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Business Course Featuring GIS Expands Indian College Students' Horizons

By Holly Hitzemann

Abstract

College students at Southwestern Indian Polytechnic Institute in Albuquerque, New Mexico used GIS to analyze economic development opportunities on pueblo and reservation lands. After being exposed to the enterprise analysis capabilities of GIS, students defined a business opportunity for GIS analysis, used the proper GIS tools, illustrated a market area, discussed their findings, and drew conclusions regarding the viability of their selected economic development idea. The 40-hour class used the Business Opportunity Analysis Featuring GIS and Census textbook to guide students through market area/ site location analysis, demographic profiling, geocoding, map preparation and target market advertising using Business Map, Community Tapestry and ArcGIS 9. All students grasped the concepts and related its importance to their careers and the potential prosperity of their tribes. Future plans include offering this course in community college and business incubator curriculums statewide.

Introduction

An ESRI workshop in Albuquerque New Mexico spawned a friendship and collaboration between Southwestern Indian Polytechnic Institute's (SIPI) GIT Program Coordinator, Denise Chavez, and Holly Hitzemann, the business incubator project consultant for a New Mexico economic development non-profit, WESST Corp. WESST Corp consultants had attended the 2004 workshop to glean additional insight into the business applications of ESRI's software for novice business users. During the workshop's question and answer period an animated discussion ensued as attendees discussed the current difficulties to actuate a smooth geocoding assignment. Subsequent to the session, Ms Chavez invited WESST Corp to visit her campus and discuss further their plans to bring GIS business applications into mainstream entrepreneurial and economic development adult education through its business incubator project.

The outcome of these meetings was a formal contract with Ms Hitzemann to develop and teach a summer course which highlighted GIS software tools, as well as basic business and economic analysis. This class would be offered within the GIS department to students who had completed at least two introductory GIS classes. The condensed

summer session would also challenge students to derive an economic development project on Native American land and methodically analyze the merit of their proposed business opportunity. Secondary course requirements were to expose student to business GIS as a career path, provide exposure and use of on-line business analysis tools such as census, ESRI's Business Analyst on-line service, and key demographic and market study sites, and produce a compilation of their own research at class end using power point.

Instructional Design/ Methods Employed

The 2005 summer session course held in SIPI's GIS computer lab was delivered over a one week period. The eight hour instructor led days were segmented into morning lecture, computer labs, on-line research, guest lecturers, and student discussion. Using the text developed for this course by Ms. Hitzemann, *Business Opportunity Analysis Featuring GIS, Census and Planning,* students were first tasked to select one of two geographic study areas and then identify a potential business opportunity to site on their selected site. The study areas were specifically chosen for this course: one a rural setting and the second a suburban fringe site. These locations mirror the majority of Native American lands available today for economic development.

The second and third course days were spent in lecture and discussion of basic business analysis and marketing. The definitions of market and trade areas, demographic profiling, census tracts, competitive analysis, and both primary and secondary market research were discussed and exemplified. The importance of geography in the access of employees and vendors, as well as transportation routing was also highlighted. In lab, students applied the lecture topics to on-line and software aided exercises with ESRI's Community Tapestry, US Census, and ESRI's ArcView9.1 for geocoding and mapping. Two quizzes allowed for re-examination of student grasp of material presented.

Throughout the introductory material, students followed a generic example of business opportunity and site location analysis through the mock business, "Dotty's Daycare". The "Dotty Daycare" case study allowed for real proofing of the tools and material presented. The data sets for the case study were created for the Albuquerque area to make this study provide a sense of actual, real time research. A prior case regarding a potential restaurant in Las Cruces, New Mexico was also presented by a local marketing consultant to allow students to preview the expectations of their final power point project. Purposely embedded analysis errors in this presentation provided a fun and lively exchange with the consultant and allowed students to feel a growing sense of expertise.

Guest lecturers were brought in to discuss GIS business career options, as well as power point presentation tips. A banking expert and case study on new branch or ATM location was also introduced and discussed.

This work laid the foundation for the student to spend up to four hours on days four and five in preparation and research for their business opportunity presentation.

Course Outcomes

The final presentations by the student demonstrated their grasp of the material and ability to honestly reflect on the analysis of their peers. Every business opportunity presented was intelligent and well suited to the study area selected. The presentation on placing a Wal Mart on the urban fringe site was astute, practical, and honed in well on the unique "travel to" consumer profile of adjacent pueblos and tribe.

Most enjoyable were the "expert" criticisms aired by students subsequent to each presentation. Nearly all students were able to recognize when additional market area trade analysis was required, or demographic profiling was incomplete. Further, students well grasped the import of siting issues with relationship to access to employee centers, vendors, and shipping.

