
Surfacing Places and Communities as Civic Mobile Learning Resources

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Abstract

We have undertaken a series of engagements with stakeholders of local parks in order to understand how they might be better utilized as educational resources. Our investigations have provided suggestions for how mobile learning technologies can engage with the economic, socio-cultural and political infrastructures that comprise community places. Our ongoing work investigates how HCI can support a community-generated civic learning curriculum, which we believe outdoor spaces are extremely well suited to support.

Author Keywords

Digital Civics; mobile learning; civic spaces; civic learning

ACM Classification Keywords

• Applied computing → Education → E-learning •
Human-centered computing → Ubiquitous and mobile computing → Ubiquitous and mobile computing theory, concepts and paradigms → Mobile computing

Introduction

Our work takes place within the education branch of the Digital Civics agenda: a multi-disciplinary movement which aims to understand how digital technologies can support citizen empowerment and help individuals become active agents within society [11]. We have

taken a focus on how mobile learning technologies can support outdoor civic learning—that which supplies the learner with the knowledge, skills and values necessary to be citizens who actively participate in their local communities and take responsibility for improving and understanding them. In this paper, we will give a brief overview of our previous work [12] and why we believe that outdoor community places have underutilized potential as mobile learning environments. We will outline the previous work we are building upon, our chosen design context for civic mobile learning, our design engagements with local stakeholders as well as the resulting longitudinal studies which are still ongoing.

Outdoor Civic Learning

Lave and Wenger's Situated Learning Theory posits that learning is normally situated and often unintentional: it is embedded within authentic activities, contexts and cultures, and occurs through 'legitimate participation' with communities of practice [9]. Classroom activities are often in clear contrast to this, and as a result there has been a growing movement advocating for more outdoor learning within formal education [5,10]. By the very nature of active participation with local communities, civic learning would also appear to benefit from being taught outside the classroom. The growing popularity of outdoor learning has also coincided with the growing adoption of mobile learning ('*learning across multiple contexts, through social and content interactions using personal electronic devices*' [2], a.k.a. 'm-learning') by schools [1]. Previously, local parks have offered schools a convenient and effective outdoor learning environment, with access to abundant learning resources both physical (e.g. nature,

architecture) and social (e.g. park rangers and volunteers, local community groups).

Design Context

However, our project has been situated within the context of the ongoing socio-economic period of hardship within the UK. Parks have seen severe budget cuts due to significant austerity measures [7], resulting in cutbacks of 'non-essential elements' such as dedicated teaching staff. In an effort to compensate for diminished staff availability, many local authorities have begun to charge schools if they want to utilize the park rangers on school trips. When compounded with teachers often running on shoestring budgets, this has resulted in the expertise of the park rangers becoming an under-utilized learning resource.

Space and Place

'Space' and 'place' are often used interchangeably in everyday discourse. However, Yi-Fu Tuan argued that they have quite different meanings, claiming '*What begins as undifferentiated space becomes place as we get to know it better and endow it with value*' [14]. Dourish and Bell argue that we form place by encountering the social, institutional and historical layers of infrastructure that exist beyond the physical attributes of space [3]. We believe an unexplored opportunity exists for technology to highlight these infrastructures as learning resources, allowing communities to share with newcomers what makes a place valuable to them.

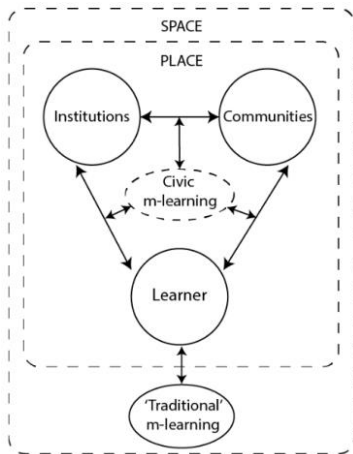


Figure 1: The social design space for m-learning technologies. While 'traditional' m-learning technologies usually only engage with the physical attributes of space as learning resources, civic m-learning should also aim to utilize the infrastructures that form place.

Mobile Learning in Space and Place

Sharples and Taylor's task model for mobile learning [13] extended Activity Theory [4], placing new emphasis on factors crucial to mobile learning: the learning environment, the amount of control over the activity given to the learner and the learner's interactions with others. Frohberg et al. [6] used this task model to perform a critical analysis of the state of mobile learning research. They highlighted that few mobile learning technologies engaged with the underlying social infrastructures of place, instead focusing on the physical attributes of space. We created a visualization of the civic m-learning design space, to illustrate how 'traditional' m-learning technologies frequently only engage with space and fail to engage with the infrastructures of space as learning resources [Figure 1].

