

# **Knowledge Enhancement on Site – Guests’ attitudes towards m-Learning.**

Peter J. Mirski<sup>a</sup> and  
Dagmar Abfalter<sup>b</sup>

<sup>a</sup> Department of Management and Applied Informatics  
Management Center Innsbruck, Austria  
peter.mirski@mci.edu

<sup>b</sup> Department of General and Tourism Management  
University of Innsbruck, Austria  
dagmar.abfalter@uibk.ac.at

## **Abstract**

Trends such as progress in mobile information technologies, lifelong learning and societal changes are the starting points of the development of mobile learning. A survey among 380 tourists investigated attitudes and expectations of tourist interested in (mobile) learning offers during their stay as well as their preferred learning settings including time, content or learning style. The results indicate a clear interest of tourists in using mobile learning for the enhancement of their knowledge. Implications for the effective use of mobile learning for tourism services and possibilities for guest retention are reflected (maximum 150 words).

**Keywords:** mobile learning, lifelong learning, leisure learning, mobile devices, survey.

## **1 Introduction**

It can be considered ironic that progress in information technologies has generated even more work and pressure on our society instead of easing every day’s life. Learning during leisure time has become a trend in our knowledge society which can be characterized by a high correlation between time-poor and money-rich (Lindskog / Berge 2003). While levels of education are rising, time has become one of our society’s scarcest resources. Time-rich market segments contain retired people, children and youth as well as unemployed whereas most professionals and parents with small children can be considered time-poor (Lindskog / Berge 2003).

Learning is a constructive process of acting within an environment and reflecting upon it. Action includes solving problems, engaging in dialogues of enquiry and acquiring new knowledge (Sharples 2000). Mobile information technologies offer new possibilities for knowledge enhancement and also for value creation through unique tourism services. There is now the opportunity for people to preserve and organize their personal information in digital form over a lifetime.

## **2 Theoretical Background**

### **2.1 Lifelong learning**

The underlying assumption for lifelong learning is that it is impossible to supply all the knowledge and skills learners need throughout their lifetimes at school or at university (Sharples 2000). People need and desire to constantly enhance their knowledge and skills for the sake of their professional or personal development or for problem solving in both areas.

Learning is a process of mental and social change of an entire lifetime. In future, learners will not be bound to particular locations. New technologies offer the opportunity to learn and study at any time and anywhere in different ways – according to the user's preferences. Also, lifelong learning is primarily collaborative rather than competitive involving joint and cooperative learning as well as the exchange and critical discussion with others.

### **2.2 Mobile learning**

Mobile devices can help to combine work, study/education and leisure in a meaningful way. M-learning can be considered a lifelong activity that can take place in changing communities and mixed with everyday life situations where people repeatedly enhance their knowledge and skills (Sharples 2000).

m-Learning or mobile learning is an emerging form of distance learning that offers both teachers and learners the “opportunity to interact and gain access to educational material using a wireless handheld device, independent of time and space” (Dye / Solstad / K'Odingo 2003). Research in m-Learning for Higher Education is steadily progressing. In a survey of young adults' (16-24 years) use of mobile phones in the UK, almost half expressed an interest in using their mobile phone to improve their reading, spelling, maths or language skills. Although only 5% currently use palmtops, 55 % stated that they might use on under other conditions, especially lower prices (LSDA 2003). Nevertheless, its usability and applicability for tourism aspects remain

mostly unexplored although travel and tourism have already been identified one of the major fields of application for mobile services and mobile learning.

### **2.3 Technical Requirements**

New technologies such as handheld mobile devices allowing for wireless connections to the Internet open new prospects for a whole range of mobile services for tourism. After the introduction of first computers, then desktop computers and third the development of the Internet and the worldwide web, it is claimed that handheld computers are at the forefront of the “fourth wave” in the evolution of technology (Pownell / Bailey 2001), allowing for information for anyone, anytime, anywhere, thus enabling learning issues such as teaming, lifelong learning, collaborative, explorative and hands-on learning. Although palmtop computers have been available for the past 6 or 7 years, their use for learning is still a relatively new area (Savill-Smith / Kent 2003).

