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Indirect Outreach in a GIS Environment: Reflections on a Map Library's Approach to Promoting GIS Services to Non-GIS Users

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Abstract

Promoting non-traditional library resources to the academic community can be a challenging and sometimes ineffective process if not coordinated and planned thoroughly. The University of Waterloo Map Library (UML), specializing in cartographic and geospatial data resources, diligently visits dozens of classrooms yearly, promoting its resources and services. The nature of the content is often intimidating to the students however, because Geographical Information System (GIS) technology is unfamiliar to them. In September 2007, the Map Library instigated a new indirect outreach approach of connecting with students and introducing them to geospatial information literacy concepts. Instead of leaving students confused about the technology and the library's vast amount of resources, the new approach encourages students to learn at their own pace and leaves them responsible for seeking more information when they need it. This approach has resulted in establishing relationships with many more students, and thus increasing the number of GIS users in the library and on campus.

Introduction

The University of Waterloo Map Library (UML) specializes in cartographic and geospatial data resources. With a growing collection of over one terabyte of geospatial data available for the local, provincial and national levels of geography, the library serves as the campus' geospatial resource hub. Four staff members run the daily operations of the library, with two of them offering geospatial reference and instruction services. Over 2,500 students and faculty use the library's geospatial data collection every year, with the majority of the users engeography and planning rolled in courses. Although the number of students and faculty using Geographic Information System (GIS) resources certainly warrants a large data collection and reference staff to assist with the retrieval and technical assistance, the library continues to promote its services to university members across all faculties, with additional effort to attract members from the sciences, engineering and social sciences.

A difficult challenge has been to demonstrate to non-GIS users in non-GIS courses how geospatial resources can be incorporated into their course work and research. Establishing contact with these students and faculty is best accomplished with classroom visits. In most cases, when the course instructors are not familiar with GIS concepts, they are not receptive to the library giving talks during lecture time about a topic that is seen as irrelevant to the course. Efforts to demonstrate to faculty members how GIS can be incorporated into their research often fail because more often than not, they are not interested in learning new technology that they know very little about.

With a low success rate of actually getting into the classrooms to present geospatial library instruction sessions in non-GIS courses, the library implemented a geospatial workshop program that offers GIS-related presentations and hands-on workshops outside of classroom time. The program, implemented in the fall of 2006, offers one to two hour courses in geospatial information literacy, GIS data collections, and an introduction to a number of GIS software programs. The courses are promoted in library and campus-wide newsletters and to this day are very successful. There is an obvious interest in GIS across campus, and with these workshops, the library is able to outreach to interested members who are somewhat familiar with the concept of GIS.

Although these workshops have increased overall exposure of the library's resources, they are still not capturing those individuals who do not know enough about GIS to sign up for the workshops. This includes all the students and faculty who are not familiar with the notion of geospatial technology, and may not be well versed even in popular online geographical tools such as Google Maps. The library had to consider yet another outreach approach-one that targets the most novice users. How can GIS attract the interest of individuals who have never heard the acronym before? Since these individuals most certainly will not show up at a workshop, or a GIS event, they will need to be exposed to the technology and the library's resources in an indirect way. The UML had therefore expanded its outreach program to include a completely different approach of promoting library geospatial resources to non-GIS users.

Literature Review

The majority of the literature available on promotional efforts of geographic or GIS literacy in academic libraries focuses on teaching GIS through formal instruction. Abresch, Hanson, Heron, and Reehling (2008), for example, suggest that geographic literacy is best promoted by offering a combination of background information with GIS handson exercises. In order to address every participant's skill level, there should be three different levels of GIS instruction Martindale (2004) also supprovided. ports instruction initiatives. He believes that the goal of the GIS librarian is to introduce the technology to as many people on campus as possible, and that the best way to do this is to offer different levels of GIS courses. Martindale suggests promoting the workshops with posters and on websites, as well as embedding geospatial information into the course lecture. Weimer (2005) had a number of suggestions for outreaching to potential users. Offering both traditional instruction sessions as well as specialized Map/GIS sessions will introduce users to geospatial literacy. When offering traditional instruction sessions. the instructor can take the time to introduce some geospatial concepts. The more specialized sessions will then focus on demonstrating the use of GIS in research and the resources available to users across many subject areas. Weimer also recommends the librarian to mingle with potential users outside of library-at the departmental open houses, career fairs, and student meetings, for example.

