

The Mobile as an ad hoc PLE: Learning Serendipitously in Urban Contexts

Ruthi Aladjem
Knowledge Technology Lab at Tel Aviv University

Rafi Nachmias
Full Professor of Science Education and head of the School of Education
Tel Aviv University

Abstract

In this paper we describe results from a pilot study of informal serendipitous learning mediated by mobile technologies, during first visits to cities. Learning interactions were explored with the underlying premise of unveiling potential paths for consolidating discrete learning events into coherent learning experiences. The analysis of learning interactions revealed three themes that are discussed in this paper—the availability theme, the social theme and the awareness theme. We suggest that the mobile device serves as an “ad hoc PLE (Personal Learning Environment)” that offers on-demand support for learners, thus encouraging them to explore the city and to utilize opportunities for learning and interaction, while accommodating their individual needs and preferences.

Background and introduction

Travel situations have long been recognized as holding substantial learning potential (Mitchell, 1998; Falk et al., 2012). In this context, a city may be regarded as an exploration ground; all is new and invites explanation, clarification, and further information. A visit to a new city carries endless learning opportunities, from the local language, the history of the city, its architecture, art, culture and so on. Travellers are often in a state of mind that makes them eager to learn and explore (Mitchell, 1998; Falk et al., 2012) and learning takes an informal, serendipitous nature. By informal learning, we are referring to learning incidents that are not planned nor organized (Kleis et al., 1973); the term serendipitous learning accentuates the incidental and unplanned aspect of informal learning processes, though it does not suggest that learning is random, as it is in fact determined by the learner’s goals, interests, and prior knowledge (Buchem, 2011).

Before the age of smart mobile devices, tour books, tour guides, and paper maps served as the common support tools, for visitors looking to explore and learn more about their travel destinations. Information was thus limited to the scope of the book, preselected by an editor or an expert guide. A chance encounter with a point of interest that was not deemed as significant enough to appear in a tour book might have ended with no further investigation. As a result of the lack of immediate information, the learning interest that was evoked by the point of interest, might not have been fulfilled or further explored. This situation has changed dramatically since the oncoming of the social web and the advent of mobile devices, no longer is there a single source of information or lack of immediate support. The mobile's perpetual connectivity allows access as well as to information at anytime, anywhere, and on any topic of interest, as well as active contribution (Jenkins et al., 2006; Kress & Pachler, 2007; Scardamalia & Bereiter, 2006). Furthermore, the mobile device has become one with the learner, carried everywhere at all times, holding vast potential for supporting learning in authentic settings and contexts. Learners are free to follow their personal interests, to define their own learning goals and to engage in active, collaborative, learning processes among learners with shared interests (Dieterle, Dede, & Schrier, 2007; Laurillard, 2007; Sharples, Taylor, & Vavoula, 2007).

The notion of a Personal Learning Environment (PLE) has been described from multiple perspectives with varying definitions and design directions (Henri & Charlier, 2010; Zhou, 2013). Adhering to a view of a PLE as an approach to the use of technologies, that is "comprised of all the different tools we use in our everyday life for learning" (Attwell, 2007), we suggest a view of mobile devices as potential ad hoc PLEs for travel situations; comprised of tools selected by learners according to their context dependent learning needs, as they arise in real time. Mobile services and technologies such as navigation tools, social networks and

location-based applications, although not created specifically for learning purposes, may allow learners to engage in knowledge interactions through activities such as sharing, searching and reflection. By selecting applications that support their personal, context dependent needs as they emerge in real time, learners may potentially turn a city visit into a personal, active, and collaborative learning experience.

Following, we will describe the research approach of our pilot study, aiming at identifying and analysing informal serendipitous learning processes during urban explorations, supported by mobile devices. We will then present the main findings and discuss possible implications.

Research approach

The pilot study was conducted as part of a PhD research, aimed at identifying and analysing key factors that play a significant role in incidental, serendipitous learning processes, supported by mobile technologies. The pilot takes a qualitative, learner-centred, approach that includes in-depth interviews with 10 early adopters of technology, who own a smart mobile device. Early adopters are often characterized with such personality traits as personal innovativeness, active information seeking, and intrinsic motivation for exploration (Agarwal & Prasad, 1998; Straub, 2009). These characteristics seem congruent with desirable qualities of 21st century learners and with the socio-constructivist ideal of an active learner involved in constructing knowledge while interacting with a community in authentic settings (Sharples, Taylor & Vavoula, 2007; Wenger, 1998). For the purpose of this study, any knowledge interaction that occurs outside of a formal learning environment is considered an informal learning incident (Kleis et al., 1973; Livingstone, 1999). The research questions focused on the ways in which mobile tools and applications are being used in order to construct knowledge in authentic settings (the city). The analysis of learning interactions also

considered the learning needs that emerged during the visit, the tools and applications that were used in order to support those needs, the types of learning activities (for example, “push” contributions or “pull” requests) and the contexts in which the activities took place.