Still, there are advantages such as the relative low price for palmtops compared to desktop or laptop computers, the possibility of ubiquitous computing, the ease of access to information, the possibility of collaborative learning and of independent learning. Major drawbacks are still the existence of several incompatible technology platforms competing in the marketplace and – possibly – their physical fragility as well as the need to keep batteries re-charged (Savill-Smith / Kent 2003).

Whether mobile phones with Internet access or handheld data devices with phone capability are used, the objective is wireless access to data applications for individuals. Handheld digital devices are becoming more common, and their quality and capability is increasing due to technological breakthroughs in miniaturization and advancements in wireless bandwidth and data networks (Keegan 2002). Important characteristics for mobile learning devices and tools should include that they are highly portable, can be individually adapted to the abilities, knowledge and learning styles of the user, are unobtrusive, available anywhere and adaptable, persistent, useful and intuitive for people who have no prior experience with technology.

### **2.4 Mobile learning services for tourism**

Travel and tourism have become a global industry with more than 690 million people travelling in 2001 (World Tourism Organization 2002). The education sector is not the only sector that is changing. About 10 years ago, Poon (1993; 2003) introduced the concept of the “new tourist”, being characterized as having more experience, a new moral concept, changing life styles, increased flexibility as well as increased independence. Also, several trends such as an increasing demand for adventure and

enjoyment seem to state a shift from destination-based to event- and attraction-based tourist products. These characteristics increase the fit between mobile learning possibilities and tourist profiles on their move to “high tech, high touch”.

Boundaries between services and learning are diminishing as specific and accurate knowledge is increasingly needed for short-term purposes and the provision of information and learning material is more and more considered a service. In the case of tourism, m-Learning devices allow for accurate and instant learning items on site, whether the tourist is interested in learning more about the museum or the city he is about to visit, the mountain he is about to climb or the historic roots and geographic or linguistic peculiarities of the country he is about to traverse. In this respect, m-Learning offers more than just providing an electronic travel guide.

In order to sustain an effective customer relationship management, hospitality and leisure companies will have to focus on business models that concentrate on mass customized travel experiences. Therefore, “in 2010, travel will be about engaging in powerful, seamless personal experiences that are carefully tailored to learning and catering to the tastes and demands of individual travellers” (Erdly / Kesterson-Townes 2003). Innovation may hold the key to survival and competitiveness in the tourism sector. In a society where knowledge and learning are highly estimated and the technical equipment such as PDAs, GPRS standards on mobile phones or wireless internet access is widely distributed, mLearning services for tourists provide an opportunity to deliver unique services. Also, it may be a powerful tool to bind the knowledge and information seeking guest segment to a destination or operating service. A survey among visitors to Austria staying more than 4 nights in the region identified educational trips (17%) as the third important main travel motive (Statistik Austria 2003).

### **3 Aim and Scope of the Study**

The societal trends described above point to a respectable potential of mobile learning. Despite the fact that there has been widespread discussion on the need to provide learners with the technology to help them learn when and wherever they want to, few empirical research has been undertaken in order to investigate possibilities and acceptance of mobile learning offers away from classical learning institutions such as schools or universities.

The present study aims at identifying the potential of tourists being interested in (mobile) learning offers during their stay as well as their preferred learning setting, including time, content or learning style. The willingness to pay for the respective

service is taken as an indicator for explicit interest in the service. Also, the effectiveness of such an instrument for customer retention is brought to the fore.

## **4 Method of the Study**

The Tyrol is Austria's most tourism intensive region, accounting for 6028 overnight stays per 100 inhabitants (Statistik Austria 2003) and is located at the center of Europe, bordering Germany and Italy. The survey instrument was a questionnaire with close-end multiple-choice questions and statements that had to be rated on 5-point-Likert scales. The survey has been carried out at five locations in the Austrian province of Tyrol in August 2003 and was administrated by 3 interviewers. 380 questionnaires have been collected and analysed.

## **5 Results of the Empirical Study**

### **5.1 Respondents' profile**

The majority of the respondents are German citizens (50.4 %), Austrian tourists or residents (23.5 %) or Swiss (16.4 %) and Italian (4.6 %) tourists with slightly more female (58 %) than male respondents. 11.3 % of the respondents are aged from 16 to 25 years, 34.9 % are aged from 26 to 35 years, 24.4 % are aged from 36 to 45 years and 17.7 % of the respondents are aged from 46 to 55 years. 6.7 % of the respondents are aged between 56 and 65 years and 5.1 % are older than 65 years. The level of education is rather high, 40.6 % have finished their A-Levels, and another 23.4 % hold a university degree or diploma from higher education institutions. The majority of the respondents work as employees (47.8 %), 4.0 % in leading positions, 14.9 % are self-employed. About a third are not currently working, being students (17.1 %) and retired persons (9.6 %).

