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# TEACHING SOCIAL HISTORY THROUGH LOCATIVE MEDIA: A CASE STUDY IN AUSTIN, TEXAS

Enseñanza de historia social a través de los medios locativos: un estudio de caso en Austin, Texas

Ensino de história social através das mídias locativas: um estudo de caso em Austin, Texas

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### ABSTRACT

This paper explores the combination of formal and informal learning coupled with locative media principles; we research the potential of this specific type of media to reinforce and expand learning goals out-of-class time, equipping students with lifelong learning attitudes. We report on the findings from and observations on how a class of undergraduate students used locative media for the first time to learn about the effects of spatial segregation in a specific underserved area of Austin, Texas, USA. Students were asked to visit several locations and produce multimedia stories with a focus on the local history. Results from the study show that using locative media is highly efficient for learning purposes. Students get to experience the content learned in the classroom in a physical setting, which fosters 'situated learning', a theory we used as theoretical framework. Our findings also suggest that rather than local history or history in general, current societal issues with a strong spatial component are more effective in engaging students with the assignment off the classroom. Hence, segregation and gentrification were found in this study to be useful subjects to be explored and taught through the principles of locative media.

**Keywords:** Locative media, smartphones, informal learning, formal learning, segregation, local history, physical place, narratives.

### RESUMEN

Este trabajo explora la combinación del aprendizaje formal e informal junto con los principios de los medios locativos; hemos observado el potencial de este tipo específico de medios para reforzar y expandir los objetivos de aprendizaje fuera del tiempo de clase, dotando a los estudiantes de actitudes de aprendizaje permanente. Presentamos los hallazgos y las observaciones sobre cómo una clase de estudiantes de licenciatura utilizó medios locativos por primera vez para aprender acerca de los efectos de la segregación espacial en un área específica desatendida de Austin, Texas (EE. UU.). Pedimos a los estudiantes que visitasen varios lugares y que produjesen historias multimedia centradas en la historia local. Los resultados del estudio muestran que el uso de medios locativos es altamente eficiente para fines de aprendizaje. Los estudiantes pueden experimentar el contenido aprendido en la clase en un entorno físico, lo que fomenta el 'aprendizaje situado', una teoría que utilizamos como marco teórico. Nuestros hallazgos también sugieren que, en lugar de la historia local o la historia en general, los problemas actuales de la sociedad, con un fuerte componente espacial, son más eficaces para involucrar a los estudiantes en la tarea fuera del aula. Por lo tanto, la segregación y la gentrificación se revelaron en este estudio como temas útiles para ser explorados y enseñados a través de los principios de los medios locativos.

**Palabras clave:** medios locativos, *smartphones*, aprendizaje informal, aprendizaje formal, segregación, historia local, lugar físico, narrativas.



## RESUMO

Este trabalho explora a combinação da aprendizagem formal e informal junto com os princípios das mídias locativas; temos observado o potencial deste tipo específico de meios para reforçar e expandir os objetivos de aprendizagem fora do tempo de aula, dotando aos estudantes de atitudes de aprendizagem permanente. Apresentamos os resultados e as observações sobre como uma aula de estudantes de licenciatura empregou mídias locativas por primeira vez para aprender acerca dos efeitos da segregação espacial em uma área específica desatendida de Austin, Texas, EE.UU. Pedimos aos estudantes que visitassem vários lugares e que produzissem histórias multimídias centradas na história local. Os resultados do estudo mostram que o uso de mídias locativas é altamente eficiente para fins de aprendizagem. Os estudantes podem experimentar o conteúdo aprendido na classe em um entorno físico, o que fomenta a ‘aprendizagem situada’, em uma teoria que utilizamos como marco teórico. Os nossos resultados também sugerem que em lugar da história local ou a história em geral, os problemas atuais da sociedade, com um forte componente espacial, são mais eficazes para envolver aos estudantes na tarefa fora da aula. Portanto, a segregação e a gentrificação se revelaram neste estudo como temas muito úteis para ser explorados e ensinados através dos princípios das mídias locativas.

**Palavras-chave:** mídias locativas, *smartphones*, aprendizagem informal, aprendizagem formal, segregação, história local, lugar físico, histórias.

