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LEARNING POTENTIALS OF THE UBIQUITOUS INTERNET: USING MOBILE DEVICES TO SUPPORT THE INDIVIDUAL, SOCIAL AND PHYSICAL CONTEXT OF THE LEARNER

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ABSTRACT

The aim of this paper is to identify the key learning potentials of the ubiquitous internet. Rather than focusing on mobile technology or the mobility of the learner, the paper emphasises the ubiquity of internet access as a paramount catalyst for new learning in the digital age. From a sociocultural perspective the paper discusses different ways in which the use of mobile devices can extend and augment the context of the learner. The learning potentials of the ubiquitous internet relate to the opportunities to extend the context of the learner on three levels: 1) personalisation of information and communication, 2) perpetual social contact and visibility, and 3) augmentation of the physical context with an additional layer of information.

KEYWORDS

Mobile learning, ubiquitous internet, sociocultural theory, learning potentials.

1. INTRODUCTION

The field of mobile learning has gone through a number of phases, which have shifted the focus of the field. Sharples (in Pachler, Bachmair & Cook, 2010) identifies three phases of mobile learning beginning with a focus in the mid 1990s on the devices (Quinn, 2000). Around the year 2000 focus began to shift towards research on mobile learning outside educational institutions, for instance in museums. Since around 2005, the focal point of attention within mobile learning has moved even more away from the technological devices and towards the mobility of the learner. Scanlon et al. (2005) state that: "Our approach to mobile learning [...] is not to focus on the technology but on the learner being mobile." (Scanlon et al., 2005: 2). Within this focus on the mobility of the learner, Sharples et al. (2007) and Pachler et al. (2010) emphasise the importance of context for learning.

Sharples et al. (2007) even define mobile learning in relation to changes of context. They define mobile learning as "the processes of coming to know through conversations across multiple contexts amongst people and personal interactive technologies." (Sharples et al., 2007: 225). This paper will expand on this approach by developing an understanding of the concept of context and its relation to learning. The paper will put forward the argument that the learning potentials of mobile media relate to the opportunities of the technology to support and expand the context of the learner.

2. FROM MOBILE TECHNOLOGIES TO THE UBIQUITOUS INTERNET

The focus on context means that the term *mobile devices* is not adequate to describe the nature of the technology that holds the learning potentials. Mobile devices play a central role in widening the context of the learner, but more fundamentally, this is enabled by the individual's ubiquitous access to the internet (including the world wide web). This is, of course, to a great extent, made possible by mobile devices, but in an interplay with other devices such as computers and laptops. Access to the internet is key to understand the

learning potentials related to context. The learning potentials that we outline in this paper, are just as much enabled by the characteristics of the internet as they are by the mobility of devices. Thus, we wish to highlight the term *the ubiquitous internet*, and we will argue for a shift in focus within the field of mobile learning towards the concept of the ubiquitous internet. This also implies that the paper does not focus on the mobility of neither the devices nor the learner, which is central to the field of ubiquitous learning (Hwang et al, 2008; Yahya et al, 2010). From the point of view of this paper, the central point is *not* that the learner is mobile – in fact he/she has always been mobile (Jensen 2013) – but rather that the learner is able to extend his/her context and connect the given context to other contexts.

3. CONTEXT AS INDIVIDUAL, PHYSICAL AND SOCIAL

To develop a conception of context, the paper draws on sociocultural learning theory. The sociocultural framework is especially relevant, because it emphasises the role of context for learning (Vygotsky, 1978; Leontyev, 1981; Wertsch, 1998). Within a sociocultural framework, context is conceptualised by both physical surroundings, the social situation, and by the intentions and purposes of the individual.

According to sociocultural theory, the goal-directed actions of the individual are the basis for understanding learning. The concept of *goal-directed actions* is described by Dewey (1916), who argues that learning occurs through actions that have an aim or purpose. In other words, learning relates to the practice of the individual's actions. Lave & Wenger (1991) and Brown et al. (1998) take the approach a step further and argue that learning is situated in practice. According to Leontyev (1981) the actions of the individual and the situation of the individual's actions is placed within a sociocultural practice, which includes the actions of other people. In other words, actions are never strictly individual, because they always relate to actions of other individuals within an overall sociocultural practice. Consequently, different forms of social interaction become central to learning. According to the sociocultural approach of this article not only direct communication and collaboration is of importance to learning, but also the individual's insight into the activities of others who are related to the sociocultural practice.

