

Visualizing Our Futures: Using Google Earth and Google Maps in an Academic Library Setting

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Introduction

In October 2011, it was announced that Google Earth had just achieved one billion downloads.¹ This remarkable statistic was even more profound when one considered that Google Earth and its sister application, Google Maps had only been available to the public since June 2005. These facts also highlight what an enormous impact Google Earth/Maps has had on the way people now utilize geographic information. Along with its free availability, what has especially driven this Google Earth usage is its ease of use. Users can now search for a place, as well as create, visualize and share geographic information all through one powerful visualization tool. For example, researchers can now bring up a map with air photos or satellite imagery of their study site online at no cost and annotate it with their own sketches, web site links, photographs, notes, and videos. This user-generated map can then be shared with fellow researchers online through a Google Maps account, or sent via an email to them and viewed through their own Google Earth application.

As GIS Librarians working in an academic environment, the authors were quick to recognize the potential of Google Earth and Google Maps as geographic visualization tools. With Google Earth's free availability and easy learning curve, a researcher now had a new medium to communicate their work,

perhaps even opening up such research into new avenues of inquiry. Along with developing workshops and user guides for utilizing Google Earth for visualizing research, both authors have been instrumental in promoting Google Earth and Google Maps to their respective faculty and staff as both a research and instructional tool. For example at the University of Toronto Mississauga, Google Earth was introduced into a "Introduction to Classical Studies" course and engaged the students to learn about classical sites from the ancient world, such as Pompeii, and the role of geography in their history. Students were able to make maps and "mashups" in Google Earth creating visual presentations that included images, videos and text about their particular sites. At the University of Waterloo, Google Earth became a central resource for the students and instructor in the Recreation and Leisure Studies course "Urban Recreation". The students used Google Earth to discover recreation opportunities in the urban setting. Using the features and tools available to them, students quickly learned about their urban surroundings and created maps to show the connection between place and space.

Background Research

As part of their work with Google Earth, both authors researched what other Libraries were doing with Google Earth and Google Maps technology. They

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performed a literature search which turned up very little in terms of how other academic libraries or librarians were using Google Earth.² Next, the authors reviewed many Canadian and American academic library websites to see if they were promoting Google Earth or utilizing the technology in some way.³ While an environmental scan of websites was more fruitful with the discovery of several academic libraries using the technology to promote access to digital map and aerial photo resources, the authors still felt that there was more Google Earth activity taking place in academic libraries.

Research Survey

To obtain greater insight into how Google Earth/Maps were being used, the authors soon realized that they needed to ask academic librarians directly if they used the technology and for what purposes. To do this, the authors put together a set of survey questions aimed at the academic librarians, especially those who work with map collections, Geographical Information Systems (GIS), and or Geography/Earth Science Subject collections. To reach these groups of librarians, the survey questionnaire was distributed over a selection of specialized listservs, including Maps-L, GovInfo, GIS4LIB and CARTA (Canadian Maps & Air Photo Systems Forum). As the authors were also members of the Association of Canadian Map Libraries & Ar-

chives (ACMLA) and the Western Association of Map Libraries (WAML), the survey was also circulated on their “Members Only” listservs of these associations.

In terms of survey length, the authors chose to keep the survey brief, with only 20 questions. These consisted of six yes/no questions, seven multiple choice, and seven short answer. The survey was then distributed on Survey Monkey for two months from December 2010 to the end of January 2011.