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## Introduction

Segregation levels are persistently growing in the us (Florida & Mellander, 2015) especially in the South of the country. Very recent studies provide evidence that segregation is also increasing in European cities (Tammaru et al., 2016; Van Ham & Tammaru, 2016). Among other factors, segregation is a result of income inequality (Tammaru et al., 2016), which negatively affects contemporary society. It puts in risk democratic dynamics as lower income groups become disengaged not only with politics but also with space. Also, segregation sets a spatial footprint in the cities, where rich and poor live in different neighborhoods. In order to raise awareness about this historical and current societal issue, this study uses locative media principles, such as exploring physical places, to analyze to what extent this type of media would help students to grasp the content taught in the classroom. Hence, we report on the findings from and observations on how a class of undergraduate students who was exposed to locative media for the first time. Our goal was to integrate formal with informal learning practices and foster situated learning. For this purpose, we used the mobile application<sup>1</sup> and website Historypin to complement lectures delivered in-class. For our experiment we chose a social history class focused on racial segregation in certain areas of Austin, Texas. Segregation in Austin, specifically, is a problem that has negatively affected the social fabric of the city,

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1 At the time of the study, early 2014, Historypin was also available as a mobile app. Currently, it is only a webpage. See here: <https://about.historypin.org>



without much public awareness of it being raised. In this city, the social disadvantage of African-Americans results from purposeful city-planned segregation that started in 1928 and officially continued until 1970 —although *de facto* segregation persisted long after— (Straubhaar et al., 2012).

Currently, this legacy affects both African-Americans and Latinos/as,<sup>2</sup> who are still largely informally segregated in resource-poor neighborhoods, which makes the city's geographical information uneven. With this in mind, students were asked to visit several locations in specific underserved and segregated areas of Austin and produce text and photographs-based stories with a focus on local history. Students were also prompted by quizzes, readings, and discussions with instructors and classmates. A final study was conducted to assess the outcomes of such exercise.

Locative media as an area of research and practice encompasses a number of different fields and applications. Our work is situated within the branch of location-based learning. Terminologies such as 'mobile learning', 'location-based learning', and 'context-aware ubiquitous learning' describe learning opportunities provided in the real context of the physical world through GPS-enabled phones. Despite the plethora of terms, their common feature is to use location-aware media technologies to provide students with educational experiences in the physical environment, outside the classroom (see Clough, 2010; Fitzgerald, 2012; Hwang, Shi & Chu, 2010). The "environment" is mostly outdoors (Price & Rogers, 2004; Randell, Phelps & Rogers, 2003; Rogers et al., 2004) but it may also be indoor, such as in museums (Vavoula et al., 2009), or a combination of both (Rogers et al., 2005). "Mobile learning" is usually used to refer to the inclusion of mobile phones in the classroom (Cabrera et al., 2005; Grasso & Roselli 2005; Hsi & Fait, 2005), while "location-based learning" started being used around and after the widespread adoption of smartphones for learning (Chou & Chanlin, 2014; Heimonen et al., 2013).

While some research on locative media has looked at the production and consumption of locative content onsite and with the aid of smartphones (Farman, 2014), this study is focused on the production of place-based stories without necessarily having the support of a mobile phone. This approach enabled the students to choose whether or not they want to use mobile technology during the experience, as not all of them possessed location-aware smartphones that would enable them to do so. This also enabled researchers to assess findings regarding user's preferences when learning about places, avoiding technological determinism.

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2 A note on terminology: The authors acknowledge that the term 'Latino/a' is an insufficient term to describe a widely diverse and complex identity group. However, following Chavez (2013), the broadness of the term 'Latino/a' is used in this paper not to obscure historical and intersectional differences. Rather, 'Latino/a' is chosen because it enables an analysis that acknowledges axes of discrimination enacted on populations who are descendant from Latin Americans more generally. Also, Lucila Vargas (2009) explains that the term 'Latino/a' "comes with many perils because it renders invisible some crucial intragroup differences" (p. 2), but, as the author points out, it is important to remember that we use the term as all-inclusive category that identifies the rough 53 million of Hispanic/Spanish speakers in the United States, who are from or descendants of immigrants from Latin America and the Caribbean.