Macfarlane and Rodgers (2008) have discovered that utilizing accessible software such as Google Earth can spark the interests and meet the needs of users whom otherwise may not been interested in GIS-related resources. Google Earth software provided the library with the opportunity to improve geospatial skills of researchers by having them experiment with geographic information. Services were promoted with posters, on library websites, online newsletters, as well as face-to-face discussions. With the word out, GIS requests started to pick up. Sessions were offered that included both in-class and walk-in workshops, and all resulted in high interest in Google Earth software from students and faculty across many subject areas.

Regardless of the type of promotional tactic used, the ultimate goal of the above case studies is to attract users to GIS workshops in order to introduce GIS concepts and highlight a variety of applications. The end result is to teach geographical or geospatial information literacy. Unfortunately, the literature does not include information on outreach to those who do not yet realize they may benefit from GIS resources. Indirect outreach has not been documented in the literature, but that is not to say that some institutions have not successfully applied it in their programs. A quick Internet search revealed several interesting workshops and events that might spark interest in the general academic Some examples include community. University of New Hampshire's Pictures, Points and Places workshop, which teaches participants how to link digital pictures with GPS points (University of New Hampshire. Cooperative Extension, 2007), Dalhousie University's Treasure Hunt/Geocaching workshop (Dalhousie

University Libraries, 2008); and dozens of institutions offering Google Earth and Google Map workshops.

Indirect Outreach

The UML took its existing instruction outreach program and modified it to include additional special classroom visits, workshops and events that would attract individuals with no prior GIS knowledge. The past dilemma of failing to attract the interest of non-GIS users with GIS was resolved with the launch of this new indirect outreach program in September 2007.

With the realization that students and faculty with no previous GIS experiences will not be interested in wordy GIS presentations and hands-on workshops, the library discovered that a less academic and a slower-paced introduction to geospatial technology attracted the users to GIS and geospatial resources at the library. The indirect outreach approach is in fact only adding an additional stage to the outreach program. When the students are comfortable enough with the concept of GIS (i.e. they understand the acronym and the gist of what the technology can do), we call this the tier one approach. When they can then participate in the rest of the outreach program, such as taking workshops or attending presentations, we call this the tier two approach.

The *tier one approach* is a very basic exposure to the technology. It does not directly promote any GIS software, GIS data or library service. If it were more complex than this, the students would not be interested in it. The students will take away with them a general knowledge of what GIS technology can do. By knowing that it exists, they will discern when GIS is mentioned in their field or around campus. If they hear of a GIS event on campus, they may attend. In contrast, the *tier two approach*, which includes the in-depth classroom presentations, advanced workshops and library visits, is an academic effort to promote the library's resources. By demonstrating how GIS can be used in specific fields, users will have enough of an introduction to warrant the technology as an option for research, analysis or as a map-making tool.

Library clients who want to use geospatial data require a large range of skills, from determining the nature and extent of information needed, to using the information effectively to accomplish specific purposes. These types of information literacy skills are certainly much more focused and not useful yet to the novice GIS users.

Indirect Outreach—Tier One Approach: Workshops

To successfully attract non-GIS users to library-sponsored workshop, а the theme has to be non-GIS related (at least not directly), and it has to be promoted in a way that would attract campus members of all study areas. The workshop should be related to GIS and the library in some way-otherwise the activity defeats the purpose of the outreach program and the mandate of the library—but this should not be the focus of the workshop, nor should it be promoted as such. Since the fall of 2007, the UML has offered a number of workshops entitled: "Google Earth: More Than Imagery," "Google Earth: Creating KML," "Mapping your House," "Keeping Track of Your Records: Turning Lists

into Maps," and "Introduction to Map Making." Other workshops have also been offered, but they are considered to be more advanced and geared towards the *tier two* individuals.

