ABSTRACT
This paper details the research and development on GeoStoryteller, a project where learners engage with archival photos and multimedia narratives in historically relevant places. Using a combination of augmented reality technology and web-based delivery, the ultimate aim of the project is to uncover if place-based learning can increase learner engagement in historical topics. Currently, the researchers have completed system design and development and are in the process of collecting user feedback data. The initial application of this technology will focus on German immigration to New York City (1840-1945) through a partnership with the Goethe-Institut, the Federal Republic of Germany’s cultural institution operational worldwide.

Categories and Subject Descriptors
H.5.1 [Multimedia Information Systems]: Artificial, augmented, and virtual realities

General Terms
Design, Experimentation, Human Factors

Keywords
GIS, mobile technology, digital humanities

1. INTRODUCTION
Over the past ten years, there has been an explosion of new technologies and applications that make use of geographic information. From GPS-enabled navigation devices, to useable GIS software like Google Earth and Maps, to educational projects like PhillyHistory.org, geographic data has become incredibly accessible to wide audiences (Boyer, 2011). However, geographic information is not simply data, such as dots on a map or coordinates in a database, quickly deliverable to a digital device. Geographic information is necessarily bound-up with issues of culture and history, prompting questions like, was this locale always like this?; and, what has happened here? When a location has become meaningful to an individual or community, it becomes place, or a space invested with human understanding and value (Harrison & Dourish, 1996).

The intersection of geography with issues of place, culture and history was made readily apparent in 2010, when an international debate erupted over the erection of a mosque several blocks from the Ground Zero site in Lower Manhattan. The issue was divisive, as evidenced by a New York Times/CBS poll that found 50% of New Yorkers opposed the building of the mosque (Barbara & Connelly, 2010). This issue brought geography and culture to the forefront. Questions raised include: How close to the disaster site is too close: two blocks, five blocks, ten blocks? Should it matter, since the First Amendment guarantees freedom of religion?

Despite the importance of place, it is rarely used in the teaching of history and social studies, and if used only in the abstract geographic sense, such as through a map (Hsu & Chen, 2010). Students are rarely brought to the place where the historical event actually occurred (Tuthill & Klemm, 2002). This is in many cases practical, given the time demands of educators, but makes little sense for students who already reside in areas rich in national and global history, such as New York City. Similarly, libraries and cultural heritage organizations rarely make use of place in teaching history and social studies. Rather, they have relied most heavily on the use and circulation of printed books.

This poster details the initial research and development on GeoStoryteller, a project where learners—using smart phone’s such as Apple’s iPhone—engage with archival photos and multimedia narratives in historically relevant places. Using a combination of augmented reality technology and web-based delivery, the ultimate aim of the project is to uncover if place-based learning can increase learner engagement in historical topics. Currently, the researchers have completed system design and development and are in the process of collecting user feedback data.

2. STUDY CONTEXT
The initial use of GeoStoryteller is in collaboration with the Goethe-Institut, the Federal Republic of Germany’s cultural institution operational worldwide. Historical photographs and multimedia narratives detailing the history of German immigrants in New York City (1840-1945) are made available to learners on the places where the events occurred. The aim is to use the city as classroom and connect everyday places with historical and cultural contexts.
3. SYSTEM DESIGN
GeoStoryteller is a web-based system for authoring and delivering place-based stories. Authors place their stories on a map, add photos, create multimedia narratives, and tag the stories for discovery by users. Learners have the option for finding stories through the GeoStoryteller mobile interface (http://m.geostoryteller.org) or through Layar, the augmented reality web-browser (see Figure 1). For example, learners will be able to find augmented reality content and multimedia narratives detailing such sites as the Ottendorfer Library, the oldest public library in Manhattan opened originally to support the German immigrant community in Kleindeutschland (Little Germany, today known as the East Village).

4. RESEARCH OVERVIEW
This project is interested in uncovering if placed-based digital storytelling can increase learner engagement in historical topics. To study this, the following research questions are posed:

1. Does situating historical content in physically relevant locations affect learner engagement?
2. Does making augmented reality content available to learners affect their engagement?

Study participants are recruited from the Pratt Institute School of Information and Library Science population via the school’s listserv and are incentivized with a $25.00 gift card. This group of participants is used not only because of ready availability but also because of their diversity and ability to represent a variety of learners (e.g., various ages, backgrounds, and interests). Participants sign an informed consent form for the research study, and are loaned an Apple iPad (with headphones and cellular Internet access) for a single day. The participant is given a brief introduction to the project and the device on campus, and the participant leaves the campus to explore the historic sites on his or her own. On return, the participant is interviewed one-on-one by one of the researchers. The interviews take place in a private office which lasts approximately 25 minutes, with the interview audio recorded. The interview protocol includes basic demographic questions, interest in local history and mobile technology, and questions related to their experience engaging with the technology and the content. The interview protocol is available online.1 Interviews are transcribed and coded by two independent coders, using the following scale (5 = Strongly Agree, 1 = Strongly Disagree):

1) Being on physical location increased participant interest in the topic.
2) Being on physical location increased participant understanding of the topic.
3) Augmented reality content increased participant interest in the topic.
4) Augmented reality content increased participant understanding of the topic.

The agreement between the two independent coders will be ascertained by using Cohen’s kappa (Cohen, 1960). Additionally, select participant quotations that augment the numerical results and point to other issues or trends will be included in the results. Data is currently being collected and we anticipate being able to discuss initial results via a poster at the iConference 2011 in February.

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6. REFERENCES

1 The interview protocol is available at http://mysite.pratt.edu/~acoccio/geostoryteller_interview.pdf