## 1. Literature Review and Theoretical Background

### 1.1. Lifelong Learning Practices: Informal Learning vs. Formal Learning

Smartphones with locative capabilities have long been heralded as a medium that may promote informal learning opportunities (Martin, 2009; Oppegaard, 2016). Studies about the integration of mobile phones and learning highlight some limitations of formal education arguing that it is not “feasible to equip learners at school, college or university with all the knowledge and skills they need to prosper throughout their lifetimes in class” (Sharples, 2000). Mobile phones are presented as one way to encourage the “always-learning” mode (Sharples, 2000). Moreover, Martin (2009) points out that, while most educational research focuses on classroom-based learning, by connecting learning with physical place, we can tap into “embodied pedagogies of sensation in experiences—not with bodies, but as sensing and moving bodies, with cultural understandings mediating conscious experiences—” (p. 287). Reading Martin (2009), we draw on the assumption that locative media situates learners with the here-and-now of specific places of learning rather than the generic space of the classroom.

Conceptually, the scholarship on location-based learning is shaped by the questioning of formal education efficacy and it is presented as an alternative/complement to formal learning. Livingstone defines formal learning as involving “the presence of a teacher—someone presumed to have greater knowledge—and a learner to be instructed by said teacher”. On the other hand, Livingstone (2007) defines informal learning as “forms of intentional learning in which we engage either individually or collectively without direct reliance on a teacher or mentor and an externally-organized curriculum” (p. 3), for example, when visitors engage with geo-located information in a self-directed and self-managed manner. However, the author points out, the distinction between the two is pretty fluid, since they may be considered as they may overlap between different learning activities.

In fact, while there are studies focused solely on informal learning (Clough, 2010), others form a bridge between formal and informal (Fitzgerald, 2012; Vavoula et al., 2009). Fitzgerald (2012), for example, explores the creation of user-generated content for locative apps with learning purposes. Fitzgerald explains an activity in which students, after visiting and creating content about the visited sites, reflected on their experience in a classroom setting. This way, exploration of the outdoors is merged with formal guidance indoors. On these lines, Vavoula *et al.* (2009) created Myartspace, a mobile phone service that allows students to gather information during field trips which is automatically sent to a website, where they can view, share and present it, back in the classroom or at home. The service proved effective in enabling students to gather information in a museum and then allowing them to reflect on it in the classroom. The authors point out that the activity allows students freedom to explore the environment within the constraints of pre-existing learning aims. Along the same lines, Heimonen *et al.* (2013), created Seek’N’Share, hypothesizing that “creating location-based mobile learning experiences also involves creating the learning content and providing ways for the learners to capture their learning outcomes and share and discuss them while back indoors”. Heimonen et al. (2013) tested Seek’N’Share with schoolchildren. Using an assignment about local history, the learner’s goal was to visit several points of interest in order to learn about the local landmarks, record media content of the present-day environment, and then construct a presentation about it. Results



from the Heimonen experiment show that children rated learning about history with the mobile application as more inspiring than using traditional classroom-based methods.

The common finding in the studies described above is that delivering location-relevant information based on a student's location enhances their experience of the physical world through learning. A shared result is that students who use location-based tools perform better or engage better with their surroundings (Heimonen et al., 2013; Naismith, Sharples & Ting, 2005) than students who did not use them (Hwang et al., 2010).

## 1.2. Filling the Gaps

As it was shown in the previous subsection, mobile phones and especially location-based media have revolutionized the way people learn and get informed *in situ*, on the fly. Location-based learning has showed positive results in bringing learning outside the classroom. However, it is still unclear what types of place-based topics are most useful to be studied through being at location. Although this current work is based on the extensive scholarship on location-based learning, this study is unique by contributing to the field by mixing issues of racial and spatial segregation with locative media principles. In this way we envisaged scaffolding for lifelong learning practices bringing what has been taught in formal settings out into the world, complementing everyday life with continuous learning practices.