Some of the workshops have been offered in the UML in order to introduce the visitors to the small library. Library staff mention impressive statistics about the collection and point out the quiet study spaces in hopes of having the students return, at the very least, to take advantage of the study space. All workshops, regardless of the theme, have library handouts consisting of a brochure about services and another handout with a list of upcoming workshops. All workshop attendees are also informed of the Map Library's website, its blog, and librarian contact information.

The workshops themselves provide the attendees with a fun one to two hours filled with impressive demonstrations of software and a hands-on component that actually have students mapping. The Google Earth workshops are the most popular with high attendance that warrants additional sessions. The workshop attracts students across all faculties—most commonly in engineering, and is most likely so popular because Google Earth is currently considered by many to be one of the latest and greatest online tools.

After showing students all the innovative tools available in the program (the roots of their interest and therefore attendance), the workshop has students using Google Earth as a mapping program; they learn how to bring library data into the globe and are taught the fundamentals of GIS. Students create their own place marks, measure distances, draw lines and learn about the value of aerial photography as a research tool. The introduction of Google Earth interests many in the spatial representation of data—in fact many students who sign up for Google Earth also sign up for other workshops offered by the UML. Google Earth workshops attract roughly 100 students every term. Those are 100 students who have become familiar with the Map Library and at least one map library reference staff member they can contact with questions.

The other workshops introduce attendees to GIS in other ways. The "Mapping Your House" workshop, for example, is a short, one-hour demonstration on using georeferenced historical maps and air photos to find specific properties. A GIS software program is used with both historical and modern imagery. The Map Library's air photo collection includes high-resolution digital air photos that impress many attendees. In many cases, the photos owned by the library are much sharper than those available in Google Earth-and when those images include the attendees' homes, they get very excited. The library has found that offering workshops that have a personal connection to the campus community increases interest. In this case, the workshop was promoted as an exercise in researching property and finding your home on a map.

The workshop entitled "Keeping Track of your Records: Turning Lists into Maps" is a presentation and hands-on workshop that demonstrates how converting a textual file into a non-textual format, such as map, provides a different perspective on the information. Online tools are used to convert Excel files with points of interest (address book, favorite restaurants, etc.—participants were asked to bring in their own list) into geocoded points that display on an online map. Participants see the value of spatial reference, while observing proximity and relationships.

At the end of all workshops, students are exposed to the concepts of spatial mapping, GIS, geospatial data and the Map Library. They are now ready to join other interested members of campus for the more advanced workshops that demonstrate how GIS can be used in their coursework—a more serious and academic series of workshops. All the attendees are also left with an open invitation to stop by the library to learn more about the projects they have just completed and how they can do something similar in their courses.

Indirect Outreach—Tier One Approach: Classroom Visits

As mentioned earlier, being invited into classrooms where the instructor and students are anything but savvy GIS users is extremely difficult. However, asking instructors for five minutes of their classroom time to introduce the staff members and the library is rarely ever refused. It does not take up much time and it demonstrates to the students that the instructor supports the library.

The UML has been increasingly visiting classrooms for a "quick intro" to make the relationship between maps, GIS and the Map Library clear to the students. Nothing substantial is taught during this time, as the goal is to simply make an impression. Although there is not enough time to demonstrate to the stu-

dents why they would want to make a map, they will at the very least know that the option exists and where to get help. The library staff member goes over some of the services offered, including mentions of all the tier one workshops that are being offered and encourages everybody to sign up for them. The most important message left with the students is "My name is _____ --please ask for me at the desk, and I can help you with all your mapping needs." This provides the students with an established contact-the comfort of a familiar face with a name to go to when they need assistance. Too many times, the Map Library sees students walking in and waiting to be asked if they need assistance. It appears as though students are shy to ask questions or ashamed that they do not know the answers. This "quick intro" approach is aimed at alleviating this situation, and it encourages students to ask questions at the library.