Results

All subjects owned a smart mobile device (six subjects owned an iOS device and four owned an Android device). Subjects gave a detailed description of up to three recent visits that they had made to new cities (i.e., cities that they had not visited before), bringing the number of cities visited to a total of 21. All subjects reported that they had chosen to use their mobile device as the sole tool for support and communication during their visit; no additional artefacts (such as a paper map, a tour book, or a tour guide) were used.

During their visit, subjects were continually engaged with their personal mobile environment, using versatile mobile applications; different applications were selected alternately to support different needs. It is beyond the scope of this paper to discuss all applications in detail, but they included: location-based navigation and information services (such as *Google Maps*, *Yelp*, *TripAdvisor*, *Foursquare*, *Browser Search*), social interaction tools (such as *Facebook*, *Twitter*, *Google Talk*), tools for real time documentation (such as *Instagram*, *flickr*, *Evernote*), real time scheduling services (such as *bus and subway schedules*), and translation tools (such as *Google Translate*, *iTranslate*). It was found that the tool selection was not necessarily based on the technical features that the applications offered but was context dependent; different applications often carried similar features (for example, both *Facebook* and *Foursquare* have location-based features and support “check-ins”) but were used in different contexts and situations for different purposes. The determining factor seemed to be the way in which subjects interpreted the main purpose of the application and what they had felt would best suit their needs (for example, checking in on *Facebook* was described as an effective

means for sharing with friends back home while checking in on *Foursquare* was often done for pertinent purposes such as seeing if there were other users at the current location and initiating new encounters).

Three major themes emerged from the analysis of learning interactions: the availability theme, the social theme, and the awareness theme. A description of each theme follows.

The availability theme

Walking around the city carrying a mobile device means that one is perpetually connected. Subjects had mentioned that the fact that information and communication are readily available and only a click away, affected their behaviours and decision-making processes. This seems, first and foremost, to have affected their personal sense of control over their environment. For example, one subject mentioned that “just knowing that I could not *really* get lost, allowed me to get lost in the streets, wandering aimlessly without a worry and just looking around. “

Availability also affected the perception of the need to plan ahead; most subjects reported that they preplanned almost nothing for their trip because they knew that they would have their mobile with them. Only one subject stated that he regularly prepares a list of locations to visit; based on prior research and recommendations, he places the list on a mobile map that he uses to navigate in the city. However, he also noted, “If the applications worked perfectly, all the items on my list would appear on them anyway and this might have been redundant.”

Availability also allowed subjects to make decisions in real time; in several cases, subjects received recommendations for nearby locations from friends who realized that they were nearby (as they saw their check-ins). In one instance, a subject checked in while in the north of Paris and a friend commented that he must visit the famous Père Lachaise cemetery; this

visit later led to a college project on Oscar Wilde (who is buried at the cemetery) that was based on the information collected and shared during this unplanned encounter.

Finally, availability allowed for benefiting from location-based services and for the ability to learn in context. In fact, context was often the trigger for learning interaction, as one subject mentioned, “If I come across anything that seems interesting, I immediately look for more information by searching, posting a question on Twitter or simply by photographing, tagging and sharing.” Lack of an available connection and the high cost of mobile internet were mentioned as a major issue. Having an internet (Wi-Fi) connection was mentioned in the interviews as a basic and critical need; as one subject mentioned, “I am lost without my mobile and it must be connected all the time- I can’t imagine my world without it”.

The social theme

The ability to stay in touch with one’s close social group (friends and family) as well as to be able to receive information from and contribute to a larger community, were mentioned throughout the interviews. Subjects had reported versatile ways and contexts in which they chose to use the social features available in different mobile applications.

Subjects, especially if traveling alone, kept a continuous communication with their close social circle; sharing and receiving feedback. This contributed to a feeling of a shared learning experience; as one subject noted, she felt as if “my friends were taking part in my expedition, even if they were not technically there.”