## 1.3. Conceptual Framework: Situated Learning

The concept of "situated learning" is in line with the discussion in the previous section, as Anderson, Reder, and Simon (1996) argue, that more emphasis should be given to the relationship between what is learned inside the classroom and what is needed outside the classroom. Situated learning is one of the several social learning theories that imply that people learn through observation and interaction with others in a social setting: a practice that lasts a life long.

Moreover, Goel, Johnson, Junglas and Ives (2010) offer an operational definition of situated learning as "a change in mental models that happens through social interaction in a given context" (p. 218). The authors identify four different dimensions or indicators of situated learning: 1) thematic focus that has been chosen during the interaction, or, in other words, how individuals communicate with each other, they have a common unifying theme, 2) the level of cognitive absorption experienced by an individual, which means how motivated a person is to learn something, 3) the level of participation by an individual, the extent to which an individual engages in social interaction, it is said to occur when an individual shows interest in others' points of view, offers information and opinions, and is attentive to other group members during the learning activity, and 4) the perceived social structure of the group, which refers to the patterns of relationships that develops between and amongst individuals as they relate to other members of a group during a learning activity.

Rieser and Clark (2013), in a research of locative media that situated learning through the deployment of Empedia, a news locative software environment for mobile phones, define 'situated' as "activities that promote learning within an authentic context and culture" (p. 210). Situated learning posits that learning can be enhanced by ensuring that it takes place in an authentic context. That said, this theory will help us to understand the findings of this study.



## 1.4. The History of Segregation in Austin and its Effects

The legacy of racial segregation in Austin, which persists today, has created a situation in which the city's geographical information is uneven; some areas of Austin have well-documented histories while others remain relatively invisible in the storytelling of Austin's past and present. In Austin, the social disadvantage of African-Americans and Latinos/as results from purposeful city-planned segregation that started in 1928 and officially continued until 1970 —although *de facto* segregation persisted long after— (Straubhaar et al., 2012). Currently, this legacy affects both African-Americans and Latinos/as, who are still largely informally segregated in resource-poor neighborhoods. This segregation has especially had consistent effects on the people who live in the Eastside of Austin. Furthermore, a recent study found that Austin is one of the ten most economically segregated cities in the United States (Florida & Mellander, 2015). The history and contemporary context of Austin's segregation was a central topic in the university course within which the locative-learning project was undertaken.

An important consideration in grappling with legacies of segregation in cities such as Austin are the complex ways in which racial and economic discrimination are intertwined in producing and maintaining inequitable distributions of cultural, social, and political resources. Nancy Fraser (2000) provides a compelling analytical model for addressing the institutionalization of socio-cultural and economic inequality, understanding that any attempt to redress social injustices must consider both the cultural and economic aspects of social hierarchies and class distribution. In the context of Austin, Texas, segregation was formally and informally enacted according to racialized hierarchies privileging white citizens. And, by geographically isolating African-American and Latino communities from a variety of institutional (including educational, political, occupational, etc.) resources, segregation in Austin has long held both a racial and an economic component. In order to redress the motives of these concerns, it is crucial to understand that equity as well as equality should be considered. This means that segregation entails not only an unequal sociocultural valuation of group identities, but also an inequitable distribution of political and economic resources.

## 2. Methods

In order to assess the effect of locative practices on the understanding of historical social issues such as racial and spatial segregation, we designed an exploratory case study following Yin's approach (1989) to understand to what extent the act of visiting physical locations and being prompted about that visit in the classroom enhances a student's understanding of the content. The study was conducted in the context of a graduate course concerned with Latino culture and a specific area of Austin. The class was composed of 28 students ranging in ages from 19 to 30 years old, of which half were Latinos/as. This sample was chosen because we were interested in exploring innovative methods to convey the notion of spatial segregation and also Latino culture. The researchers took this course as a sort of laboratory to try locative media with educational purpose. None of these students was familiar with locative media. For this study, we used a set of qualitative methods such as semi-structured interviews, participant observation and field notes (see Creswell, 2013).

