Mobile learning and Mobility in Teacher Training

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Abstract

This article describes the mobile learning project, where mobile device is used for educational activities. Article defines the word mobility from the educational point of view. The main perspective in this article is in teacher training. We present experiences how mobile technology was used in teacher training, how trainees and supervising teachers felt the use of mobile technology. The pilot was carried out on Department of Home Economics and Craft Science in University of Helsinki. The idea of pilot was that supervising teacher and trainee students discuss and share their ideas about teaching methods etc. through mobile device and also use SMS-messaging and digital pictures as a part of supervising process. The use of digital pictures which were delivered via mobile device came up to be surprisingly successful. The goal of these innovative pilot projects is to create flexible teaching solutions, which will enable the accessing of information with all kinds of devices, and to support learning in a variety of situations.

Introduction

According to Clark Quinn [1] "Mobile learning is learning through mobile computational devices". So mobile learning denotes a situation in which students use mobile technology in their studies. Characteristic of mobile learning is the opportunity to break away from teaching that takes place in a classroom, and to move to another location while communicating via information networks. Another distinctive feature of mobile learning is that it enables learners to enter an information network at the precise moment when it is necessary by using a portable learning device and a wireless network. Mobile learning may be considered as an extreme form of flexible learning. The mobile environment integrates studies that take place on campus, at home or outside university facilities into one shared, flexible learning environment. [2]

Since the middle of the 90's several teachers and researches in university of Helsinki have experimented mobile technology in teaching and studying. The first project was so-called LIVE –project (Learning in a Virtual Environment) in 1997-1999. [3],[4] The UniWap project was begun in June 2000 as a joint venture between The Educational Centre for ICT in University of Helsinki and the software company ICL Invia. In this project there was developed a WAP-based project environment, which utilized a shared database. In practice, this meant that if teachers came up with a good idea, they could immediately use a WAP phone to enter the idea in the database. This first Uniwap pilot was tested by 25 university teacher in connection with personnel training in 2001.

Based on Uniwap –project the Educational Centre for ICT with its partners, ICL Invia, Oy Radiolinja Ab, The Hypermedialaboratory in University of Tampere and R5Vision, established "the Mobile Learning – project". The purpose of this project is to develop production of digital learning materials and make models, how to teach, study and learn in mobile learning environments. In this project the Uniwap environment has been improved, for example SMS-service and transfer of digital picture. The Uniwap environment has now been tested in two pilots in University of Helsinki. The first pilot, which is the main issue in this article, was carried out in teacher education on Department of Home Economics and Craft Science and the second one in Department of Forest Resource Management.

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Mobility

It is needed to define the word mobility by educational point of view. Kynäslahti [5] brings out three different elements for mobility:

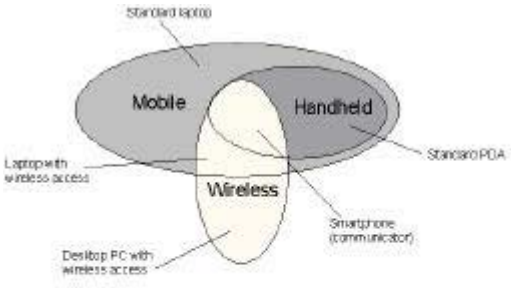
1. convenience
2. expediency
3. immediacy

Kynäslahti has concluded to these elements by applying answers to following questions. Who is mobile and why someone is mobile or who is on the move and why someone is on the move. These questions deal with mobility of teaching and learning.

When we think of that question who is mobile, we can notice at least four different outcomes: 1) teacher, 2) learner, 3) some external specialist, 4) content (learning content, an animal etc.)

When we think of question why someone is mobile or on the move while he is teaching or learning, we can notice different outcomes: 1) Reason for moving is irrelevant regarding to learning and teaching. We happen to be moving while conducting educational activities. It has to do with convenience, rational time management and etc. 2) Secondly we just are on the move in some particular place or in places which are relevant regarding the subject that is being studied. This would be called the perspective of expediency. 3) The third essential aspect of mobility is immediacy. We are able to perform an educational act immediately, even if it requires access to the Internet or a connection to other kinds of electronic environments, regardless of where we are. [6]

The word mobility can be defined also from technical point of view. What is a device which is in use while we are learning in mobile situations?



Picture 1. Defining the mobile device (adapted from Siilasmaa) [7]

In this picture there has been defined the mobile device which was in use in this pilot project. First of all we can think mobile feature. Traditional example for mobile device is a standard laptop computer. You can carry it and take it with you to many places. Adding the hand held feature to the mobile feature we can find a standard PDA (personal digital assistant) device. These devices (laptop and PDA) do not yet offer required capacity to carry out tasks which were needed in this project. We need also a wireless access to the network. Purely wirelessly connected device can also be a desktop computer which is connected to the wireless local area network. By adding the mobile feature to the wireless feature we can see a laptop computer with WLAN access. But in this pilot we needed device which is mobile, hand held and has wireless access to the network.

We can find out smartphone device (Nokia Communicator 9210) from this category. In this pilot project it was also important that device has www-browser. By using that browser the user can upload digital pictures to the appropriate places in learning material.

Teacher education in Finland

In Finland teachers are educated in departments of teacher education or other similar university departments. Also the other than teacher education which directs to the Masters degree, can include pedagogical studies. Those pedagogical studies bring qualifications for teacher duty.

Teacher education directs to the Master of Education degree. It includes 160 credits. One credit is measured

as a 40 hours study. The Master of Education degree includes 35 credits of teacher´s pedagogical studies which are carried out in department of teacher education. Teacher´s pedagogical studies include educational studies, didactics and teacher training.