Design Engagements

Over the course of our design process, we held numerous interviews, workshops and prototype deployments with the parks' stakeholders. This included park rangers, park volunteers and school teachers. We also visited several of the parks to view the existing educational materials and observe current practices during a school trip. These engagements focused on the participants' relationships with parks as places, their use of parks as learning environments, their general experiences with outdoor learning and their use of educational technologies.

Prototype Application

Using insights gained from examining the learning materials and the participants' relationships with the parks, we developed a prototype mobile app [Figure 2]. This app allowed for multiple user interactions which

focused creativity and the user's engagement with the environment, including taking photos, videos, drawing, marking locations on maps and tracking down locations using the learner's changing proximity. As a way of testing the suitability of these interactions in an educational context, we deployed this application on a local school group's visit to a nearby park. The children using the application to explore the park's historical features and identify different plants and animals that the park had to offer.

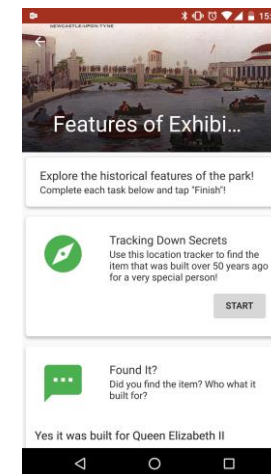


Figure 2: The prototype application which was used by children to explore a park's historical features. It was later built upon and became ParkLearn.

Initial Insights

We drew several insights from the design engagements and prototype deployments. We found that for a technology to be successful at engaging a community space, it should be designed in consideration of the existing social ecosystems, with an awareness of the

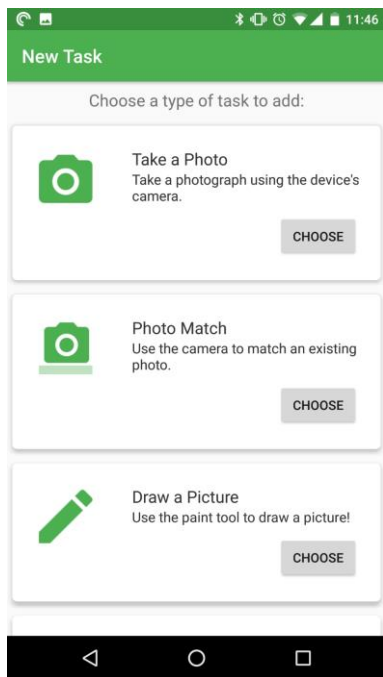


Figure 3: The ParkLearn app allows for the creation of new, place-based activities. It acts as an activity toolkit, supporting photography, drawing, video recording, audio recording, map marking, location hunting and text input.

different motivations of stakeholders and the relationships that exist between them. For example, while the teachers were more interested in meeting the requirements of the national curriculum, the park rangers and volunteers were attempting to instill into the children a sense of ownership over the park, in the hope that they might later care for it as volunteers (clearly reflecting the rangers' struggle with the climate of economic austerity). From this, we learned that designing for civic learning may entail the development of platforms that allow for multiple stakeholders (including children) to express their values and practices, promoting dialogue and political agency. Further discussion can be found in [12].

Current Work

Our ongoing work (with publications under review) explores this further. To support the sharing of places' stakeholder values through educational activities, we expanded the prototype application into ParkLearn—a mobile learning platform that allows users to create, share and engage with place-based learning activities [Figure 3]. As with the prototype app, these activities support a wide variety of creative interactions. ParkLearn also features a website, allowing users to view their uploaded activities and responses when they return from outdoor learning sessions, supporting seamless outdoor-to-classroom learning activities. Content which has been uploaded in response to activities can be used as further learning materials upon return to the classroom. This allows for the ParkLearn platform to support seamless learning [8] between the classroom and the outdoors. We have taken a longitudinal approach with schools, engaging with them over a period of several academic years. Teachers have used the application on school trips

[Figure 4] as well as using it to support activities within their school's grounds.



Figure 4: Children using the ParkLearn application on a school trip (left) and a park volunteer setting up a scan point for the 'talking statue' activity (right)

Additionally, we have been building relationships with multiple volunteer groups and charities who aim to support local heritage. They are using the ParkLearn platform to share their expert knowledge with the wider community in novel ways. The first instance of this was the volunteer group of a local park using ParkLearn to create a 'talking statue': they created an activity within the app which provided an audio narration from the perspective of one of the park's statues. When the accompanying QR code [Figure 4] was scanned, the statue described the history of himself and the park, before talking about the efforts of the volunteers and guiding the learner through the features of the park using GPS. In future work, we hope to explore how technologies like ParkLearn could support teachers in making use of these community experts as educational resources, and how this relationship could also benefit the community as stakeholders.

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