Although this study was exploratory, the assignment was carefully designed and divided into six different operational steps. Although our study is different, we drew on the work of Barak and Ziv (2013), who organized





the assignment given to the students in several steps: a) exploring, b) learning to operate the application, c) creating content, d) participating and assessing the content and grading. The steps of our work are described in detail below:

- 1) **Theory:** In the beginning of the training, students were exposed to the history of segregation by being assigned homework to read a chapter and visualize several maps in it about segregation in Austin. Back in the classroom, during the first ten minutes of the class, students were prompted to reflect on the readings by responding two questions. The responses were also used as complementary qualitative data. On February 13<sup>th</sup>, 2014, they had to respond a quiz about they learned through maps and what they would like to learn through maps. Firstly, we introduced the concept of locative media to the students in the class. Before the discussion in the classroom, students had been assigned articles to read about location-based storytelling, definitions of locative media, and narrative archaeology. During the class we discussed various terminologies such as locative storytelling, location-based games, location-based services, location-based social networks, privacy concerns and possible benefits of location technologies. We expected the lecture to instill curiosity in exploring and getting familiar with various location-based concepts and applications.
- 2) **Tools and technology:** For the purpose of our study we chose to use Historypin, the Google Maps-based locative culture and history mapping site and mobile app, because at the time of the study, it was a social mapping website and also a mobile application —available for iOS and Android operating systems— that allowed users to pin images, video, and audio clips to Google Maps. Users could include a story about each image and other metadata. It also enabled the user to create a channel/profile, where everyone can manage and customize her/his content and page. We expected the versatility of Historypin to facilitate the work and uploading of contents, either on the fly from a smartphone or working at a desktop computer. Users are also able to see, on the map, stories that are near to them through location disclosure. We drew upon Chilcott (2013) who analyzed Historypin, among a couple of other applications, as easy-to-use digital tools to engage both creators and end users in shared digital content and curated experiences relating to place and community. Before choosing Historypin for this study, other applications such as crowdmap/Ushahidi, local wiki, and Broadcaster were surveyed. We also talked to professors who had tried some of these apps with their students. After doing the research, we concluded that Historypin would be the easiest platform for participants.
- 3) **Visiting a physical location, geotagging and reflecting:** At the end of the third class about locative media, the students were given an assignment that required them to create three different pins (or stories) each one about a specific Austin location and to post them on the Mapping Austin Memories Historypin account. Each pin required the student to either take a photo or use an archival photo of a location, write a brief passage about the location, and pin it to its geographical location on Historypin's online map. One pin had to be about the Austin Tejano Trail (an educational trail about the history of Tejanos in Austin —5 miles long and approximately a 2½ hour walk—). The sites along the trail include schools, libraries, churches, residences, and historic homes. Another pin had to be about a location with historical significance for East and/or Southeast Austin. Finally, a third pin had to be contemporary: about a location that is currently important for East and/or Southeast Austin. Moreover, students were encouraged to explore places that were important for African-Americans or Latina/os in Austin, in East or Southeast Austin because of the legacy of segregation in these areas.



- 4) Grading the assignment: The Historypin project accounted for 15% of each student's final class grade and depended on the student's completion of all three pins. Completion of the pin included posting a photo of the site, providing accurate information, choosing a site in the assigned region, and explaining the site's relevance to topics and ideas explored in class (context analysis). Points were given based on whether the student's pin was interesting, engaging, original and substantial, and for writing quality and creativity. Writing quality was assessed based on proper use of syntax and language, appropriate writing style, and effective communication skills. Creativity was judged according to the student's treatment of the subject matter.
- 5) Interviews and fieldnotes: The researchers collected fieldnotes and observations about the reactions of students when they were introduced to the concept of locative media and the history of segregation in the classroom throughout the semester. At the conclusion of the assignment, we asked the students to be interviewed willfully about their experience.  
Out of 28, 13 students ranging in age from 19 to 24 years old, volunteered. The 13 were born in: Texas (n = 7), California (n = 1), El Paso (n = 1), Louisiana (n = 1), Colombia (n = 1), Mexico (n = 2). Out of seven Texans, only one was originally from Austin. The interviewee's responses were cross-checked with qualitative data collected through the early classroom quiz.
- 6) Data analysis: Interview transcripts, field notes, and quiz responses about the locative media readings were analyzed through open codes by the experimenter in order to identify themes and categories. Also, the content analysis on the stories produced by the students themselves was used in order to understand the locations the students chose and to locate the media artifacts. The data was also compared with previous research about location-based learning and concepts related to the field, provided in the subsection 1.1.