Indirect Outreach—Tier One Approach: Events

In the last two years, the Map Library hosted two special events that were indi-In September rectly related to GIS. 2007, the Map Library curated a weeklong historical map exhibit that consisted of approximately 100 historical maps, atlases, directories and air photos of the local area. The exhibit also included displays of historical maps created using a GIS. Maps of historical railroads, geology and aerial photography were displayed along with information on GIS technology and the library's collection. A large display of the campus in aerial photography throughout the years was also created, using historical paper photographs and more recent images available in geospatial format. By hosting the exhibit in the library, many first time visitors came through and saw not only what was on display, but the rest of the Similarly as in the maps available. workshops, guides and brochures were handed out that educated visitors on the Map Library's collection and services. The exhibit was promoted to the campus and local communities and had approximately 250 individuals walk through. The exhibit was promoted as a historical map exhibit, so presumably it attracted individuals with an interest in maps or history. There were also prize drawings and refreshments advertised and made available to encourage more visitors.

In September 2008, the Map Library hosted an art show entitled "Geo-Abstract"

(http://www.lib.uwaterloo.ca/locations/u md/digital/art.html). This weeklong show was an attempt to offer the campus community geospatial information in a fun way. It consisted of 14 art pieces created by Map Library staff, using GIS technology and library datasets such as satellite imagery, aerial photography, census data, and 3-D modelling. The show was designed to display the beauty of the earth as an art form. Each piece represented a real geographical location, and was created using GIS tools and techniques. The event was promoted to the campus community as a collection of artwork showcasing maps, the earth and its people. Posters were hung in most buildings on campus, invitations were sent to each department, and articles were written in campus and library newsletters.

The Department of Fine Arts offered the Map Library its Gallery for the duration of the show. All pieces of art had accompanying text that described the GIS datasets and explained how each piece was created using GIS technology. Information about the Map Library and its services were also made available in poster and brochure form. Two library reference personnel who offer the GIS library services staffed the event at all times. They were available to answer any questions and educate the campus community on GIS literacy and library services.

The show attracted over 100 individuals with varying backgrounds. Many were interested in seeing artwork created with technology. Visitors appeared interested in learning about GIS and how the pieces were created. Some saw the displays as artwork and commented on the vivid colors and abstract form. Others saw them as attractive maps, and recognized their locations—some had a personal connection with what they found, such as vacation spots and hometowns. Library staff took advantage of the one-on-one time with the visitors, and explained the technology, the geospatial collection and some of the services offered at the Map Library. The event exposed the library to individuals from many disciplines and offered each individual personal contact with a library staff member. Geospatial literacy promotion and outreach has continued since with the art pieces circulating for display in other library locations on campus.

Other Indirect Outreach Initiatives Visiting the Library

Library outreach is about getting users into the library. If the library offers users information about its resources and services, then the outreach efforts can be

as easy as promoting a visit to the li-The Map Library continues to brary. promote itself as a quiet study place; many students simply want to study in a smaller, quieter library that does not see the kind of traffic as the larger libraries do. Less chatter at the information desk, less phone calls, and less food in the library makes the library an attractive study location. Some of the students may not be interested in any other services offered, but by spending time in the library, they are aware of their surroundings and may observe library publicity around them (posters, bookmarks, interactions with other library users). They will know where to go if they need more from the library than study space.

The Map Library also offers other unrelated services that encourage library traffic: public printing, scanning, computer access, wireless internet, and a photocopier. The library is currently working on a redesign for a fresher look and will possibly acquire a flat screen to display library-related messages. For all those visiting the library for nonresearch purposes, the digital messages may help in promoting GIS or other library-related services.

The Map Library also encourages faculty to bring their students into the library for a library-related class lecture. Instead of the library staff member being invited to speak in the classroom, the library invites the class into the library. Depending on the size of the class, sometimes it is feasible to offer the students a quick tour of the library as well.

