

REFLECTIONS ON MOBILE AND LIFE LONG LEARNING: MUSEUMS AS APPLICATION FIELDS

Angeliki Antoniou

University of Peloponnese

Department of Computer Science and Technology

Terma Karaiskaki, 22100 Tripolis, Greece

George Lepouras

University of Peloponnese

Department of Computer Science and Technology

Terma Karaiskaki, 22100 Tripolis, Greece

ABSTRACT

Viewing mobile learning as a valuable tool for life long learning, the paper wishes to explore different scenarios for the use of visitors' mobile phones within the museum environment. The museum is perceived as a life long learning institution and there are suggestions for the design of mobile learning technology that adapts to the different learning needs of a diverse public.

KEYWORDS

Life Long Learning, Mobile Phones, Museum

1. THE EMERGENCE OF MUSEUM, MOBILE AND LIFE LONG LEARNING

The present work wishes to demonstrate the connection between life long learning and mobile learning, using the museum environment as a new application field. Different social, political and economic reasons formed the notion of Life Long Learning. Both UNESCO and the European Union agree that Life Long Learning is and will be a "master concept that should shape educational systems" ('The Faure Report', UNESCO 1972, p.182; Commission of the European Communities, 2003). Within the framework of Life Long Learning (or better Life Long Education), one could identify three types of Education: Formal, Non-Formal and Informal Education. Some of the main reasons for the use of such categories are 1) the rapid expansion of mass media and technology (Torres, 2001), 2) the need for inclusive education (i.e. flexibility required for the education of people with disabilities) (Kisanji, 1999) and 3) the growing need for vocational education (Jeffs & Smith, 1990).

According to Coombs, Prosser and Ahmed (1973), **Formal Education** (FE) is "the hierarchically structured, chronologically graded 'education system', running from primary school through the university and including, in addition to general academic studies, a variety of specialised programmes and institutions for full-time technical and professional training" (Coombs, et al., 1973, p.11). Similarly, **Non-formal Education** (NFE) can be defined as 'out-of-school and continuing education' (Torres, 2001). Finally, **Informal Education** (IE) is "the lifelong process by which every individual acquires and accumulates knowledge, skills, attitudes and insights from daily experiences and exposure to the environment. ...Generally, informal education is unorganized, unsystematic and even unintentional at times, yet accounts for the great bulk of any person's total lifetime learning –including that of a highly 'schooled' person" (Coombs & Ahmed, 1974, P.8). Therefore, a major difference between the educational types is the role of curricula in the process. Ellis (1990) viewed the different types of curriculum as a key factor for the separation of the three educational types. A set curriculum characterises FE. NFE has a negotiated curriculum

since it is flexible, reinforces dialogue and it is learner-centred. Finally, IE is characterised by the absence of curriculum and it is conversation-based. Apart from the fact that the different educational types have some common characteristics, they often co-exist and overlap.

Today all three types of education are considered equally important. However, although this is the case in organisations like UNESCO or the European Union, there are still some reactions to the use of alternative types of education. The past focus on solely FE makes the parallel use of all three types problematic at times. Some students may find it confusing to cope with the transition from FE to NFE and IE (Jeffs & Smith, 1990). In the same way, some professionals might have problems to develop a concrete view of themselves as instructors. The different types of education demand a different role from the teacher and the student. The parallel use of such types could be a complicated task. Moreover, it is not easy for educators to change their teaching styles across the different educational types (Etling, 1993). Technology could be proven a valuable tool in this case. It could assist the transition from one type to another since this transition does not have to be totally depended on the flexibility of educators (i.e. teachers, parents, or museum guides).

Current research sees a link between mobile learning and life long learning (Holzinger, et al., 2005; Sharples, 2000; Sharples, et al., 2005). The increased learning needs together with the needs for mobility of people in the western societies makes mobile learning a promising tool for life long learning. Mobile learning can assist the individual for learning anytime, anywhere.

We also believe that museums are places where all types of education (could) exist. Museums provide an ideal environment for education. Museums can also provide a unique environment for the emergence of technologies for mobile and life long learning. Visitors have different educational needs. The museums as educational institutions should support all types of learning. Moreover, current research demonstrates the changing role of museums. Museums started as places for the storage, protection and display of artefacts. Many researchers argue that museums nowadays are learning institutions (Kelly, 2000). This view is shared by different professionals like academics and curators (Falk & Dierking, 1995). The change of museums from storage/display institutions to learning institutions seem to have complied with the increasing need for lifelong learning. Museums as educational institutions could and should accommodate the needs of all three types of education. Technology could assist in this process by offering systems that could identify the different educational needs and types for different visitors and adapt to them. In the following sections we will provide some solutions for the use of learning technology within the museum environment, as a new application field for the emergence of mobile and life long learning applications.