### 3. Results and Reflections

#### 3.1. Geotagged Stories and the Latino Community: The Choice of the Locations

The class generated 85 geotagged stories placed on the map of Austin through Historypin. More than half of the stories were about places located in East Austin (n = 46), and one third related to the Tejano Walking trail map (n = 28). One fifth of the stories related to the African-American population (n = 17). We found 36 different categories regarding the chosen story locations, thus the top five categories were: churches (n = 9), historical houses (n = 6), statues (n = 5), schools (n = 5), libraries (n = 3). Other locations that were chosen more than once included government buildings, cemeteries that faced racial segregation and restaurants. Churches were predominant, which is quite revealing as the 'church' was often used as an artifice to impose segregation in Austin. Churches are tied to the idea of the Latino community, and they were moved to East Austin as a strategy for segregation. This historical information was mentioned several times during the discussions in the classroom. We found that the attention paid to churches, as locations worthy of creating a history pin, is an indication that students were connecting the content exposed during class with the physical spaces. Most of the students tied the places they visited to stories of changes happening in the urban space, or to the community aspects of East Austin. In the subsections below, we complement the general field notes and observations noted during class time with the findings that emerged from the answers to the initial quiz and the semi-structured interviews.



### 3.2. Formal vs. Informal Learning: Enabling Consolidation of Knowledge Outside the Classroom by Exploring the Physical Space

Past studies that merged formal and informal learning (Vavoula et al., 2009) found that visits to physical locations, such as museums, appear to consolidate knowledge discussed in the classroom, rather than resulting in acquiring new knowledge. In line with Vavoula, we found that the activity allowed the content revealed during class to become tangible and physical, fostering connections to the students' own lives. In some instances, for example, it was only by visiting the location that students understood the effects of segregation, gentrification, or general changes in the urban space. Students were able to observe the city, as they had not done before; the activity also allowed them to interact with others in a social setting, as the situated learning theory suggests. One of the female participants, for instance, was frustrated because she could not find the location listed on the Tejano Walking Trail map where she had chosen to do the assignment. This participant wanted to write a story about a 'community garden' in East Austin and she was struck and amazed when she realized that it no longer existed. For her, this was a practical example of the topics discussed in class, and how East Austin (after segregation) is going through gentrification driven changes. She explains: "For example, I went to another place that used to be a community garden, and the garden isn't there anymore. And ironically, what was built there was condos, so I was like: we were just talking about that, how these people's homes are knocked down and they are building these expensive condos, I was like: Oh, my goodness, this is already happening!"

This participant ended up producing a locative story based on what the location used to be, as follows: "I talked about how they are trying to build condos, pushing people out of their homes, taxes are getting higher, and that it was sad the garden was gone".

In general, all the students truly enjoyed the assignment. The process of producing locative stories was effective in reinforcing the knowledge about the historical legacy of segregation in Austin. Several participants marked the experience of visiting a location as 'special and valuable'. A student highlighted in the quiz that the experience was valuable because she visited Martin Middle School, which was one of the first interracial schools in Austin. Most students in fact lacked knowledge about the disadvantaged or segregated quality of East Austin. Throughout the classes, mainly during discussions of the quiz, students mentioned how surprised they were with the amount of segregation that is still present in Austin and how that worked against the interests of African-Americans and Latinos/as.

This respondent, for example, ended up producing a story about the statue of Martin Luther King on the University of Texas campus. She said she learned from peers on campus that the statue is facing East in order to welcome UT students from that side of town. Her story conveys knowledge she acquired locally, during her activities on campus. She also found out that the sculpture is under 24-hours surveillance due to backlash at the statue's installment. In one of her quiz responses she said: "Doing [story pin about] the statues of Cesar Chavez and MLK (Martin Luther King) got me to look further into the history, which I knew little about".

Despite the fact that many of the students had lived in Austin for a short period of time (for the purpose of attending the university) and one could argue that this is the reason why they do not know much about local history, they were impressed by the effect of segregation of the city. Only one of the interviewees, who was from



Austin, was aware of the effect of segregation in East Austin, but she realized that she was not very well informed about the rest of the city. She mentioned that she did not realize how unique Austin was till she moved away.

