As Learning Needs Arise - Creative Use of Mobile Applications to Support Daily Informal Learning

Ruthi Aladjem
Tel Aviv University
Knowledge Technology Lab
rutrutal@gmail.com

Rafi Nachmias
Tel Aviv University
School of Education
nachmias@tauex.tau.ac.il

ABSTRACT
The potential of mobile devices for supporting learning activities, has been researched and discussed extensively in the past decade or so. However, despite broad and versatile research on mobile learning, relatively few studies have explored the use of mobile devices for supporting daily informal learning. This paper focuses on the ways in which learners make use of their mobile device to support personal informal learning and specifically, on the creative uses of readily available mobile applications by the learners. This creative usage of mobile tools and applications consists of repurposing and re-appropriating the applications by using their available features in novel or non-conventional ways, for varying learning objectives. We dub this practice of subverting prescribed usage as “bending”, in order to distinguish it from related practices such as hacking, tinkering and customizing. “Bending” is in line with frameworks of digital literacy that acknowledge the significance of the reuse of media and technology. We aim to shed a light on this type of practice, and suggest that although easily overlooked, due to its somewhat anecdotal nature, bending may potentially encourage a creative mindset that could, in turn, be transferable to other technologies and domains and may support the development of critical thinking strategies, problem solving skills, creativity and self-efficacy. Furthermore, we suggest that with today’s increasing dependence on technology and specifically, on mobile technologies, bending may serve as an opportunity for learners to take ownership over the technology and may also facilitate a more mindful use of mobile devices that could potentially be transferable to their engagement with additional technologies and domains.

Author Keywords
Informal daily learning, creativity, bending

INTRODUCTION
Mobile technologies have become an inseparable part of our daily lives, involved in virtually every activity including, among others, the support of versatile learning and informational objectives and goals. Despite the acknowledgement of the vast potential of mobile devices to support informal and incidental learning (Clough et al. 2009; Scanlon et al. 2014), relatively few studies in the field of mobile learning have focused on exploring the ways in which mobile devices are being used for learning and informational purposes on a daily basis (Chan and Ang, 2017). A mobile incidental learning process may, for example, start off with an anecdotal activity such as casually browsing through a social network feed (such as Facebook or Instagram) and stumbling upon a post (a content item) which provokes a sense of interest and curiosity. Those initial interactions may in turn, lead to further exploration of the objects of curiosity, and may result in an unplanned journey of informal incidental learning that is often carried through and supported by the personal mobile device (Aladjem & Nachmias, 2011; Kop, 2012). Recognizing the significance of technology for learning and indeed, living in a technology driven digital world, has led scholars to define sets of digital competencies, described as “survival skills” for learners, that go beyond the basic skills of reading and writing and are essential for learners in a digital age (Eshet-Alkalai, 2004; Gallardo-Echenique et al. 2015). Frameworks of digital literacy recognize the importance of creativity and mention creative use of tools and media as one of the key elements for learners in the digital age (Eshet-Alkalai, 2004 and Jenkins et al. 2009). The goal of the current study is to highlight a practice of creative usage of mobile tools and applications, which takes place during daily informal learning processes. This practice should be distinguished from related creative practices such as hacking, tinkering and customizing of tools and applications, we therefor dub it as “Bending” and define it as the adaptation of the prescribed use of available mobile applications and tools, in order to suit personal daily learning needs and objectives.

STUDY APPROACH AND DESCRIPTION
The data for this study is drawn from a larger study which explores the wide phenomenon of daily informal learning supported by mobile technologies. The study adopts a qualitative constructivist approach in order to map, analyse and reach a thorough understanding of the phenomenon (Creswell, 2012). The findings are based on semi-open interviews, held with 38 participants. The study group included 20 females and 18 males between the ages of 21 and 46 years old (average age, 30). During a two hour long interview, each respondent reviewed the applications installed on their mobile device, described the common uses of each application and described, in detail, learning related activities that they conducted using the apps. The respondents were encouraged to provide multiple examples of learning scenarios with detailed descriptions of their uses and were also asked to include related information such as the context for the activity as well as any background

123
that led to its occurrence or influenced its course. The interviews were transcribed, coded and classified according to the types of activities and interactions described by the respondents. Activities which consisted of adaptation of the affordances and features of the applications mentioned during the interviews, was classified into two types of activities and practices; the first practice was classified as “customization” and the second practice was classified as “bending”. Customization is the act of adjusting the default settings or options that are available in the application, for example changing the background image, selecting a different colour schemes for the user interface, or manually setting personal content preferences. This type of activity is performed “by design” and is a part of the intended use of the application. The second type of engagement refers to scenarios in which the applications were used in a manner that is different from the common and intended use of the tool. This tendency to use mobile applications in non-conventional ways which may sometimes even be contradictory to the intended or common use of the applications and their features, was classified as “Bending” activity. The current paper focuses on activities classified as “Bending” and on the themes and findings which arise from those bending practices.