### **5.2 Information concerning the stay and holiday preparation**

Most of the respondents had already visited the destination before (55.4 %), 9 % of the interviewees are residents. Residents' answers concerning the questions on mobile learning did not show significant differences and have therefore been maintained. The majority of tourists used their private car to come to the Tyrol (65.0 %) or arrived by train (22.7 %), staying for a holiday (54.2 %) or a short vacation (33.6 %).

Most of the respondents visited the destination with their partner (43.4 %) or their family (19.2 %) and friends (18.9 %). Only 12 % travelled alone. Trips were booked

up to 4 weeks in advance (47.4 %), 32.0 % booked more than 2 months before their stay. Hotels (35.5 %) and pensions (28.4 %) as well as friends and relatives (13.4 %) and holiday apartments (11.6 %) are the most important types of accommodation.

The main sources of information for the travellers have been friends and relatives (52.4 %), the Internet (43.3 %) and travel literature and brochures (41.6 %). Information retrieved before the beginning of the journey was mostly on organisational details (71.8 %), leisure (44.7 %), excursion (43.9 %) and cultural (30.7 %) facilities. It is important to note that the focus of the present study is not information services but learning aspects. The usability and aspects of mobile information services have been described elsewhere (e.g. Ghandour / Buhalis 2003; Eriksson 2002).

### 5.3 Travel motivations

Factors that have been crucial for the travel decision have been assessed using 5-point Likert scales (1 = I strongly disagree, 5 = I strongly agree). Landscape, mountain and nature as well as the desire for change, discovery and the experience of new things have been identified the most important travel motivations.

	<b>Decisive factors</b>	<b>Mean</b>
4.0-4.5 Strong agreement	To enjoy the landscape, mountains and nature.	4,50
	Change, discover and experience new things.	4,43
	The freedom to take flexible and spontaneous decisions.	4,25
	Culture and sightseeing.	4,02
	To enjoy silence/peace.	4,01
3.5-3.9 Agreement	To enjoy sun and water.	3,89
	Sports and activity.	3,84
	To do something for my spirit and education.	3,60
	Get to know new persons.	3,58
3.0-3.4 Rather agree	Comfort, to have myself indulged .	3,33
	To do something for my body and my looks.	3,02

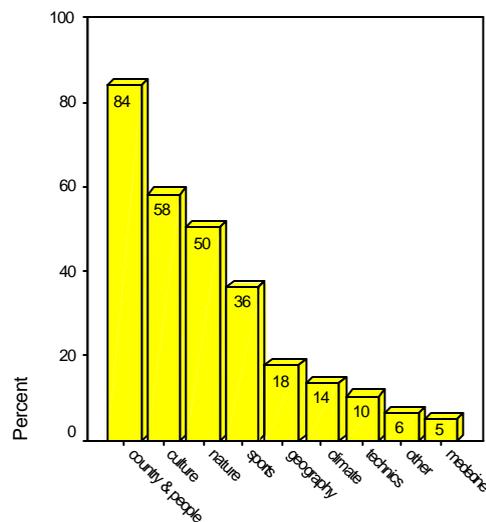
**Table 1.** Decisive factors for the travel decision  
(1 = I strongly disagree; 5 = I strongly agree)

### 5.4 Attitudes towards “leisure learning”

Questioned about the reasons for knowledge enhancement, the majority of the respondents stated general and further education (83.2 %), professional interest (42.4 %) and personal hobbies (35.4 %). Amusement (23.2 %) and the desire to dispose of

conversation topics (22.2 %) are further reasons, why the interviewees like to learn. There does not seem to be a preferred style of learning, as most of the respondents like to combine different learning styles such as seeing/reading (69.0 %), discussions (48.4 %), hearing (40.4 %), feeling (22.3 %) and writing/drawing (19.0 %). 20.3 % of the respondents like to use new media for their learning experience. Concerning the timing of learning, the possibility to learn during their stay is most attractive concerning the destination (72.2 %) as well as the respondents' personal interests (77.9 %). In general, respondents are quite satisfied with the information offer provided in the destination (mean = 4.42), the learning offer is considered still but less satisfying (mean = 3.83).