The ability to benefit from social support formed on the basis of context or need was also mentioned; subjects regularly used location-based applications that are based on community contribution such as *Yelp* or *Foursquare*, to receive information on discoveries that they had

reached. Sharing, sometimes led to unexpected discoveries; for example, “I posted a picture of a café and a friend told me that an art gallery next door was just opening an exhibition.” Finally, though sharing was usually done in real time, social activity allowed subjects to return, virtually, to discoveries that they have shared; subjects also reported that they sometimes accessed previously shared items in order to add titles or insert tags.

The awareness theme

As a result of their intensive use of mobile social tools while exploring the city, subjects become more aware of the reciprocal nature of their activities. Subjects mentioned that they came to realize that their actions had more than a personal meaning and that their activities, such as sharing, contributing information, and answering questions, could affect others. One subject, for example, summed up by saying that “just as I have been depending on the courtesy of strangers so can my actions have meaning to others and not just to my personal group of friends.” Realizing that their activities resonate, affected subjects’ long-term tendency to be actively involved in knowledge contribution after the visit ended. Another subject said, “I had used *foursquare* years ago, when it was launched but after a while didn’t really see the point anymore and stopped, after my trip I make a point of using it again as I realize that others will read and benefit from my reviews.”

In summary, it was found that the use of the mobile as an ad hoc personal learning environment has contributed to a shift in the relationship between learners and the object of learning, while exploring the city. The mobile has contributed to an increased sense of control over the surroundings and allowed for true immersion with the dynamic city and all that it has to offer. The mobile device also allowed learners to interact with their community, as part of the learning process and had increased their awareness of the fact that their contributions can

resonate and can benefit others, thus encouraging them to engage in knowledge building processes even once their visit was over.

Discussion and conclusions

The pilot study illuminates the transformation that mobile technology has brought to the learning experience during visits to a new city. The study also highlights ways in which the mobile device can serve as a dynamic learning environment that is activated and controlled by learners, for exploration and learning. The wide array of tools and applications available to learners, all under the “umbrella” of the mobile device and the choice of this technology as the sole learning environment for exploring the city, suggest that the mobile serves as an on-demand personal learning environment, an ad hoc PLE for the visit. Effectively, learners are taking an active part in designing their PLEs (Henri & Charlier, 2010) by selecting and utilizing dynamic components based upon their contextual needs and preferences, as they emerge in real time.

The mobile, serving as an ad hoc PLE, supports a serendipitous learning process. Learners do not need to, and often chooses not to preplan their visit, because of their reliance on the perpetual connection to contextual sources of information and to their own communities. This ad hoc PLE supports dynamic learning processes with extensive opportunities for immediacy that is needed both for the learners’ changing needs as well as due to the city’s static and always changing nature. With no predetermined plan and no expert to lead the way, learners are in control of the learning process; live concerts, parades, traffic jams and essentially everything that happens in the city, is injected, in real time, into the exploration process. Though a single interaction may seem trivial, this ad hoc PLE essentially connects discrete learning interactions onto a comprehensive personal learning experience

(Aladjem & Nachmias, 2011), each interaction may lead to several potential trajectories and a final learning path can only be sketched afterward. With a feeling of control over their environment, largely due to the availability of resources and the social support received through the mobile PLE, learners are free to fully experience the city without worrying about getting lost. Learners undergo a truly serendipitous and immersive learning experience by engaging in authentic, contextual learning interactions. Personal points of interest that were not likely to appear in an expert tour book, now become meaningful learning activities as they are shared and interacted upon, thus changing the level of granularity of learning and increasing the array of potential learning triggers.

Learners are continually engaged in social collaborative learning activities such as responding to comments, tagging previously shared items or adding titles, these activities lead them to virtually revisit previously shared discoveries and view them through the diversified eyes of the community. Revisiting past learning experiences allow learners to engage in reflective and ultimately more profound learning experiences (Dieterle, Dede & Schrier, 2007; Sharples, Taylor & Vavoula, 2007). Due to their reliance on communal contributions, learners become increasingly aware of the notion that their own activities can hold more than just a personal value, realizing that their contributions resonate and can be of benefit to other learners in a virtual community. It can be said that through their own activities learners come to realize that they are a part of a dynamic collaborative knowledge construction process and that they are not just consumers of knowledge, but are also assigning meaning, sharing with the virtual community and changing the balance between contribution and receipt of information (Kress & Pachler, 2007; Scardamalia & Bereiter, 2006).

