Does the use of Place Affect Learner Engagement?
The Case of GeoStoryteller on the Streets of New York

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Introduction

The aim of this research project is to uncover if place-based learning can increase learner engagement and understanding of historical topics. To study this, learners will use GeoStoryteller to learn about a historical topic on the places where those events occurred, and then be interviewed by the researchers. GeoStoryteller is a tool developed by the researchers that runs on smart phones such as Apple’s iPhone. It provides the user multimedia narratives about the historical sites, delivered via the mobile web or through Layar, an augmented reality web browser.

Place provides the learner with a meaningful entry point to the topic and one that increases the topic’s prominence within an information environment that is seemingly limitless. This environment—for those who have broadband connections to the Internet—is constantly growing in interesting facts and resources yet proves difficult for the user in determining what is worth knowing, creating what individuals often describe as information overload (e.g., Shirky, 2008). Whereas the Internet is seemingly unbounded, geographic space has the advantage of being finite and inherently understood. Providing users with meaningful entry points to information, such as through the use of already familiar places, is hypothesized to increase engagement and subsequent understanding.

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. The complete learning materials for this content area are available at http://www.germantracesnyc.org.

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. For example, learners will be able to find augmented reality content and multimedia narratives detailing such sites as the Otten Dorf 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).

Research Questions

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 perceptions of their engagement and understanding?

2. Does the use of augmented reality affect learner perceptions of their engagement and understanding?

Methods

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. Participants sign an informed consent form for the research study, and are loaned an Apple iPad (with headphones and cellular Internet access) for several hours. Optionally, participants can use their own smartphone such as an iPhone or Android. 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 that 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. Interviews are transcribed and coded by two independent coders, using the following questions and 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; 5) Subject would use this type of application again to learn about other historical sites; 6) Technological comfort is high; 7) Subject Interest in history is high; 8) User could not get augmented reality to work or experienced significant problems with it.

The agreement between the two independent coders is ascertained by using Cohen’s kappa.

Results

Results from the quantitative content analysis indicate that learners agree to strongly agree (92% of participants) that being on physical location both increased their interest and understanding of the historical topic. For example, one female participant in her twenties noted that the experience "helps in a sense of a guided tour that, inside a museum, would not so much be a tour, and in this way you’re seeing actual elements of history and architecture in a very modern environment. Very illuminating." Participants were most enthusiastic when they received new information particularly through the video-enhanced podcasts—on familiar physical surroundings. For example, a male participant in his twenties remarked that:

I thought it was a lot of fun. I am up and down Second and Third and Fourth Avenue all of the time, and I never noticed some of those buildings, and the busts, and the architecture, and it was really fascinating. Made me want to show other people.

However, learners on average did not feel that the augmented reality contributed to their understanding or engagement because they experienced significant usability issues (69% of participants reported high usability issues). Although all participants were given a brief introduction on how to use the augmented reality function while indoors and on-campus, once the participant was outside he or she had significant usability problems.

Conclusion

This study indicates that learners perceive that the use of place—having physical, outdoor access to the places where significant events occurred—increases engagement and understanding of historical topics. This engagement is the result of discovering new information about familiar surroundings using standard mobile user interfaces (lists, maps, videos), and not from more novel user interfaces (augmented reality).

Users who have significant personal investment in augmented reality technology report that it works well and it is useful, however, users without this background report that it is difficult to use. This would indicate that additional training is needed for users to fully take advantage of augmented reality. At present time, it would be incorrect to assume that the general user already understands augmented reality or could easily learn how to use it without deliberate instruction.

Participants

34 individuals participated in the study between the dates October 22, 2011 and November 19, 2011. The first 13 transcripts have been analyzed, and demographics for this group include:

<table>
<thead>
<tr>
<th>Gender</th>
<th>54% Female, 26% Male</th>
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<tbody>
<tr>
<td>Ethnicity</td>
<td>46% White, 24% African American, 3% Asian, 3% mixed ethnicity, and 3% Native American</td>
</tr>
<tr>
<td>Education</td>
<td>33% Post College graduate studies, 7% College graduate</td>
</tr>
<tr>
<td>Device Used</td>
<td>75% Apple iPad, 25% Apple iPhone, 16% Google Android</td>
</tr>
<tr>
<td>Age</td>
<td>33% Teenies, 33% Twenties, 33% in their thirties and 8% in their fifties</td>
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On average, participants spent on average 2 and a half hours (stdev = 54 minutes) exploring the neighborhood and using the mobile device (either their own device or a iPad they borrowed from the researchers). The average temperature was 52.4ºF (stdev = 8ºF). Interviews scheduled for days with rain or snow were canceled and rescheduled for other days with more amenable weather.

Credits & Acknowledgements

Photos courtesy of Library of Congress (Figure 1), New York Public Library (Figure 4) and Wally Gobetz (Figure 3).

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