Approximately half the class commented on class evaluations that they would pursue a business GIS career route. The other half commented that they would bring the course material to their tribal or pueblo council and discuss possible business opportunities within their respective lands.

Discussion

Subsequent discussions with Denise Chavez, SIPI's Director of GIS determined that the *Business Opportunity Analysis Featuring GIS, Census, and Planning* course should be offered in the college's regular curriculum and reviewed by the business department.

It was also decided that the future course should have an expanded internet data searching section, and additional lecture, exercise, and case studies on classic economic development. A semester long course was requested, with amendments to the summer session to accommodate this format.

The key to the course success appears to be its culturally relevant exercises and assignments. It is therefore suggested that incorporation of a similar course into other college arenas prepare lab and case studies which directly relate to their local geography and market areas. Further, the course is benefited by the presence of guest speakers. It would be appropriate in future offering to include a speaker from the local economic development department, as well a one from a chamber of commerce or tribal council. Further modifications may be to use ESRI's Business Map in lieu of Arc View 9.X in those markets where the majority of students are encountering spatial analysis for the first time.

Acknowledgements

The author would like to acknowledge the support, friendship, and editorial suggestions provided by Denise Chavez, SIPI's GIT Program Coordinator. Denise's foresight as to

the value of a hybrid business and GIS course not only demonstrates her grasp of the marketplace, but also the needs of her students and community. Further, Dr. Darlene Collins provided well needed instructional design support as the author toiled to write this first collegiate text which combined business, internet and GIS tools. Darlene's steadfast belief that a course of this nature could be developed provided needed motivation during its five month development.

Kevin Hodsen and Paul Bailey from ESRI have steadfastly provided support, assistance in understanding the inner workings of geocoding, and discussion of the vast potential of spatial analysis for business applications.

The author also thanks WESST Corp for allowing demonstration of geocoding results over time using their database. Clearly, WESST Corp incubator which will feature ESRI technology will allow its tenants access to tools for sustainability in this global marketplace.

End Notes

Holly Hitzemann The author of *Business Opportunity Analysis Featuring GIS, Census, and Planning,* Holly Hitzemann, is a business development and market research analyst specializing in engineering, government, and business to business projects. She founded Great American Stock in 1984 and built that firm into a leading imaging provider, expanding sales into 64 countries. Hitzemann studied pre-med at Revelle College, USCD (University of California at San Diego) and subsequently earned a Masters in Business. For six years prior to founding her firm, she worked in Special Projects and Business Development for General Dynamics and Systems Development Corp. She was also instrumental in creating curriculum for certification in science and technology communication for UCSD. Hitzemann has been referenced in numerous leading medias such as Wall St. Journal, and Inc. cited her as one of the six entrepreneurs featured in *The Business Owners Guide to Personal Finance.* She has recently sold one of her companies and is pursuing a degree in Environmental Science at the University of New Mexico. Hitzemann is Vice Chair of the CHCA Civic Association, and co-leader of Construction and Development fore WESST Corp's future business incubator in downtown Albuquerque which will be LEED [TM] certified.

Denise Chavez is currently the GTP Coordinator for the GIT Program at the Southwestern Indian Polytechnic Institute. Her responsibilities include school growth and development and program coordination of the curriculum for new Geospatial Technologies. She has taught Advanced GIS and GPS theories and methods. She was a Planner for the city of Rio Rancho, NM where she coordinate the planning, implementation, and maintenance of the City's enterprise-wide Geographic Information System (GIS); and was the Project manager for City-granted GIS contracts, and the Grant

Administrator for State-funded GIS grants. She has a Masters Degree in Community and Regional Planning from the University of New Mexico and her research interest are in applying GIS and Remote Sensing to the study of Urban Heat Islands, particularly Albuquerque and the Southwest.

Darlene D. Collins is a Certified Performance Technologist (CPT). She has a B.S. in Education) and an M.S. in Management . She has successfully completed all course work and comprehensive exams and is expected to complete her PhD in Education from Capella University in Dec 2006. She is the Founder of HHPA Consulting and Coaching, holds an Adjunct Instructor position at ITT Tech, and is an on call consultant for the University of New Mexico. She worked at Intel for 5 years doing training and change transition management. After 11 years in the USAF as a training and logistics officer, she spent 6 years as the general and customer support manager of a local marketing firm. Her current projects include socially disadvantaged economic development co-ops and advanced business education program development or adult learners. She enjoys making learning fun and her enthusiasm, vitality, and inspiration are interlaced into her intriguing story telling presentation style.