The respondents' personal interests are mostly centered on country and people (84.1 %) and culture (58.2) as well as nature (50.3). Table 2 provides an overview of the diverse fields of interest.



**Table 2.** Personal fields of interests (percent)

Attitudes towards “leisure learning” and possibilities for mobile learning in a holiday context have been investigated using a 5point-Likert scale (ranging from 1 = I strongly disagree to 5 = I strongly agree). Scale reliability was tested using Cronbach’s alpha ( $\alpha = .801$ ), after removing the control question “I prefer to learn

alone”, Cronbach’s alpha yielded  $\alpha = .816$ . Results above .7 are generally considered reliable.

	<b>Attitudes</b>	<b>Mean</b>
4.0-4.4 Strong agreement	I steadily try to extend my knowledge.	4.38
	I prefer learning on site (with direct contact to my learning object).	4.23
	Persons with extensive knowledge are respected in our society.	4.11
3.5-3.9 Agreement	I’m interested in collecting as many information on my destination as possible.	3.79
	It is important for me to exchange with others what I’ve learnt.	3.77
	The learning offer has to be adapted to my personal level of knowledge.	3.67
3.0-3.4 Rather agree	An extensive learning offer would motivate me to come back to the destination.	3.13
	I prefer learning alone.	3.03
	I ‘m interested whether other persons inform themselves about the same topics at the same time as I do..	3.02
	The price for the learning offer must not exceed the price for a domestic mobile call.	3.01
2.5-2.9 Neutral	Back home, I reinforce the information I have gathered during my holiday.	2.94
	I would be prepared to pay for an adequate learning offer.	2.87

**Table 3.** Attitudes towards learning (1 = I strongly disagree; 5 = I strongly agree)

Open questions concerning the respondents’ connotations and attitudes towards “leisure learning” indicate that the term “learning” is usually associated with negative images such as “boring”, “work” and “effort”, “stress” or the contrary to recuperation. Nevertheless, the respondents stated high interest in learning issues and knowledge enhancement as well as the willingness to use and pay for such services.

### **5.5 Technical equipment of respondents**

While nearly all respondents dispose of mobile phones (99.7 %) for their personal and office use, the use of laptops (18.0 %) and PDAs (4.3 %) is less frequent and dominated by office use. Mobile phones are mostly used for telephony (97.6 %) and short messaging (79.4 %), but also as an agenda and organizer. Only 9.4 % of the respondents use WAP on their mobile phones.

## 6 Implications for the use of mobile learning in tourism

About a third of the respondents (29.3 %) would be prepared to pay for a mobile learning offer. 36.8 % of the respondents state an intention to revisit the destination in case of the provision of a suitable learning offer. Taking the willingness to pay as an indicator for explicit interest in such a service, this result shows the relevance of mobile learning for future tourist offers. *There is a positive relationship between the willingness to pay for a learning offer and the intention to revisit the destination in case of a suitable learning offer ( $p < .001$ ).*

Market segmentation is the key to a thorough understanding of the diverse customer needs. The variable sex showed no significant influence on attitudes towards leisure learning. The variable age had strong influence on the amount of information desired, the wish to reinforce learnt contents back home and the intention of revisit as well as the desire to exchange learnt issues with others.

The level of education showed to be an important segmentation factor. Respondents with A-levels or higher education state a higher of personally adapted learning content. This implies the need to develop learning contents that can be individually customized by users with different knowledge standards. Respondents with higher education also state a significantly higher interest (90.7 %) in having access to learning contents on site. *There is a relationship between the level of education and the desire to receive learning material that is appropriate to the actual standard of knowledge (Pearson's  $\chi^2 = 32.648$ ,  $p = .008$ ) as well as the desire to learn on site (Pearson's  $\chi^2 = 41.994$ ,  $p = .007$ ).*

The term “learning” is negatively associated although respondents stated high interest in learning issues and knowledge enhancement as well as the willingness to use and pay for such services. Therefore, the term “learning” does not seem to be suitable for the offer of mobile learning services. *Labels suggesting a combination of entertainment, fun, suspense and education (edutainment) are considered more appropriate.*

## 7 Conclusions

This article tried to identify the possibility and potential for mobile learning services for tourism and leisure. Future research should address questions such as cost-value relationships or possibilities for content development and organisation in/for collaborative learning settings. Also, further research into the use and effectiveness of

mobile learning services as a means to guest relationship management should be conducted.