**FINDINGS**

The bending practices found in the study, were grouped into three major themes, based on the underlying needs and motivations that have led the respondents to initiate and engage in bending activities. The themes are the need to explore and enhance knowledge, the need to communicate and the need to organize, document and track, as detailed below.

**The need to explore and enhance knowledge**

In several learning scenarios described in the interviews, bending practices were driven by a need to satisfy curiosity or to enhance knowledge. One type of bending practice found in this study, involved converting applications that were social and public or semi-public in nature, into private tools. For example, one respondent explained that in order to have fast access to items that he was exposed to on his Facebook feed, but had no time to read while on the go, he had completely changed the privacy settings of Facebook, so that all his posts were set to “private” and would be visible to himself only. Changing the settings effectively turned his “wall” (which is a part of the social feed in essence) into a private feed, thus allowing the respondent to “share with himself” items that he was interested in reading later on, by posting them to his own wall. A related practice was reported by a respondent who had kept two separate Facebook accounts, one for social objectives and the other as “a private bookmarking tool that I built for myself: I don’t have my friends there I just follow groups and people that I’m interested in what they have to say” by this, she essentially uses the “social” network, as a personal, private, bookmarking tool.

Another example of a social network being used for personal exploration, is the use of metadata as means for broadening knowledge. Many applications allow users to add metadata to content items, in order to enrich and support the user experience. Metadata information may include details such as the location in which the item was created, additional members of the community that are associated with the item (through tagging people in a photograph and sharing on social media), technical information (such as the model of a device by which a photograph was taken), related content categories added to an item posted on social media and more. Metadata provides additional information about the content item but may also be used as means for discovering additional content items. Several respondents described their use of metadata to for exploring different contexts, either out of sheer curiosity or for more practical objectives, such as planning a trip to a new location. For example, the location tag on an Instagram photo, provides information about the location in which the image was captured. However, clicking the location tag, allows users to view additional photographs which were taken at the same location. One respondent described that “My favorite feature on Instagram is the geotag, if someone posts a photo from a location or place that I am not familiar with; I always view more photos that were taken there. I got to know many places like that and even eventually traveled to some of them”. Another respondent actively searched metadata tags, “I search Instagram for all kinds of things. For example, we weren’t sure if we wanted to go to a rock concert so I found live videos of the performers on Instagram and based on what we saw there, we decided to go. It turned out to be awesome”. One respondent mentioned exploring tags as an integral part of preplanning for vacations or visiting new places. “I don’t really use Instagram, I don’t post anything and have very few people that I follow but I use it as a sort of a guide book instead of Google...Whenever we plan to go somewhere new, I do an Instagram search first through the tags and look at all the photos to decide where to go and find the cool places”. A more serendipitous scenario was described by a respondent that decided to go to a destination after extensive research that began with a single incidental photograph which appeared on her Instagram feed, after which “I spent several hours going over many photos and marked all the places on Google maps. A few weeks later, I bought a flight ticket to Kyoto.”

**The need to communicate**

The fast, short and immediate nature that characterizes mobile communication, often leads to visual modes of communication which are viewed as quicker, more available and less cumbersome than formulating and typing a message or even recording a voice memo. Several respondents reported that they regularly use their mobile camera in order to communicate their location or in order to convey different situations without using verbal description. For example, one respondent explained: “say I have a meeting with someone, instead of writing that I have arrived to the location of the meeting, I simply take a selfie or a photo of the place and send it out”. In addition to the use of the camera for communication, some respondents chose to use visual signs as substitute for verbal communication. Two respondents reported that they conduct full conversations on a regular basis, solely using emoticons and emoji (a set of digital pictograms which can be used on mobile keyboards) or animated gifs. The use of emoticons was not intended just to express emotions but also to convey different thoughts and ideas. “Me and my girlfriend talk all the time but we never type, it’s
The need for organization and documentation