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Appendix – Excerpt from *Business Opportunity Analysis*
Featuring GIS, Census and Planning – Course Overview

Appendix

As Of This Reading...

YOU ARE ENTREPRENEURS!

Your Mission:

**Identify, Research, Analyze and Present
A Viable Business Opportunity**

Appendix

OVERVIEW

The identification of a viable business opportunity requires a systematic review of both the *microenvironment* and the *macro environment*. The *microenvironment*, often referred to as internal factors, includes *those business elements within your control* such as your location, employees, product or service offering, vendors and suppliers, pricing, and promotion strategies. The *macro environment* , also referred to as *external factors,* includes forces *outside your control* such as competition, demographics, local, regional or global economics, natural resources, social, legal or political change, and technology.

These sessions will provide an overview of the research and planning process needed to adequately understand both the microenvironment and the macro environment in which your individual business or economic development opportunity will reside. In a sense, the process is a test: the best opportunity will be able to well answer the following questions.

Does the product/service address a real existing need or niche?
In either the existing or future marketplace?

Who exactly will be the firm's customers and potential customers?

What kind of people are the customers? What is their demographic profile?
Where do they live?

Can the target market (the customers most benefited by your firm's product or service) afford to buy your product? Will they?

Is the firm **located to serve,** i.e. located at the convenience of the target market?

How does the firm's offerings compare with the competition? How will it differentiate from the competition?

How will the firm promote its existence efficiently and affordably to the target market and other similar market segments?

What external forces may affect the firm's sustainability, profits, or existence?

Are there legal, financial, environmental, political, or technological barriers to success?

Does the firm have internal process to measure, analyze, and act upon changes in the microenvironment and the macro environment?

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Research Project One

We will answer these questions for a hypothetical business opportunity you will identify in one of two study areas. The project areas are identified on the following maps. The maps identify a specific area, marked by crosshatch, in which you may locate your firm generally. Other projects rules include:

- o The business you select must be a logical fit within the market area.
- o You must identify specifically the street or block on which you will locate within the study area
- o The project research results must be presented in power point per format guidelines/evaluation provided.
- o All cited trade, economic, census, and financial facts must be annotated by source.

Note: You will present a preview of your business opportunity in class, receive constructive criticisms, and then present the power point again for your mid term. During the preview presentation, your classmates will act as a pueblo council reviewing your general ideas. During the midterm presentation, the class will critique the presentation as bankers or financial investors in the proposed project.

Research Project Two

The second research project, which will also act as the final exam, will ask that you create a presentation which markets an entire pueblo or reservation area of YOUR CHOICE. Your job will be communicate the assets of the area, and identify to a global market why to locate an industry within this geography. You will be acting as the **economic development** arm of this area. The presentation format will be similar to that of the first research project, with the following exceptions:

- ☐ The hypothetical financial projections should either be for proposed industry solicited or proposed venture.
- ☐ The presentation will feature the assets of the entire area.
- ☐ Competitors need only be cited if it is logical – internet or out of area competitors should be cited when relevant.
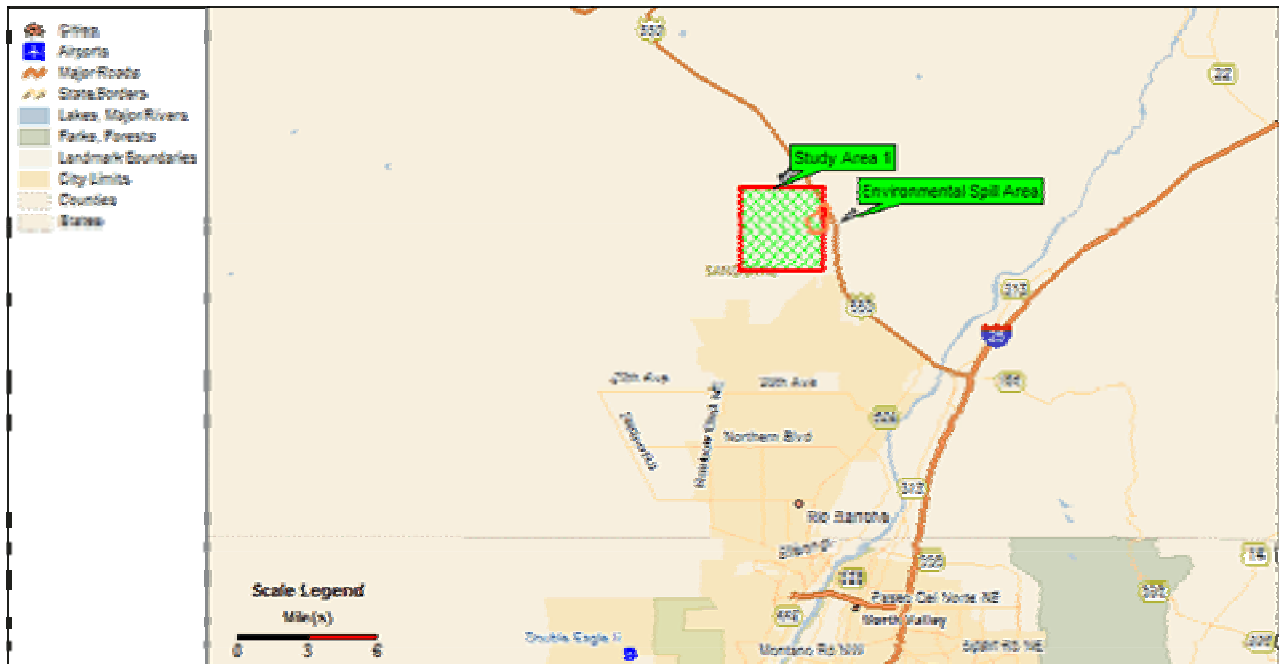
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STUDY AREA ONE