From the sociocultural approach we conclude that the concept of context contains a physical, an individual and a social perspective. In that sense, both a physical, an individual and a social aspect of context becomes important to learning. Below we will elaborate on the potentials within each of the three aspects of context.

4. INDIVIDUAL CONTEXT

Within a sociocultural framework, an individual context of the learner is constituted by the aims, purposes, objectives and interests of the individual. The individual might be engaged in solving a specific problem, answering a question, or creating a product. The character of the directed nature of the individual will determine, how the individual reads a situation and will determine what is relevant for him/her in the given situation. In that sense, the individual's aims and purposes contribute to the individual nature of the context.

The concept of *personalisation* denotes that information and communication gets filtered and influenced by the individual context. Through personalisation, the context of the individual can be utilised in two different ways in relation to information and communication: 1) the user is active by providing and selecting information in a system (e.g. RSS feeds), and 2) the user's activities on websites are mined and analysed. This relates to the concept of *narrowcasting* (Lukács, 2007) which refers to an information strategy, where users are targeted with content through registration of their activity on the web, their preferences and their personal profile.

Personalisation plays a key role in the development of services for mobile devices; for instance, services that use push messages to provide information based on the profile of the individual. This can be accomplished by use of measurement points related to the individual's activity such as time, physical location, communication and previously accessed information. Also it is possible by registration of the user's continual use. Through a feedback loop constituted by continual and cumulative registration of the user, the user's selection of output information provides new input to the system, which - again - is used to generate an output of information targeted at the individual.

The learning potential of the ubiquitous internet in relation to the individual context of the learner is that information in different forms can be accessed in different correlations that the learner can piece together in order for them to suit his/her special purposes. Learning resources can provide personalised information based on the individual learner's objectives and purposes, and the students' previous use of information. In this way it is possible to target learners with relevant information such as new publications, new courses and relevant presentations based on their "personal profile".

5. SOCIAL CONTEXT

From a sociocultural approach, the social context of the learner consists of an overall sociocultural context surrounding the actions of the individual. The social context is constituted by other individuals, whose activities relate to the actions of the individual. For instance, the social context of a student writing an exam paper will, among other things, include other students, the teacher, the examiner, and administrative staff. An important aspect of the social context is that the individual might not be aware of the entire social context. For instance, a student might not be aware of formal demands set by the administration, or of the criteria that the teacher and examiner use in the evaluation of the assignment.

The technological developments over the last few centuries have taken place parallel to what Giddens (1990) refers to as the *disembedding* of human interaction, describing how social relations are lifted out of physical proximity and reconstructed across an indefinite range of time and space. This disembedding and recontextualisation of human relations has brought on an increased awareness of phenomena and events outside the immediate vicinity of the individual. Theorists like McLuhan (1964) and Castells (1996) have established a connection between the rise of media technologies like television and the internet and new shapes of human interaction, and claim respectively that the radical increase of the human radius of attention caused by media has given rise to the concept of the Global Village (McLuhan, 1964) and the Network Society (Castells, 1996).

The wide adoption of mobile devices with internet access and the subsequent ubiquity of the internet has led to a radicalisation of the disembedding of social relations described by Giddens (1990). Regardless of time and space the individual is now perpetually connected to the entirety of his/her social network. Even though not everybody is online all the time, central internet affordances like the network structure (Castells, 1996), the openness and visibility of communication and information (Hoem, 2006), and the combination of synchronous and asynchronous communication forms (Foulger, 2003) allow the individual to utilise a vast quantity of his/her social network in shaping the social context at a given time and place.

Web services like Facebook, Twitter and Google+ are constantly at hand due to the ubiquitous internet, and they allow us to establish, maintain and utilise personal connections anywhere and anytime. The easy access to social relations allows the individual to more extensively exploit what Granovetter (1973) has referred to as *the strength of weak ties*. Granovetter distinguishes between *strong ties* which consist mainly of family and close friends, and *weak ties* which denote more peripheral relations. Strong ties offer the individual security and confirmation, while the weak ties allow the individual to be presented with new information or unfamiliar standpoints, and allow the individual to seek out and join new communities, which transcend the closedness, that characterises the information and communication patterns of close relations (Granovetter, 1973; Baron, 2005). The perpetual contact (Katz & Aakhus, 2002) between weak ties created by the ubiquitous internet has led to an unprecedented openness in communication and has breached the closed perimeter of communication in physical contexts.