Many technical questions remain unanswered so far. There is a notable lack of detailed academically reviewed research studies of projects and trials using mobile technologies. Still, several projects, partially funded by the European Union, are on their way, such as the mlearning (<http://www.m-learning.org>) or the MOBIlearn projects (<http://www.mobilearn.org>; <http://www.mobilearn.at>) in order to a vision of tourists, experiencing e.g. a unique mountain environment while being able to gain access to a learning interaction on the actually contemplated flora and fauna can come true.

## References

Dye, A., Solstad, B.E. & J.A. K'Odingo (2003). Mobile Education - A Glance at the Future. [http://www.nettskolen.com/forskning/mobile\\_education.pdf](http://www.nettskolen.com/forskning/mobile_education.pdf) [July 01, 2003].

Erdly, M. & L. Kesterson-Townes (2003). "Experience rules": a scenario for the hospitality and leisure industry circa 2010 envisions transformation, *Strategy and Leadership*, Vol. 31 (3), p. 12-18.

Eriksson, O. (2002). Location Based Destination Information for the Mobile Tourist, in Wöber, K.W., Frew, A.J. & M. Hitz (eds.). *Information and Communication Technologies in Tourism 2002*, Springer, Vienna, p. 255-264.

Ghandour, R. & Buhalis, D. (2003). Third-Generation Mobile Services and the Needs of mTravellers, in: Frew, A. / Hitz, M. & P. O'Connor (eds.). *Information and Communication Technologies in Tourism 2002*, Springer, Vienna, p. 222-231.

Keegan, D. (2002). The future of learning: from e-learning to m-learning, ZIFF Papiere 119, Fernuniversität Hagen.

LSDA (2003). Mobile phones switch young people on to learning. Press release Feb 2003. <http://www.lsda.org.uk/files/pdf/press/7feb2003.doc> [July 1, 2003]

Lindskog, H. & S. Brege (2003). The Importance of Time-rich and Time-poor Consumer Behavior for the E-commerce. Conference proceedings of the 24<sup>th</sup> McMaster World Congress, Canada, January 15-17, 2003.

Oertel, B., Steinmüller, K. & M. Kuom (2002). Mobile Multimedia Services for Tourism, in Wöber, K.W., Frew, A.J. & M. Hitz (eds.). Information and Communication Technologies in Tourism 2002, Springer, Vienna, p. 387-396.

Poon, A. (1993). Tourism, Technology and Competitive Strategies. CAB International, Wallingford.

Poon, A. (2003). Competitive Strategies for a New Tourism. in Cooper, C. (ed.) Classic Reviews in Tourism. Channel View Publications, Clevedon, p. 130-142

Pownell, D. & Bailey, G.D. (2001). Getting a Handle on Handhelds. Electronic School, June 2001. <http://www.electronic-school.com/2001/06/0601handhelds.htm> [September 20, 2003]

Savill-Smith, C. & P. Kent (2003). The use of palmtop computers for learning. Research Report. [http://www.m-learning.org/docs/the\\_use\\_of\\_palmtop\\_computers\\_for\\_learning\\_sept03.pdf](http://www.m-learning.org/docs/the_use_of_palmtop_computers_for_learning_sept03.pdf) [September 20, 2003].

Sharples, M. (2000). The design of personal mobile technologies for lifelong learning. Computers & Education, Vol. 34 (3/4), p. 177-193.

Statistik Austria (2003). Tourism in figures Austria 2001/2002.

UMTS Forum (2003). mobilkom austria Identifies UMTS Pioneers: Male, Under 45, and On Six Business Trips a Year, 07 Nov 2002. [http://www.umts-forum.org/servlet/dycon/ztumts/umts/Live/en/umts/News\\_3GArchive\\_2002\\_OctDec\\_Article071102a](http://www.umts-forum.org/servlet/dycon/ztumts/umts/Live/en/umts/News_3GArchive_2002_OctDec_Article071102a) [July 01, 2003].

World Tourism Organization (2002). Tourism Highlights 2002. Madrid.