However, several students, in their interviews after the locative experiment, mentioned regretting not knowing more about their hometowns too. A participant, originally from Dallas but a resident in Austin for over seven years, expressed some sense of regret about his lack of local or historical knowledge about his hometown. This respondent commented that he wished he had gotten to know better the place where he was from. In his opinion, people take their hometowns for granted by saying “I know where I live” because they have lived there long enough. This participant was also critical in regards to what outside people know about Austin, conceptualizing the city as a brand that college students consume while they live in the city.

One of the students, who is from Mexico, said that she would be interested in using this kind of locative media service or storytelling tool in her hometown of Monterey. She said: “You know [...] I would like to do that in my home country, I do not know why [...] I love Austin, but if I will do that in Guanajuato, places that are closer to me, that there is history I am interested in, it is not that I am not interested in Austin, but I am much more interested in Guanajuato. I guess it is emotional connection to it”.

Locative media to this student is linked strongly with sense of place and memories. This participant highlighted in her quiz response that she had never visited East Austin before this assignment. At the time of the study, the respondent was still in the process of discovering the city and for this reason she had not developed a strong sense of place in Austin when she was interviewed. This might be why this respondent said she would prefer to write about places where her family lives. After all, she had an emotional connection with those places, where her relatives were, that she had not acquired in Austin yet.

In general, during observations of the in-class discussions after the locative experiment, it was noted that the students not only reinforced their knowledge about what was taught in class but also showed genuine interest in finding out more about the history of where they lived, or came from, and the places they passed through or frequented. However, several participants said that history by itself was not enough to engage them with their surroundings through locative media applications. One common suggestion among the participants was to incorporate the locative history app into other services. For instance, one participant suggested incorporating it into applications with tracking capabilities (e. g., RunKeeper, Nike + Running, MapRun).

## Discussion and Conclusions

This study was anchored on monitoring the effect of merging formal and informal learning practices by introducing locative media as a situated learning tool and reinforcing the topics exposed during class. We hypothesized that such a practice would not only consolidate the knowledge derived from the information dispensed in class but also foster awareness about the history of segregation of African- American and Latino communities. However, local history *per se* may not be enough to engage young smartphone users with their surroundings, as several respondents said they would not use an app just to look up historical information about a place. They were surprised, however, in finding out new things about segregation embedded in the fabric of the city. We found evidence of this on several levels. A fitting example is the student who said she did not know that she was resident in a neighborhood that was racially segregated in the past (East Austin). This led us to suggest that rather than local



history, which is current theme in several location-based learning projects (Heimonen et al., 2013) segregation and gentrification were found as useful topics to be studied through location-based learning. This is due to their spatial characteristics and capacity to enable students to explore the physical world by understanding the urban embodiment of the topic discussed in the classroom. We argue that the locative media principles of bringing the audience back to the physical world might prepare a new generation of citizens with the means to understand spatial and social gaps in the urban space. Locative media has shown useful to teach topics like segregation that deals with space. To reinforce such a position, we bring in the concept of “situated learning” which is focused on the relation of what is learned in the classroom and what is needed outside of the classroom (Anderson et al., 1996). We envisaged this as a way of initiating the scaffolding of a framework for lifelong learning practices.

Although the situated learning framework applied onto the design of computer-based applications has been criticized in the past as not providing authentic situations (Hummel, 1993), our findings are in line with more recent studies (Chou et al., 2014; Clough, 2010) that show that locative media practices encourage students to venture outside the classroom creating an opportunity for embodied learning. This becomes even more relevant in the case of spatial topics such as segregation, as the teaching of this subject is related to the role of physical place and its exploration. Evidence for this was the case of the student who set to visit a community garden mapped along the Tejano Walking Trail. Having to locate and reflect on a specific physical location through the act of physically going there, a student was struck to see that the garden she was looking for, in order to tell a story about it, had been turned into an expensive condo. We assume that the act of physically looking for a place, in order to inspire storytelling action, positioned the students in a particular emotional state. What was learned in class about segregation really clicked with their current experience in place. This embodiment of place happened especially if they were accompanied, and the situation allowed reflection and social interaction. Similarly, another student learned about the Statue of Martin Luther King, which is under surveillance to protect it from vandalism, only because she was asked to find meaningful stories to tell around the UT campus. She physically went there to explore the statue and its surroundings and talk to people in the premises. In general, by exploring the physical world and its social fabric, students better understood the issues related to segregation in Austin explained in class, and its ongoing consequences, such as gentrification and disadvantage.

