Chapter 43
Creating an Interactive Web Map:
A Service-Learning Project Aligned to the Geospatial Technology Competency Model

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ABSTRACT

Service-learning is a form of experiential learning that integrates curriculum objectives to address needs in the community. It also provides students with an opportunity to apply geospatial technology concepts in a real-world setting. This paper describes a service-learning project requiring students to create an interactive Google Map depicting historic buildings and artwork for the City of Wayne, Nebraska. Students create maps by using handheld GPS receivers and editing HTML and JavaScript. The objectives of this project align with several building blocks and critical work functions in the Geospatial Technology Competency Model (GTCM). This model, developed in 2010 by the U.S. Department of Labor, attempts to identify the knowledge and abilities needed in the geospatial industry workforce. In addition the methods, assessment, and challenges for developing and executing this project are described.

1. INTRODUCTION

This chapter describes an updated version of my service-learning project requiring undergraduate students in an Urban Geographic Information Systems (GIS) course to create an interactive Google Map. The map developed for the City of Wayne, Nebraska appends pictures and brief descriptions to placemarks representing historic buildings or artwork in the downtown district. Students engage in research, use global positioning system (GPS) receivers, and edit HTML and JavaScript to construct this map. Although the current project described is specific in topic, the applied GPS and web mapping skills are transferable to a variety of multidisciplinary projects and courses. Persons interested in web design or instructors incorporating GPS, HTML, and scripting in their curricula should find this article useful.

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The data and complete instructions to replicate this project are available on the Association of American Geographers-Applied Geography Specialty Group's web site[1].

This chapter begins with a definition of service-learning and how it differs from volunteerism. The benefits and outcomes of service-learning projects integrating geospatial technologies are highlighted in the literature review. Next, I provide the rationale for the current service-learning project and discuss how the objectives align with the Geospatial Technology Competency Model (GTCM). The subsequent sections describe the methods, assessment, and challenges with developing and executing this type of project.

2. INTEGRATING SERVICE-LEARNING AND GEOSPATIAL TECHNOLOGIES

Service-learning is a form of experiential learning, where students apply concepts and skills learned in the classroom to address needs in the community. Volunteerism and service-learning both provide a service to the community, but only the latter is tied to course curriculum and assessment. It is anticipated that service-learning projects will build campus and community collaborations (Gilbert & Krygier, 2007) and prepare students for future civic involvement (Speck, 2001). Service-learning projects vary in geographic scale and cover a diversity of topics some of which include local history, social services, urban planning, public safety, and environmental assessment. The discipline of geography is a natural fit for service-learning endeavors because of its breadth and the vast opportunities for students to apply geospatial technologies on community projects (Bednarz et al., 2008; Buckingham-Hatfield, 1995; Schlossberg & Wyss, 2007).

Much research and debate has been devoted to the effectiveness of teaching methods involving lecture, audio-visual, discussion, demonstration, and experiential learning. Although lectures are an effective method for transmitting knowledge they are often seen as ineffective for stimulating interest in the subject matter (Bligh, 1998). Service-learning projects may enhance geographic education by stimulating student interest and bridging application and theory in a course. Furthermore, active learning through fieldwork may provide students with their most memorable classroom experiences (Hawthorne, 2011; Krakowka, 2012).

Service-learning projects have the potential to mutually benefit the communities, students, and faculty involved. The community, unaware of the inherent relationship between geospatial technology and geography, may expand their knowledge of geography curricula through campus-community mapping projects. Potential employers observe students in a positive light when they apply transferable vocational skills involving communication and collaboration to improve the community (Bednarz et al., 2008; Dorsey, 2001; Schlossberg & Wyss, 2007). In successful service-learning projects students grasp the relevance of course concepts when applying them to real-world situations (Krakowka, 2012; Schlossberg & Wyss, 2007). Faculty members benefit by engaging students in active learning and fulfill academic service obligations, which in turn may strengthen campus-community partnerships (Bednarz et al., 2008).

Several disciplines use geospatial technology or on-line mapping in their service-learning projects. Gilbert and Krygier (2007) discuss a series of these types of projects completed by faculty, staff, and students from liberal arts colleges and universities. A successful urban planning project they cite involves faculty and students from Ohio Wesleyan University collaborating with the recreation department in Delaware, Ohio with mapping trails using GPS and GIS. In terms of environmental assessment, biology students at Grinnell College and community volunteers use GPS and GIS to map the conditions of trees