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Takin' it to the Streets: Quantitative Literacy, Public Policy, and GIS in a Service Context

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--Jeremy Donald, Reference Librarian, Trinity University, San Antonio, TX

Abstract

Improved information literacy and quantitative literacy can help individuals overcome the information costs that discourage political participation and policy debate. Using place and public data as a touchstone, the students of a college political science course partnered with a group of middle school students to apply technology to a shared project. Together they learned techniques for representing demographic and geographic data with a variety of media, including Web 2.0 tools and GIS software. They created an online site designed to address the information needs of the local community, with a focus on promoting users' information and quantitative literacy and encouraging and facilitating the use of public information.

Co-taught by a political science professor, a reference librarian and a middle school instructional designer, the course depended on placing students from both groups in control of digital media, and on making them information and numerically literate in order to be responsible producers of information in the online environment. Outcomes centered on achieving competency in applied information and quantitative literacies, and were measured by tests, project performance, peer-evaluation. This poster will use photos, charts, and examples of digital content created by the participants to present the design and results of the course.

Pedagogy

Problem Based Learning — Community Based Learning — Service Learning/Learning by Teaching — Experiential Learning

Information Literacy

Foundation:

GIS as new media (Sui & Goodchild) → Information Literacy Standards

Participatory GIS (Elwood) → Community of Practice

Practices:

Data Consumption — Data Production

Collaboration

Field Data Ground Truthing — Primary Source Research — Course Readings in Demography, Geography

GIS as sophisticated information tool ⇄ Expanded Understanding of the Information Cycle

Outcomes

Information Literate Behavior

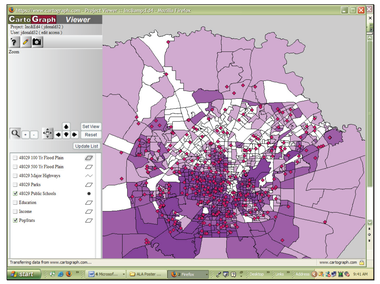
Participation in a Professional Community of Practice

Service Partnership: Learning Through Teaching

Each Trinity University student was paired with a Carroll Middle school student. Shared assignments included mental mapping of the Carroll Academy neighborhood and exploration of Census data. Parallel assignments included identifying a local issue and gathering research and data on it, and using digital tools communicate the issue and relevant data to the public.

Students from Henry J. Carroll Middle School pair up with Trinity University Students to explore Census data for their neighborhood and for Bexar County.

Partner Teams combined their skills to address a research question posed by the Carroll students: Do income and educational attainment in Bexar County, TX, follow a spatial pattern?



Use of the browser-based GIS program allowed Trinity students to prepare maps and data to use in teaching sessions with Carroll students, bringing their demographic knowledge from their course readings to bear on the inquiry-based approach used by the middle-school students.

This way, students could explore a variety of public data in a spatial format without having to master or own expensive and challenging GIS software.

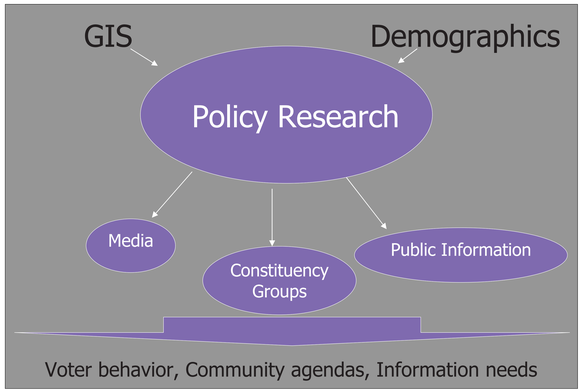
Data Sources

United States Census 2000

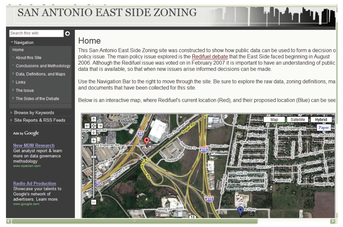
U.S. Census Website and Map Viewer

Texas Railroad Commission

City of San Antonio Map Viewer



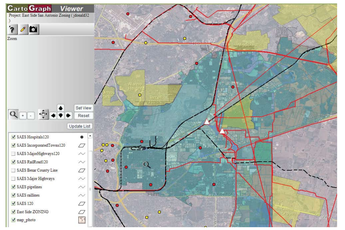
The Web Project



Teams used free website/wiki creators to communicate their reports, data, and maps to the public, and to share annotated links to public information, and contact information for key players. An interactive map viewer designed to allow users to create their own data-based maps was included, allowing users to explore quantitative data in a spatial context.