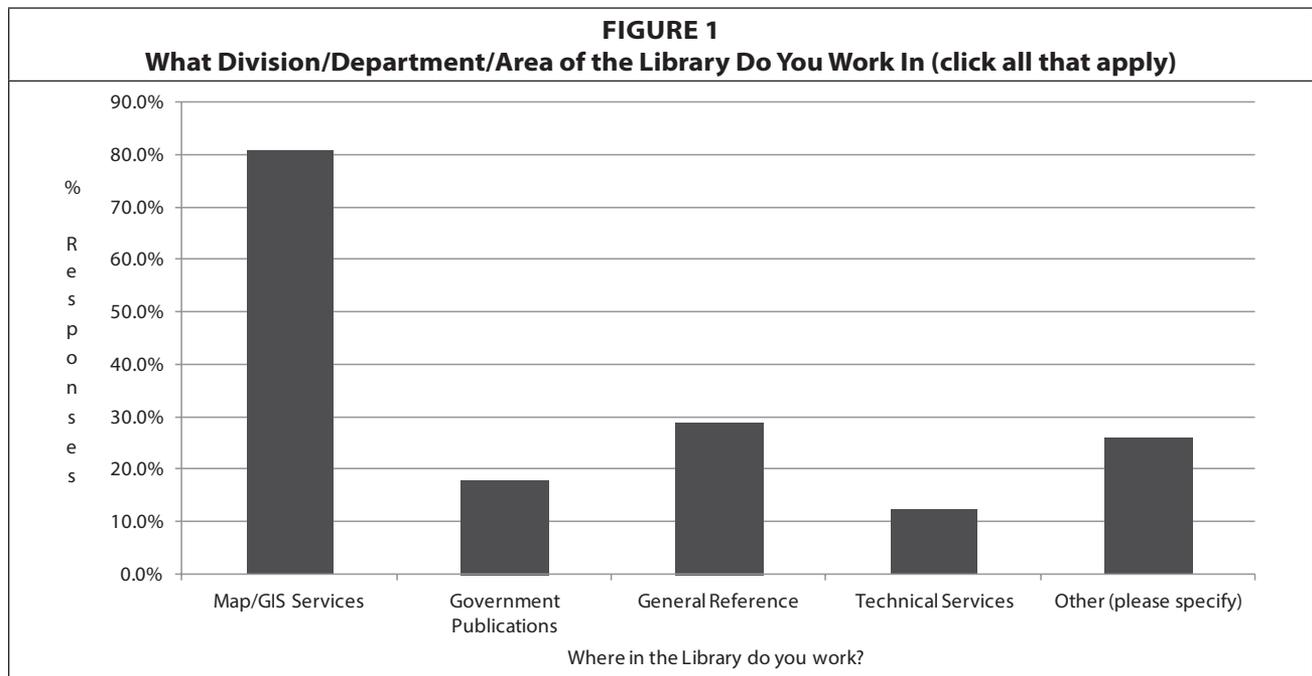
Questions & Responses

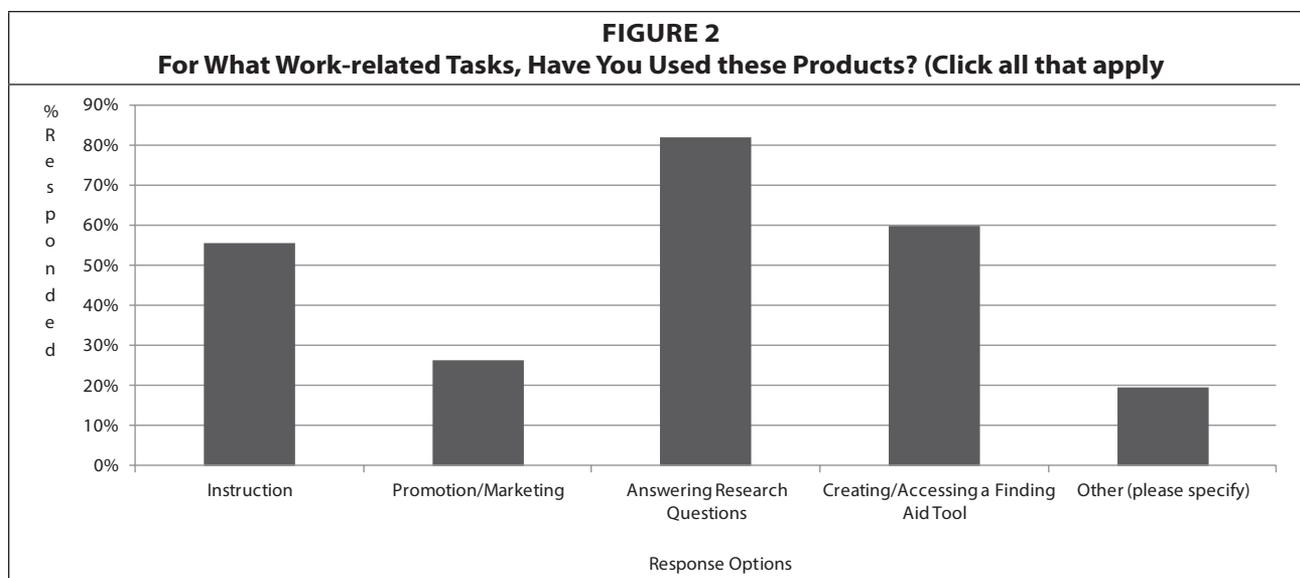
Thanks to some reminder emails and due to the fact that the survey was available over a slower period of activity in academic libraries, 83 responses were received from Canadian and American Librarians and Library Staff.

Survey Section One: “You and Your Library”

The first section of the survey included two questions that focused on the respondent’s position title and their role within their academic library.

As was anticipated, more than half of the respondents indicated that they were a Librarian, with the vast majority of them indicating that they were a “GIS Librarian” or “Map Librarian”. Other titles included “Government Documents Librarian” and “Special Collections Librarian”. Seventeen responses also came in from GIS Specialists, Library Technicians and Map





Assistants. Twelve responses also came from Library Administrators, Directors, or Department Heads. Unfortunately, the survey did not include a write-in area in this section to find out how these library leaders were incorporating Google Earth as part of their responsibilities.