Despite the high usage of smartphones by young people (Rainie & Wellman, 2012; Turkle, 2011) and the fact that mobile phones are presented as one way to encourage the “always-learning” mode (Sharples, 2000), our study suggests that the high uptake of smartphones by young generations alone may not be enough. The mobile phones may not always be the favorite means of learning about a place, as several of our respondents consider it a ‘distraction’. Past research has also suggested that mobile devices can be distracting; for example, for museum visitors (Hsi, 2002) or among children (Semper & Spasojevic, 2002). Similarly, several of the interviewed students said they learn more about places without mobile phones, when they are actually walking. Others said they avoided using the phone during their visits to real locations in order to make it an enjoyable experience. Respondents highlighted how they enjoy the place more when they have good company or when they are more sensitive and open to talking to locals without the aid of mobile devices. Furthermore, from Baudelaire’s concept of “*flâneur*” (Ferguson, 1994) to Guy Debord and the Situationists’ notion of “*derivé*” (1989), to the De Certeau’s notion of “everyday life” (1988) there is a long tradition and conceptualization of learning by wandering around the city, a tradition in which technology does not play a role. Nevertheless, technology is here to stay, and in particular mobile-networked



devices are becoming cheaper and more functional at a very fast pace. Concerns about privacy, unobtrusiveness, and serendipity, are shaping the design of future technologies as something that support us in our everyday needs rather than disrupting our routines (e. g., UrbanSpoon, Waze, Foursquare). According to previous studies (Rogers & Price, 2008), in order to embrace this new paradigm, the information needs to be designed to be easily shared by groups during an ongoing task. Rogers and Price (2008) suggest that “ideally, groups of students and their instructors should be able to switch fluidly between observing the physical world, accessing relevant information on the device and being able to communicate this with others in the group” (p. 212).

In conclusion, and in line with Vavoula *et al.* (2009), our study showed that the activity allowed students the freedom to explore the environment within the constraints of pre-existing learning goals. Several students mentioned that they went to the locations with family relatives, partners or with pets. The method of turning the assignment into a pleasurable outdoor activity that takes place in a social setting is highly positive because it may create a happy memory for the participants in the context of informal learning. In other words, by bridging formal and informal learning, instructors give space to students to experience pleasure and wonder in the physical world, while learning about tough sensitive topics such as racial segregation. They feel that they are learning by themselves, by exploring and discovering the world, but with the aid of previous content discussed in the classroom. In this way, the bridge of formal and informal learning is made. Hence, situated learning is a useful theory to understand that location-based learning, as it gives relevance to an authentic context and culture. In this sense, spatial segregation and Latino culture, two themes discussed in the classroom, were grasped in two ways: 1) students experimented walking in real physical space and thus they embodied the content discussed in the class; 2) they had to geotag the description of the place on the map of Austin, which allowed them to contribute to the democratization of user-generated content about a demographic group that has been underserved.

## Limitations and Future Work

Despite the positive findings regarding coupling situated learning and locative media, we are aware of certain limitations embedded in our work. For example, in order to have a better understanding of the impact of our experiment on the learners, we should have interviewed the students before the assignment in order to understand their perception of Austin and locative media and then compared this information with the outcomes. Another limitation of our study was the choice of the locative app Historypin. The fact that the mobile app was not user-friendly might have influenced the outcomes of the research, as it was limited in many ways and students did not find it easy to use. For future research, we suggest running a pilot study to test out a range of different mobile applications. Moreover, as future work we suggest a follow-up study to investigate how the writing of the stories would change the situated learning outcomes if it was done *in situ*, or how the writing perspective (first person vs. third person) affects place-based learning.





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