Networking

Some of the most successful ways to promote library services include sharing

the information one-on-one with individuals. This can be at a formal or informal event or meeting, on or off campus. This can be during a social or business event. Always take the opportunity to share information with interested people. One person may know ten others who will find the library services useful in their research or for general interest.

Results

The library measures the success of its outreach program based on GIS user statistics. The UML tracks all GISrelated activity in the library. Every person who inquires about GIS data is asked the course number where their research will be used. Knowing which courses have a need for data helps future direct outreach initiatives. The efforts dedicated to classroom visits, events, and workshops are ultimately to educate and promote library services so that students across all faculties are information literate. Some efforts are very easy to measure because library staff can identify the users-for example, after speaking to a classroom, those same students visit the library for GIS data, or they attend workshops. It is difficult to track users who have heard about the data from one classroom visit, but need the data for another. The library sees students using the data for dozens of different courses that have never had a library representative outreach to them, so it is only speculation that students have heard about the library from other courses or from classmates.

The UML started recording user statistics in the Fall of 2004 when it was becoming clear that the library was catering to more than just students in GIS courses. Prior to 2004, the library was not promoting its services to courses other than the core GIS classes. The students who were using the collection for non-GIS courses may have had knowledge of the library's resources from their GIS courses. The reason the division between GIS and non-GIS courses is so important and relevant is that GIS courses automatically use the library's collection without any effort spent on library promotion. Since the library is the geospatial resource hub for the entire campus and not just for GIS courses, the library would like all students to have the opportunity to use the Unlike in the GIS courses services. though, using GIS data is optional, not mandatory, so without an outreach program, the number of users in these other courses would always be much less.

There are approximately 500 to 600 students enrolled in GIS courses every year. These courses do not always encourage students to use the library for data access, as that would be extremely overwhelming for library reference staff. Instead, the course instructors place the data on a course drive. For statistical purposes though, the library takes the number of students enrolled in each GIS course and records it as a user statistic even though most of the students do not

have contact with library staff-it is the number of students that use the data that is important. Once the students have copies of the data, it is not known whether they use that data for other courses. Although this is against data licensing policy to do so, policing students' data usage is not possible. In non-GIS courses though, instructors do not upload data to a course drive, so students are on their own for data acquisition. Without a doubt, the efforts involved in working with students in non-GIS courses do not compare with those in GIS courses. The efforts begin with outreach, and continue with library instruction, training and ongoing technical support.

For the 2004/2005 calendar year, of all the patrons who used the library's GIS collection, 42% were using it for non-GIS coursework. In 2006, the library implemented the new geospatial information literacy program and started offering workshops outside of classroom time. The number of students using GIS data for non-GIS courses increased to 48%. For the 2007/2008 calendar year, when the indirect outreach approach was introduced, the number of students using GIS data for non-GIS courses actually surpassed those using it for GIS courses, at 67%.



Figure 1. The number of users utilizing GIS resources for non-GIS courses has increased since 2007.

Conclusion

GIS is an interdisciplinary field where many academic courses find value. As the geospatial resource hub for the campus, the library will always play the challenging and oftentimes consuming role of demonstrating to students and faculty the value of geospatial mapping and analysis.

All libraries struggle with the need to publicize their services to patrons. A lot of preliminary research is required by the library to determine who the library users are, where they are, which services to offer, how to offer them successfully, and how to encourage their continuing use. The library's role is to

regularly anticipate users' information needs, and build relationships so that when users are ready, they will know how to use available services. Since every library user has a different way of learning, researching and utilizing library resources, the approach the library takes to promote and teach the information needs to vary as well. Offering a well-balanced library instruction program that includes both generalized and specific information sessions provides users with the flexibility to learn at their own pace and only when they want to and are ready to. Students will always find their way into the library when they themselves realize the value of the resources available to them. The library's promotional program simply helps them by leading the way.

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