Interestingly, it was found that 81% of respondents worked in a “Map/GIS Services division, with only 29% indicating “General Reference”. Other areas listed included “Data Services”, “IT”, and a “Center for Digital Scholarship”. One group mentioned being part of a “special project” independent from the campus library, but that they deposit their research data inside their Library’s Digital Collections. Likewise, several responses actually came from non-Library employees, with staff indicating that they worked for the Geography or Environmental Science Departments on their campus.

Survey Section Two: “How are you using Google Maps/Earth in your work?”

For the next set of questions, the authors wished to learn how users were taking advantage of *Google Earth* and *Google Maps* in their Library related activities. Users were provided with a list of tasks in which respondents could check off all that applied.

These included “Instruction”, “Promotion/Marketing”, “Answering Research Questions”, and “Creating/Accessing a Finding Aid Tool”. There was also an “Other” option which allowed a fill in answer.

Interestingly, the results indicated that 82% of respondents used Google Earth and Google Maps

to answer research questions; 61 % used the tool as a finding aid resource for maps and aerial photos; 56% for library instruction; 27% for promotion/marketing of Library collections; and 20% listed “Other” activities. For “Other”, respondents listed a wide range of interesting tasks from geo-referencing map images, mapping digital media, and creating learning objects for course assignments.

Survey Section Three: Library Instruction using Google Earth/Maps

The authors both believe that Google Earth is a powerful instructional tool. Its visual capabilities, ease of use, and sharing/exporting capabilities make it an ideal platform for engaging students (and other library staff) in geographic information and education.

As the authors have enjoyed some success in using Google Earth for instruction at their respective institutions, they were somewhat surprised by the survey results in this section. One statistic which particularly stood out for the authors was that only 28% of respondents had a map, spatial, or geospatial literacy policy in place at their institution. Moreover, only 31% had even utilized Google Earth or Google Maps in a classroom environment.

Despite the relatively low number, the authors were encouraged to see how it has been rolled out in university classrooms across the North America. For starters, Google Earth is being used at all levels of a university education from freshman to graduate level. Moreover the frequency of instruction and number of

courses peaks in the fourth year of studies, which is when students would most likely be looking to stretch the visualization, sharing and mash-up capabilities of Google Earth as part of their research dissemination.

In the survey questions, the authors asked for some more details about the Instruction Sessions that were offered. Several good responses were received including “Environmental Awareness education”, “Improving Digitization Skills”, “Beach resort Analysis”, “Arctic Studies”, and “mapping events from James Joyce’s *Ulysses*”.

The authors were also curious to know if the growing ubiquitous of Google Earth/Maps technology had led to additional Library staff training in the use of GIS software/data or raising Geographic awareness. Interestingly, there was an almost even split amongst library respondents with 51% replying “No” and 49% replying “Yes” to the question.

Survey Section Four: Promotion/Marketing Usage of Library Services using Google Earth/Maps

This section of the survey contained questions examining how the Library was using Google Earth/Maps for the promotion and marketing of its services and collections. When researching into the use of Google Mapping products on Library websites, the authors had discovered that many had utilized the Google Maps API code to embed a Google Map into a website showcasing where the Library is located on campus and also to enhance the access to digital and paper bound collections.

Despite the prevalence of the Google Maps API, the authors were surprised to find that only 45% of respondents had actually identified this usage. When asked a follow up question about Google Maps enhancing their services, many agreed that it had and were looking forward to doing more with the technology. Many respondents found that Google Mapping tools, added context to their collections, making them more accessible and fun to use as well. Some cited Google Earth as bringing a “value-added” piece to their service and collection offerings.

In this section of the survey, the authors also asked if the Library was providing support to the wider campus community in using Google Earth/Maps (not counting instructional collaborations). Many indicated that they were not leveraging this expertise outside of the library, although some did note they were managing Google Earth Pro licenses across their campuses.

Survey Section Five: KML Collections

Keyhole Markup Language files (KML) are digital files used in Google Earth and Google Maps. These files may be imported into Google Earth to create dynamic maps. Moreover they can be also created and exported for the purposes of sharing maps, points of interest, and other information with others. KML files are a common format used by map and GIS users and they have become a popular format type to download from data portals. Since more and more library users are creating and downloading KML files, the authors wanted to find out from respondents if they were familiar with KML files, and if so did they create their own KML files.

When asked, 64% of survey respondents indicated that they did work with KML files, with 85% claiming they created their own for use with Google Earth in courses..