The interactive viewer (Cartograph.com) allows site visitors to re-create the static maps offered on the website, or to explore the relevant data for their own questions and create new symbolization of data layers.

Once a new map display is created, a screenshot can be taken, and the map used to communicate public data in a spatially precise—and ideally—a numerically literate way. Experienced users can download the GIS data stored on the Cartograph site if they choose.



Student evaluation comments

Were you satisfied with the outcomes of this course? Please explain.
Yeah, overall the experience was very good, and I learned a great deal throughout the course.
Yes. I now have an understanding of the types of questions I can answer and how to go about creating useful geographic data.
No if the east side wasn't focused on it would be more interesting
I did learn a lot about how to find data that is available. I am still unsure about how to use it effectively to make actual arguments.
Yes. I really enjoyed the final project. It was exactly what I wanted.

What changes or improvements would you recommend for how the course was planned?
Less having to do with the Carroll Students, It seemed disjointed and kinda of just thrown in there.
Syllabus, consolidate communications and online worksites.
More time for the final project
With the Carroll kids, I would have a project that was more interesting for the kids. I would have liked to have continued the mental map project to a more detailed level, possibly just making a wall sized map of the Carroll neighborhood. It could include pictures, information, and some basic demographic data that pertains to kids (age, education, total population, etc.).
The one thing that probably could be dropped was the Carroll students. While I enjoyed working with them, it was disappointing that we couldn't see their presentation.

What did you find the most challenging about this course?
The learning of GIS and all it entails!
Learning what was necessary to get along with ArcMap.
Learning GIS skills
The most challenging part of the course for me was learning how to use the ArcMap software. I was not aware that this course was so software intensive. The book was also very boring.
The GIS work was tough, but I really enjoyed it a lot (the most).

Selected References

Anonymous. (2006) Teaching by doing: PPGIS and classroom-based service learning Viewed online May 11, 2007 http://www.urisa.org/publications/journal/articles/teaching_by_doing_PPGIS

Association of Research & College Libraries. (2000) Information Literacy Competency Standards for Higher Education. Viewed online May 12, 2007 at http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.htm .

Carver, Steve; Evans, Andy; Kingston, Richard. (2004). Developing and testing and online tool for teaching GIS concepts applied to spatial decision-making. *Journal of Geography in Higher Education, 28*(3), 425-436.

Drennon, C. (2005). Teaching geographic information systems in a problem-based learning environment. *Journal of Geography in Higher Education*, 29(3), 385-402.

Eastman, W, Dean and McGrath, Kevin. (2006) Encouraging civic virtues: a collaborative model developed by a teacher-librarian and a classroom teacher. *Knowledge Quest*, 34(4), 28-31.

Elwood, S. (2006). Critical issues in participatory GIS: deconstructions, reconstructions, and new research directions. *Transactions in GIS: TG*, *10*(5), 693-708.

Huwe, T. (2006) Breaking into communities of practice. *Computers in Libraries, 26*(5), 22-25.

Lloyd, A. (2005) No man (or woman) is an island: information literacy, affordances and communities of practice. *Australian Library Journal*, 54(3), 230-237.

Jablonski, J. (2004). Information literacy for GIS curricula: An instructional model for faculty. *Journal of Map & Geography Libraries,* 1(1), 41-58.

Sui, D. and Goodchild, M. (2003). A tetradic analysis of GIS and society using McLuhan's law of the media. *The Canadian Geographer*, 47(1), 5-17.

Wenger, E. (1999). Communities of practice: learning, meaning, and identity. Cambridge University Press 336p.

Wong, S and Chua, Y. (2004). Data intermediation and beyond: issues for web-based PPGIS. *Cartographica 38*(3&4), 63-80.

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