Bending practices were found to serve as means for supporting the respondents with handling the large amounts of data and information which they are exposed to on a daily basis. Several respondents described scenarios in which they chose to repurpose tools that were not originally designed for organizational purposes. For example, one respondent described the use of Shazam (an application with music identification capabilities), not as means for identifying music but rather as a way to curate and create a playlist of songs that she wanted to listen to later on “as soon as I hear a nice song, regardless of whether I recognize it or not, I open Shazam and that way I have it in my digital memory”. Another respondent described repurposing the contacts feature on her iOS mobile device as a way to save passwords, by camouflaging the password under fake names. She explained that “I can quickly allocate my passwords because I know which name they were disguised under but should my mobile be stolen, there is no way that the thief will figure it out since it doesn’t say “password”. Yet another respondent reported that he regularly sends messages to his personal email address as reminders for tasks which he needs to handle: “No one uses email anymore and since I get notifications for each email, I am creating a task list on my lock screen”. In addition to the practice of using metadata for enhancing knowledge as described above, metadata was also used as a way to organize personal content publicly. This practice involved adding tags and keywords to content items, thus creating a category for nesting content items. For example, one respondent, regularly used the tag “Sunset UR” (UR being his initials) in order to be able to view all his personal sunset related photos in a batch and to watch them successively. Although the tag is public and viewable by all, the respondent explained that “no one really knows or cares what it means aside for me and it is very useful”.

DISCUSSION AND FURTHER RESEARCH

The study described in this paper, unveils an array of bending practices such as converting public/social tools for private use, using metadata for broadening knowledge and organizing information and using visual metaphors for communication. The bending activities were found to be driven by distinct learning needs, including the need to enhance knowledge, the need to communicate on the go and to the need to organize and document personal information effectively in a public, social reality. During the interviews it became evident that the respondents view their mobile device not merely as containing a set of tools that allow predetermined activities, but rather, as a platform, or a toolkit, which contains a set of affordances that may be used and reused in a variety of ways. Bending practices seem to be a simple and natural manifestation of this view; in cases where there is no available tool or solution to support a specific need in an optimal manner, another tool is being used for that purpose. Bending is consistent with the DIY and Maker culture which is gaining momentum in the context of learning, and inspiring educators to bring a more hands-on approach to learning and to encourage creative approaches for dealing with problems from a “can do” and “Do It Yourself” mindset (Chu et al. 2015). However, bending is carried out without the need for a technological knowhow or the need to interfere with core tool functions as is often the case with tinkering and hacking.

The findings corroborate earlier studies on tool adoption and informal learning; it was found that as part of the process of adopting new tools and technologies, learners adapt tools to suit their everyday practice and preferences and, in turn, the tools modify the activities that the learners are engaged in (Waycott et al. 2005). Similarly, an earlier study on informal learning practices of mobile device enthusiasts, found that in cases where the tools were not sufficient, learners chose to adjust existing tools and even to build custom solutions to accomodate their learning needs (Clough et al. 2009). Another, more recent study, on the use of self-tracking applications, found that “Extreme users” built workarounds to overcome different barriers in existing applications (Choe et al. 2014). In addition to serving a functional purpose by crafting a personal solution to serve a specific need (Clough et al. 2009), adapting tools can support the development of a sense of ownership over the device (Waycott et al. 2005).

Unlike hacking or tinkering, bending does not require coding or handcrafting proficiencies, but nevertheless, the underlying cognitive processes and creativity required to come up with bending solutions, are not necessarily simpler. Bending entails exploring the tools and their affordances, it requires a level of an understanding of the technology and its capabilities. Bending also requires an ability to envision possible uses that go beyond the standard use of the tool, even if those affordances are not emphasized on the main use case, or are not easily accessible. At a dynamic time of frequent changes in needs, requirements and expectations, learners are required to be able to act independently, while making the best use of existing tools to support their daily learning needs. In this sense, bending may be seen as a part of the process of setting personal goals and objectives during the informal learning process (Livingstone, 2001). Bending is also in line with frameworks of digital literacy and new media skills. For example, Eshet-Alkalai (2004) refers to “Reproduction Literacy”, as a practice of making creative duplications and Jenkins (2009) refers to meaningful appropriation and remixing media content, as one of the core media skills of a participatory culture. Furthermore, once a learner becomes aware of the notion that different tools may be adapted to individual needs, it may lead her/him to more awareness and a more mindful use of mobile technology that may extend to activities that go beyond applications on the mobile device.

Finally, we contend that although some of the bending activities that were found in this study may seem anecdotal, bending practices may, at the very least, reflect underling skills that are required for learning in the digital age and should therefore...
be further explored. Further research should explore additional instances of bending and delve deeper into the nature of this practice and its relations to cognitive processes and strategies such as creativity, problem solving and more. Lastly, in a world that is increasingly depending on personalized and adaptive learning (i.e. tools that automatically adapt to the personal needs of the learner) it is worthwhile to consider practices consisting of active adaptations performed from the learner side, and to further explore ways in which this train of practices may be encouraged, facilitated and adapted to other problem-solving contexts and areas.

REFERENCES