As a follow up question, the authors asked if these Library generated KML files were listed and made accessible as part of their Library’s geospatial data collections.

Impressively, 30% of respondents indicated that they did provide access to these files as part of their library’s collections, with almost all being downloadable from their Library’s website.

Survey Section Six: Other Online Mapping Tools

As Google Earth is more of a geographic visualization tool, some users may turn to more advanced GIS mapping applications for analysis, and modeling functions. The authors also believe that those with an interest in Google Earth are also likely to use other geographic software products. As such, the authors were curious to see what other GIS or Digital Mapping Software were in fact being used in Libraries.

With many North American campuses being long time subscribers to its ArcGIS products, it was not surprising to find that the results indicated that the Esri family of GIS software was most commonly used. Other responses to this question included use of Map-Info, Bing Maps, OpenStreetMap, and OpenLayers.

Conclusion⁴

Based on the survey results, Google Earth and Google Maps are certainly being used in academic library environments for a wide variety of purposes. Nevertheless, it seems that the majority of use still remains related to Geography related activities, be it collections

management and access, or instruction in Geography or Geology courses.

The authors feel that Google Earth and Google Maps can be used in many more subject areas, apart from Geography, and that many more librarians and library staff can take advantage of its rich resource of information and multimedia tools. For example at the University of Toronto Mississauga, students taking “French as a Second Language” (FSL) course utilize Google Earth not just for the information database locating French language libraries, restaurants, and community centres, but also as a multimedia presentation tool. Students can showcase their research and “tour” through a Francophone country while they present orally to classmates in French. Likewise, at the University of Waterloo, many students use the application as a presentation tool, importing slides over the surface of the virtual earth. They also take advantage of the html supported platform, creating customized graphs, charts, screen overlays and overall offering a very dynamic exhibition.

Examples such as these are becoming increasingly common, especially when one looks at social media such as the *Google Earth Educators Blog*.⁵ For the next steps, the authors would like to explore how non-Geography and non-Geology librarians are using Google Earth and Google Maps in their work, particularly in areas of library instruction and information literacy. Another area worth exploring is how Google Earth and Google Maps have impacted the work of staff working in public libraries and their library users are interacting with the technology.

The potential uses of Google Earth and Google Maps in academia is never-ending. Some use it for air photo interpretation like locating vacation spots, some use it for researching social and historical information, and others use it very successfully as simply a resource-sharing application to add content to. With the ability to add text, images, links, videos, animation, and dynamic map files, Google Earth has become a one stop shop for researching, learning, sharing and communicating all aspects of information across a wide variety of topics. Google Earth is not just a globe and it certainly was not created for only geographers. As more and more users discover the hidden gems in this product, more examples of academic usage will surface.

Notes

1. “More than One Billion Downloads for Google Earth” October 6th, 2011. http://www.earthblog.com/blog/archives/2011/10/more_than_one_billion_downloads_for.html
2. Some of the articles that talk about using Google Earth in Libraries include the following:
Terry Ballard. “Inheriting the Earth: Using KML Files to add placemarks relating to the library’s original content to Google Earth and Google Maps” *New Library World* 110 (2009): 357-65. Michaela Brenner and Peter Klein. “Discovering the Library with Google Earth” *Information Technology and Libraries* 27 (2008): 32-6. Mikael Jacobsen and Terry Ballard. “Google Maps: you are here: using Google Maps to bring out your library’s local collections” *Library Journal*, October 15, 2008. Troy Swanson. “Google Maps and Second Life: Virtual Platforms meet Information Literacy” *College & Research Libraries News* 69 (2008): 610-12. Michael Vandenburg. “Using Google Maps as an interface for the Library Catalogue” *Library Hi-Tech* 26 (2008): 33-40.
3. The websites surveyed included: McGill University’s Air Photo Indexes, <http://www.mcgill.ca/library/library-find-info/maps/airphotos>; McMaster University Library Map Index, <http://library.mcmaster.ca/maps/ww1/ndx5to40.htm>; Brock University Historical Air Photo Collection, <http://www.brocku.ca/maplibrary/airphoto/historical.php>; Yale University Sanborn Indexes, http://www.library.yale.edu/MapColl/print_sanborn.html; University of Vermont Library’s Google Map, <http://cdi.uvm.edu/collections/browseCollection.xml?pid=longtrail&title=Long%20Trail%20Photographs>; The Cleveland Memory Project, <http://www.clevelandmemory.org/hlneo/>
4. For more results from our survey, including a copy of the questions asked, please consult Eva Dodsworth and Andrew Nicholson “Academic Uses of Google Earth and Google Maps in a Library Setting” *Information Technology and Libraries* 31 (2012) 102-114.
5. Google Earth Educator’s Blog, <http://sitescontent.google.com/google-earth-for-educators/>