In conclusion, a visit to a new city is a highly intensive and condensed exploratory experience that may serve as a microcosms and a reference point for demonstrating the potential of the mobile as an informal learning tool. The mobile device has transformed the experience of serendipitous urban exploration and the ways in which learners interact with their surroundings and construct knowledge by serving as a powerful ad hoc PLE. Serendipitous learning processes could potentially be directed, with the support of the mobile PLE, to revolve around disciplines and areas that are relevant not only to informal, but also to formal learning objectives (such a History or Language Studies). Finally, when considering the city of the future we envision a city visit as a truly personalized learning experience, we believe that urban planners and stakeholders should consider the need to cater for “mobile tourism” not only by making sure that an internet connection (WiFi) is freely available everywhere but mostly by planning mobile services that take into account and accommodate the personal needs of visitors interested in exploring and learning about the city.

References

- Agarwal, R. & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research*, 9(2), 204-215.
- Aladjem, R., & Nachmias, R. (2011). Constructing knowledge via mobile devices—one interaction at a time. *International Journal of Technology Enhanced Learning*, 3(6), 599-607.
- Attwell, G. (2007). Personal Learning Environments--The future of eLearning? *eLearning Papers*, 2(1), 1-7.
- Buchem, I. (2011). Serendipitous learning: Recognizing and fostering the potential of microblogging. *Form@ re-Open Journal per la formazione in rete*, 11(74), 7-16.
- Dieterle, E., Dede, C., & Schrier, K. (2007). "Neomillennial" learning styles propagated by wireless handheld devices, In Lytras, M. and Naeve, A. (Eds.) *Ubiquitous and pervasive knowledge and learning management: semantics, social networking and new media to their full potential*, Pennsylvania: Idea Group, Inc., 35-66.
- Falk, J. H., Ballantyne, R., Packer, J., & Benckendorff, P. (2012). Travel and learning: A neglected tourism research area. *Annals of Tourism Research*, 39(2), 908-927.
- Henri, F., & Charlier, B. (2010). Personal learning environment: A concept, an application, or a self-designed instrument?. In *Information Technology Based Higher Education and Training (ITHET)*, 2010 9th International Conference on (pp. 44-51). IEEE.
- Jenkins, H. Clinton, K., Purushotma, R., Robinson, A. J., & Weigel, M. (2006). *Confronting the challenges of participatory culture: media education for the 21st century*,

MacArthur Foundation. Available at:

mitpress.mit.edu/books/full_pdfs/Confronting_the_Challenges.pdf

Kleis, J., Lang, L., Mietus, J.R., & Tiapula, F.T.S. (1973). Toward a contextual definition of nonformal education. Nonformal Education Discussion Paper. Michigan: Michigan State University, 3-6.

Kress, G. & Pachler, N. (2007). Thinking about the 'M-' in mobile learning. In Norman, A. & Pearce, J. (Eds.) Conference proceedings: long and short papers. 6th Annual Conference on Mobile Learning, 199–209.

Laurillard, D. (2007). Pedagogical forms for mobile learning. In Pachler, N. (Ed.) Mobile learning: towards a research agenda, London: WLE Centre, IOE, 153-175.

Livingstone, D. W. (1999). Exploring the icebergs of adult learning: Findings of the first Canadian survey of informal learning practices. *Canadian Journal for the Study of Adult Education*, 13(2), 49–72.

Mitchell, R.D. (1998). Learning through play and pleasure travel: Using play literature to enhance research into touristic learning. *Current Issues in Tourism*, 1:2, 176-188

Scardamalia, M. & Bereiter, C. (2006). Knowledge building: theory, pedagogy, and technology. In Sawyer, K. (Ed.) *Cambridge handbook of the learning sciences*, New York: Cambridge University Press, 97-118.

Sharples, M., Taylor, J., & Vavoula, G. (2007). A theory of learning for the mobile age. In Andrews, R. & Haythornthwaite, C. (Eds.) *The Sage handbook of eLearning research*, London: Sage, 221-247.

Straub, E. T. (2009). Understanding technology adoption: Theory and future directions for informal learning. *Review of Educational Research*, 79(2), 625-649.

Wenger, E. (1998). *Communities of practice: learning, meaning, and identity*, Cambridge: Cambridge University Press.

Zhou, H. (2013). Understanding Personal Learning Environment: a literature review on elements of the concept. In *Society for Information Technology & Teacher Education International Conference Vol .1*, 1161-1164.