2. MOBILE TECHNOLOGY AND MUSEUM MOBILE APPLICATIONS

It is beyond the scope of the present work to talk about the social needs that led to the design and use of mobile technology and its relation to learning. There have been many studies in the past explaining the reasons for the use of such technologies within the educational domain (Keegan, 2002). An attempt to combine mobile technologies and educational practices was the use of HandLeR, based on the principles of conversational learning. Based on the work of Gordon Pask, effective learning involves construction, conversation and control. HandLeR (Handheld Learning Resource) was a mobile handheld device that enabled conversation between learners and teachers (Sharples, et al., 2002).

Similarly, the very nature of museums also led to the wide use of mobile applications on their grounds. Therefore, many museums use handheld devices which support mobility within the museum premises. In addition, in the year 2006, there were more than 2.14 billion mobile phone users around the world. The penetration rate in Europe is nearing 100% and in many western European countries (i.e. Italy, Sweden, UK, etc) the rate has exceeded 100% since many citizens are users of multiple mobile phones (<http://www.mobiletracker.net>). These facts imply that most museum visitors are very likely to own a mobile phone. Thinking of the visitor also as a learner, the use of visitors' mobile phones within the museum environment has three major advantages compared to other mobile devices:

- The learner/visitor owns the device which is a communication and a learning tool in her daily life (the museum being one of many learning environments). The mobile phone can be used to provide and store information. Information delivered to the visitor's mobile phone is something that can be taken along when the visitor leaves the museum. At a later time, the visitor is still able to go through the collected information and recapture the experience.

- The visitor/ learner is familiar with the use of a device she owns, reducing cognitive load demands from the learning of another device. The visitor does not have to learn how to use a new device, during the time- restricted visit, and can therefore, concentrate on the learning material.
- Using visitors' mobile phones, a museum decreases the resources necessary to implement and maintain the applications. In any other case, the museum would have to provide the handheld device (i.e. headphones, PDAs, palmtops, etc). The museum would also minimise maintenance expenses. We believe that this is a major advantage, since the cost of technology is often a prohibiting factor for its implementation and use.

On the technical level, the information can be transmitted with the use of an adaptive system. Previous research (Antoniou & Lepouras, 2005) has shown the effective use of an adaptive learning system within the museum premises, applying Bluetooth technology for the transmission of information. Learning information was adapted to the visitors' learning and visiting style, using a correlation between the movement of the visitor (visiting style) and the learning needs that this movement implied (learning style) (Antoniou & Lepouras, 2006). Moving a step forward, we wish to add Life Long Learning factors to those learning – adaptive systems. The following section wishes to suggest possible solutions to the problem.

3. DESIGN SUGGESTIONS FOR ADAPTATION

Having reviewed visitor studies literature (Falk & Dierking, 2000; Hooper-Greenhill, 2004), we have identified four types of visitors, among others: individuals that visit alone, groups, families, and schools. All the above types have unique learning needs and their behavior in a museum differs significantly (Falk & Dierking, 2000). Information should be adapted to their specific learning demands. In addition, considering issues of Life Long Learning, we propose the use of the 7 categories- scenarios for the initial stages of the design of mobile technologies for museum use (Table 1).

Table 1. Scenarios for Life Long Learning in Museums

	Individuals	Families	Schools	Groups
Formal education	Set Curriculum	<i>No existing Scenario</i>	Set Curriculum-cooperative learning	<i>No existing Scenario</i>
Non-formal education	Negotiated Curriculum	<i>No existing Scenario</i>	<i>No existing Scenario</i>	Negotiated Curriculum - cooperative learning
Informal education	Different learning tasks – edutainment	Different cooperative learning tasks – edutainment	<i>No existing Scenario</i>	Different (cooperative) learning tasks – edutainment

Educators provide the adaptive museum learning system with material for the different learning categories. The appropriate learning content is delivered to visitors' mobile phones. Material based on a set curriculum is delivered to individuals and schools visiting a museum within the framework of the formal education (set and clear learning goals) (i.e. teaching exam related history material). More flexible content is delivered to individuals and groups that visit as a part of a non-formal learning activity. The educational goals are still clear but not that strict (i.e. teaching conservation of antiquities to a seminar group). For groups, cooperative learning tasks can be also accepted. Similarly, informal education material is delivered to families, individuals and groups visiting a museum as a part of an edutaining experience.

