc View Business Analyst ESRI Business Information Systems Higher Education Master Lab software (25 seats) and was purchased with funds from Higher Education Assistance (HEAF), 2003 for \$4,595.98.
 - **Open lab provided**
 - A dedicated MIS lab with state of the art computers seating 32 was available as an open lab for four hours a week in addition to normal class time. The lab was staffed with both a Research Associate (two hours) and a Teaching Assistant (two hours) to assist the students.
 - **Supplemental lectures**
 - Seven PowerPoint lectures were developed to supplement documentation associated with the BGIS software. Tutorials and supplemental course material (data files, etc.) was furnished on CD ROM). The CD-ROMs were used extensively during the first six weeks of class. After the sixth week students were required to successfully complete three exercises to demonstrate that they have an adequate skill set to proceed.
 - **Second segment**
 - students were divided into groups. Each group was assigned on three case studies. Each group developed three reports for presentation to the class. During the final week of the semester the students were required to present an independent project demonstrating their competency in the software and mastery of BGIS.
-

Course Application

- The course was developed for Internet web interactivity. The syllabus was built as an Internet hyperlinked document and placed on an Angelo State University (ASU) server.

All information, including links to specific downloadable databases, supplemental material applicable to the case studies, and readings from other websites was downloadable from this Website at anytime.

[Interactive Syllabus](#)

Conclusion

- The Association of American Geographers (AAG, 1996) predict that as software becomes more user friendly and on-line data more plentiful, it will be imperative that business students be educated about spatial information and its value.
 - GIS is a computer-based technology capable of running multiple scenarios and options efficiently and rapidly (Boasson, 2004). It assists businesses and governmental entities to make informed decisions and measure the impact of decisions. It is a tool to offers business a decision support tool to improve decision making.
 - The future of GIS in government and industry is clearly dependent on the availability of trained professionals who work at various levels to design, operate and manage the implementation of GIS. As GIS applications become more diverse it will become increasingly important that education opportunities address new demands for education and training. Certificate programs can address this need by linking courses in logical sequences tied to specific objectives.
 - Successful certificate programs must receive guidance and support from professional and academic GIS organizations (Wikle, 1998)
-

References

- Association of American Geographers and BGIS World (1996), *Business Geographics for Educators and Researchers*. Proceedings. Washington DC: AAG
 - Baker and Baker (1993), Market Mapping: How to Use Revolutionary New Software to Find, Analyze, and Keep Customers. NY: McGraw Hill
 - Boasson, Emil (2004). Proceedings ISECON 2004, c 2004 EDSIG Page 1 Boasson, Boasson, and Tastle Sat, Nov 6, 9:00-9:25 Vanderbilt Room.
 - Business Geographics, BGIS World Inc.
 - Chrisman, N. (1997) Exploring Geographic Information Systems. NY: John Wiley
 - Harder, C. (1997) BGIS Means Business. CA: ESRI
 - Krumme, Gunter (2005) <http://faculty.washington.edu/krumme/498/Bus.GIS.html>
 - Limp, Fred (2005) Geospatial Databases Empower Business Decisions <http://www.geoplance.com/bg/2001/0601/0601Imp.asp>
 - Longley & Clarke, eds. (1995) BGIS for Business and Service Planning NY: John Wiley
 - McNally, Mary (1999) Market Mapping: A project to Teach Business Students about Business Geographics http://www.directionsmag.com/author.php?author_id=26
 - Mennecke, Brian (2004) Understanding the Role of Geographic Information Technologies in Business: Applications and Research Directions http://infotoday.com/cilmag/may04/spiegel_kinikin.shtml
 - Mitchell, A. (1997) Zeroing In: BGIS at Work in the Community. CA: ESRI
 - Monmonier, M. (1996) How to Lie With Maps. Chicago: Univ. of Chicago Press.
 - Murphy, L. (1996) BGIS in Business Schools: A Status Report. *Business Geographics for Educators and Researchers*.
 - Sprague, R.H. (1980) A Framework for the Development of Decision Support Systems. *Management Information Systems Quarterly*, 4, 1-26.
 - Turban, E. (1995) *Decision Support and Expert Systems*, 4th Edition, Englewood Cliffs, NJ: Prentice Hall.
 - Wilke, Thomas A., 1998, Continuing Education and Competency Programmes in GIS, *International Journal of Geographical Information Science*, vol 12(5): 491-507
-