Area Notes:
Located just north of the city of Rio Rancho in Sandoval County
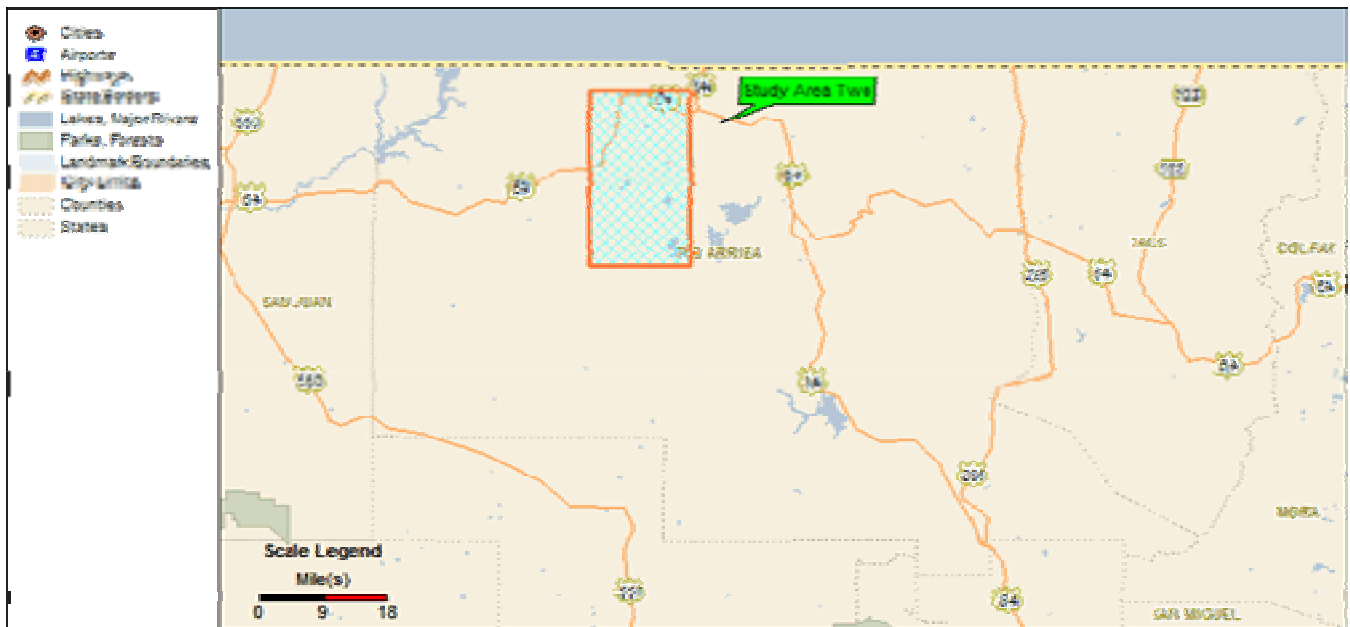**Note environmental spill is a superfund site – clean up is underway.**

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STUDY AREA TWO

Area Notes:
Large rural area near numerous natural resources and parks

Appendix

Exercise 1.1 Select Study Area of Choice and Two Possible Business Opportunities

Study Area One and Study Area Two present challenges to an entrepreneur. In Study Area One, a location north of a rapidly growing city, we see not only the challenge of deciding on a viable opportunity which can grow with the city, but as well access issues and an environmental clean up barrier on a portion of the area. Study Area Two is seated in a more rural environmental with numerous outdoor destinations nearby. Access will again be an issue to consider, as well as the potential need to draw upon customers *far away* from the business site.