4. CONCLUSION

The above classification can hopefully assist the designers of new mobile-educational museum applications to consider the learning needs of the different visitor types in the different leaning conditions. That means

that the technology will provide the tools for learning in all 7 main categories and the appropriate educational content for each one and their subcategories (i.e. the different school classes). For example, when a school class visits the museum, the system will provide the learning material for schools, in the formal education category for the specific class level. Finally, we strongly believe that museums, due to the diversity of their visitors and their different learning needs, can be new, ideal application and evaluation fields for the emergence of mobile learning and life long learning technologies.

ACKNOWLEDGEMENT

The authors wish to acknowledge the valuable support of Prof. C. Agriandoni, University of Thessaly (Greece).

REFERENCES

- Antoniou, A. and Lepouras, G., 2005. Using Bluetooth Technology for Personalized Visitor Information: Four Scenarios of Use. *Proceedings of the IADIS International Conference Mobile Learning 2005*. Qwara, Malta, pp. 307-309.
- Antoniou, A. and Lepouras, G., 2006. Adaptation to Visitors' Visiting and Cognitive Style. *Proceedings of the 3rd International Conference of Museology & ICOM-AVICOM Annual Conference 2006*. Mytilene, Greece.
- Commission of the European Communities, 2003. "Education & Training 2010". *The Success of the Lisbon Strategy Hinges on Urgent Reforms*. Communications from the Commission. Brussels.
- Coombs, P.H. et al, 1973. *New Paths to Learning for Rural Children and Youth*. International Council for Educational Development. New York.
- Coombs, P.H. and Ahmed, M., 1974. *Attacking Rural Poverty. How non-formal education can help*. John Hopkins University Press. Baltimore.
- Ellis, J., 1990. Informal education-s Christian perspective. In T. Jeffs & Smith (Eds.) *Using Informal Education*. Open University Press. Buckingham.
- Etling, A.,1993. What is Nonformal Education? *Journal of Agricultural Education*, Vol.12, pp 72-76.
- Falk, J. H. and Dierking, L.D.,2000. *Learning from Museums*. Altamira Press. Walnut Creek, CA.
- Holzinger, A. et al, 2005. Lifelong-Learning Support by M-learning: Example Scenarios. *ACM eLearn Magazine*, 5. Available Online: <http://www.elearnmag.org/subpage.cfm?section=research&article=6-1> Last accessed January 2008.
- Hooper-Greenhill, E., 2004. *The Educational Role of the Museum*. Routledge. London.
- Jeffs, I.T. and Smith, M., 1990. *Using Informal Education*. Open University Press. Buckingham.
- Keegan, D., 2002. *The future of learning: From elearning to mlearning*. Fern University Institute for Research into Distance Education, Hagen, Germany.
- Kelly, L., 2000. Understanding Conceptions of Learning. *GERG Conference 2000*. Available Online: www.amonline.net.au/amarc/pdf/research/paper2000.pdf Last Accessed November 2005.
- Kisanji, J., 1999. Historical and Theoretical Basis of Inclusive Education. *Workshop on "Inclusive Education in Namibia: The Challenge for Teacher Education"*, Namibia.
- Sharples, M., 2000. The design of personal mobile technologies for lifelong learning. *Computers & Education*, Vol. 34, pp 177-193.
- Sharples, M. et al, 2002. The Design and Implementation of a Mobile Learning Resource. *Personal and Ubiquitous Computing*, Vol. 6, pp 220-234.
- Sharples, M. et al, 2005. Towards a theory of mobile learning. *Proceedings of mLearn 2005*. Available Online:<http://www.mlearn.org.za/CD/papers/Sharples-%20Theory%20of%20Mobile.pdf> Last accessed January 2008.
- Torres, R.M., 2001. Amplifying and Diversifying Learning. *ADEA Biennale, 'Mainstreaming NFE: Moving from the margin and the going to scale'*. Arusha, Tanzania.
- UNESCO (1972) *Learning to Be*. The Faure Report. UNESCO. Paris.
- Web References**
- <http://www.mobiletracker.net/archives/2005/05/18/mobile-subscribers-worldwide> Last accessed January 2008.
- <http://www.mobiletracker.net/archives/2005/05/05/mobile-penetration> Last accessed January 2008.