As already stated above, sociocultural theory emphasises that learning is always linked to a social context, and that social interaction, coordination and collaboration are important elements for learning. The individual's insight into other individuals' activities as well as an understanding of the general work he/she is involved in are factors that are central for learning. As a result of this there is a potential for learning in nourishing various forms of contact and visibility between individuals. The radicalised disembedding of social relations from physical settings manifested in the perpetual contact between individuals, means that the individual at any given time and space is able to expand his/her social context for learning.

The learning potential of the ubiquitous internet in relation to the social context of the learner is linked to the increased openness, contact and visibility between individuals otherwise separated by time or space. This

supports an expansion of the basis for reflection and strengthens the individual's opportunities to carry out his/her self-governed learning activities with the activities of others in mind.

6. PHYSICAL CONTEXT

The physical context of the learner consists of the conditions and opportunities of the given physical surroundings. Such conditions could be tools, books, paper, pencil, computers, etc. that the individual can employ to perform activities. Because conditions of the physical context according to the sociocultural approach are important to learning, context-sensitive information can potentially support and enhance learning.

In order to encompass the different dimensions of the impact of the physical context we have chosen to use the phrase *location specific communication and information which* can be defined as communication or information which is tagged with metadata such as latitude and longitude or which is induced by proximity of a specific location. This happens partly through the individuals reaction to the surroundings and partly through internet services using GPS technology to determine latitude and longitude of the user and by pulling data attached to a specific location.

As mentioned earlier it can be argued that the ubiquity of the internet has resulted in a radicalisation of the disembedding of social relations from physical proximity described by Giddens (1990). The increased location awareness (Gordon & e Silva 2011) seen among internet users today, can – however – be understood as a partly opposing tendency in that it induces a re-embedding of social relations and a focus on the near contexts of the individual. So while the individual now has a greater focus on things happening outside the immediate physical surroundings, the physical context at the same time holds a greater importance in communication and information.

From this perspective the development of location specific services has affected the way humans conceive the world and has created a greater emphasis on that which is physically near. The organising logic of the internet was earlier characterised by the parameters *what* (topics), *who* (relation) and *when* (points in time). However, the new development in internet technology and the actual use of these new technologies have added *where* (physical location) (Gordon & de Souza e Silva, 2011) to these parameters. When users of the internet navigate after this parameter it means that the internet manifests differently according to the location of the individual. The user will use different services and search for different topics according to the location he/she is in, and at the same time the location of the user also effects which content being presented to the users from the internet services. Moreover, the internet user can navigate through and filter the internet according to specific places he/she is interested in. The location specific navigation does not replace earlier organisation structures on the web, but gives the user the possibility to seamlessly navigate through that which is marked as physically near and that which is marked as conceptually near.

However, not only GPS-technology has affected the significance of the location in information and communication on the internet. The devices which we use to access the internet have become increasingly mobile, and they do not inhibit our agency in the world to the same extent as before. The actual or latent mobility makes it more interesting than earlier for our communication partners to know *where* we are when we communicate – a tendency already introduced as the first generations of cellular phones became popular towards the end of the last century (Laurier, 2001), and which has now become relevant anew.

When utilising technologies such as location based services, the physical context for learning is extended. The learning potential of the ubiquitous internet in relation to the physical context lies within its ability to augment the given context with an additional layer of information, which the individual can use to increase his/her opportunities for acting and learning.

7. CONCLUSION

In this paper we have proposed a shift in focus within the field of mobile learning towards the ubiquitous internet. We have argued for a shift in focus away from the mobile technologies and also away from a focus on the mobility of the learner. Instead, we have argued that the central learning potentials of mobile devices relate to the opportunities of the learner to utilise the ubiquitous internet to enhance his/her context.

From a sociocultural perspective, context can be viewed as an individual, a physical and social context. The ubiquitous internet can extend all three aspects of context. First of all, the ubiquitous internet can support the individual context of the learner by providing personalised information and in the form of personal tools that adapt to the aims and purposes of the individual. Secondly, the ubiquitous internet can support an enhancement of the social context through perpetual contact between individuals. Finally, the physical context of the learner can be supported by location specific information and communication, which can augment the context with an additional layer of information. Together, these three learning potentials of the ubiquitous internet can empower the individual learner to perform actions, answer questions, solve problems, etc. in new ways. The conclusions of the paper call for further research within the field of mobile learning with a focus on how individuals utilise the ubiquitous internet in different contexts and how they draw on mobile devices to enhance their context for learning.

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