First, review the two study areas and decide which one is most attractive to you to further study. Then, consider the following list of business opportunities to investigate. You may select a business opportunity outside this list.

> It is entirely possible that you may investigate a business opportunity only to find that it will not be viable in your area! This is a very acceptable outcome and in fact justifies this entire course study.

Pet Store
Animal Clinic
Automotive Repair
Agricultural Equipment Rental/Repair
Gas Station
Convenience Store
Grocery Store
Hotel/Lodging
Eatery – Fast Food
Eatery – Sit Down Concept
Eatery – Specialty
Taxidermy
Fishing/Hunting Supply
Cellular Phone Store
Retail – General Merchandise
Retail – Specialty – Clothing
Retail – Specialty – Book
Retail – Specialty – Artisan
Retail – Specialty – Boating
Retail – Specialty – Lumber/Hardware
Retail – Specialty – Other
Hair Salon
Legal Clinic
Medical Clinic
Amusement Park (specify)
Video/Gaming Store

Computer Store/Repair
Daycare
School - Private
Instruction – Specialty
  - Karate
  - Driving
  - Other
Energy Provider
  - Solar
  - Natural Gas
  - Other
Agricultural Supplies
Satellite TV Outlet
Video Arcade
Housing - Custom
Housing – Mobile Homes
Housing - Other
  Construction - General
  Construction
  - Electrical
  - Cement
  - Other
Restaurant Supply
Dentist
Office Supply
Trucking/Transport

Appendix

Reading: *GIS Means Business* - Introduction

Questions:

1. Why would the largest hardware store in Van Nuys, CA NOT be in the blocks of highest market potential?
2. Review the dot density map for Hispanics in Austin, TX. Would a decision to locate in areas of highest Hispanic density based on this map be logical?

Exercise 1.2 Identification of Research and Data for Business Opportunity Project

Think about your study area and the business opportunity you chose to investigate. This checklist should guide your focus as we move forward in discussion of data mining and census. As the study progresses, check the optimum data sets you will acquire to well research your project. Obviously we may not have time to acquire all the information you need during our study – but it is important to understand what the requirement would be in a real life study.

Step 1. My opportunity analysis is_____

Step 2. A plan of action to support the research is: _____

_____

_____

Step 3. Using the list below, check the data that should be acquired.

☐ Investigate the general geographical area (study area) to locate or expand – acquire a base map of transportation networks, landmarks, and streets.
☐ Preview the demographics of the study area using census data and/or online Community Tapestry reports the following variables (minimum)
   ▪ Population Total
   ▪ Households and Families
   ▪ Population by Age
   ▪ Population by Race/Ethnicity
   ▪ Home Value
   ▪ Households by Income
   ▪ Consumer Expenditures
   ▪ School age children
   ▪ All Population parameters – 2008

☐ Narrow focus to those zip codes or census tracts which best match our assumed customer profile

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- ☐ Identify the market needs not served in the study area via mapping of competitor locations and identification of "gaps" in coverage
- ☐ Review industry trend data to identify where the market is and where it is headed.
- ☐ Review regional or study area reports to reveal significant changes in the *macroenvironment* such as building expansions, base closings, convention center placement etc.
- ☐ Review retail MarketPlace reports on consumer spending
- ☐ Identify market area boundaries
- ☐ Review national and local trade association data or attend meeting regarding trade outlook in our specific business area
- ☐ Create and administer *primary market research* i.e. focus groups or surveys to identify product service preferences or customer locations.
- ☐ Organize all *secondary research data* i.e. data that already exists into manageable sections for analysis and check that map data is in format for use.
- ☐ Locate base map or data on shopping centers or other relevant business
- ☐ Locate base maps for natural resources or natural attraction (parks) sites
- ☐ Locate base map for city planning and zoning
- ☐ Locate base maps or site for commercial building availability
- ☐ Identify environmental hazards
- ☐ Identify utilities
- ☐ Create databases for data not found during secondary research. An example would be scouring the yellow pages for the listing of all competitors and hand creating a database (one can also purchase this data)
- ☐ For start ups seeking to migrate from a home office to a commercial location, creation of an existing customer database.
- ☐ Acquisition of traffic counts

Step 4. Analyze the Data. What specifically should you be looking for in the data?

_____
_____
_____

Step 5. Presentation. What data or maps should you consider producing to present?

_____
_____
_____