The purpose of teacher training is to train students to plan and organize teacher´s duties. Teacher training is at the same time the first practical contact to teacher´s everyday life for many students. Students have opportunity to use one's own knowledge, experiences and personal characteristics and grow into a capable teacher. Development of professional identity and skills are supported by supervising teacher. It is also especially important that student is active in learning process.

Mobility in teacher training

At present, Finland has about 5 million inhabitants, of which over 70% have mobile phones. Approximately 98% of university students have a mobile phone, so we can suppose that university students are highly experienced users of mobile technology.

In this case we have been using virtual teacher training instruction model [8]. It means that students have been instructed by three different ways: 1) face to face instruction, 2) instruction via network based learning environment and 3) instruction via mobile device. Face to face instruction is traditional method where student and supervisor are having a dialog about teaching session. Network based instruction means that supervisor uses a learning management system to have interaction with student. Supervisor can deliver training material via Internet and etc. The third method is the use of mobile device for instruction.

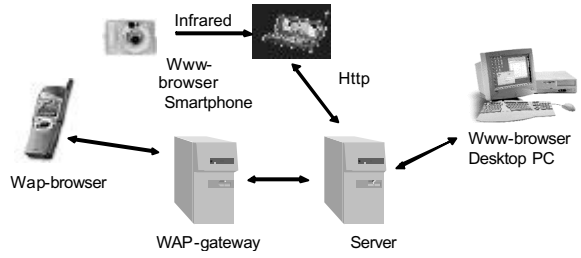
The main idea of virtual teacher training instruction model is that student has possibility to document all his/her arguments which deals with teacher training. Face to face instruction is nowadays more or less prescriptive way to instruct trainee. The trainee has always opportunity to ask and go back to the network based or mobile instruction documents.

The supervisor can use mobile device for having real time conference call with students. In that case supervisor is able to reach all students even they are physically in different places. There are many other cases how supervisor can support instruction of trainees by using mobile device. But in our case we used mobile device a bit different way.

Case: Mobility in teacher education

In spring 2002 we started the Uniwap II- pilot in teacher education on Department of Home Economics and Craft Science. There were eleven students and five teachers in this "mobile pilot". The Educational Centre for ICT lent the teachers and students 10 Nokia Communicator 9210s and two digital cameras (Casio QV-3000EX/Ir).

The idea of pilot was that teacher and students can discuss about teaching methods, through mobile devices and also use SMS-messages and digital pictures as a part of supervising. The supervisor of teacher trainees will be able to take digital pictures of various teacher training occasions, learner´s throughput and different teaching techniques. Trainees can also themselves give orders to the supervisor, which pictures and in what occasions they want pictures taken. Pictures can download to the phone via infrared access. After that one can open the www-browser and upload the pictures to the trainee´s material bank in Uniwap-database even before the training session has concluded. Moreover, the superviser may write down ideas and feedback related to the training session and send them to the trainee. The trainee then puts together a digital portfolio on the basis of these photographs and a network discussion. So in this project it was quite important that by using mobile device the content can be produced in a certain place; especially when the content is digital picture. A picture below clarifies the technical implementation of this pilot project.



Picture 2. Technical implementation of pilot project

Results

We can study those three different elements for mobility (according to Kynäslahti) and compare them to the feedback, which we collected from the trainees and teachers. The elements were convenience, expediency and immediacy.

First we can study this from the convenience point of view. Trainees felt that the reason why they were mobile was that they wanted to use their waiting moments to conduct educational activities. They for example wrote notes or memos to be shared with other trainees on the buss or on the train. They also uploaded pictures from the phone to the material bank. All of these examples deal with convenience. Trainees had opportunity to use their time rationally even they were on the move.

Second element was expediency. Trainees were on the move in some particular place. In our case trainees worked in classroom environment and also they conducted activities in many other places while they were on the move. From the expediency point of view trainees pointed out that they had to work at home and they did not have any other access to Internet than the phone. Trainees also mentioned that they used phones in store when they had to check out is there particular foodstuff at school which was needed in one's trainee lesson of home economics. In these cases they mostly used audio calls and SMS-messaging. Trainees wanted to move pictures from camera to the phone right away and most of the time that happened in classroom. They felt that without mobility the working method with camera would not be comfortable.

Third element was immediacy. This element came up to be most meaningful for trainees. They liked that they were able to act immediately. They made memos and took pictures while they were observing other trainees lessons. Trainees had immediate need to write thoughts and ideas to be shared with other trainees. One trainee said that she got a great idea on the way to university in very early morning and was happy to be able to share this idea with other members right away. Mobile device was great tool to give feedback just at the same time while observing other trainee.

The supervising teachers opinion about mobility and the use of mobile devices were also mostly positive. During the teacher training supervising teachers need to work long hours and for that reason they felt that the use of mobile devices helped their work a lot. Teachers need to go from school to another many times during the day and while they did travel they were able to connect to shared database. Also teachers felt that mobile devices brought more flexibility to the time usage planning.

We found out the difference of giving feedback between teachers and trainees. Trainees gave immediate feedback to other trainees while they were observing. They acted spontaneously. Teachers were more careful to give spontaneous feedback, they thought more deeply what to write. For example they read through the text before they send it and fixed the misspellings, when trainees typed the text and send it right away.

The massive use of Uniwap was surprising. During five weeks (14.2. - 26.3.2002) there were all together 388 messages, SMS-messages or digital pictures in Uniwap database. That is c.a. 9,7 messages by day and c.a. 24,3 messages by every participant (teacher or student).

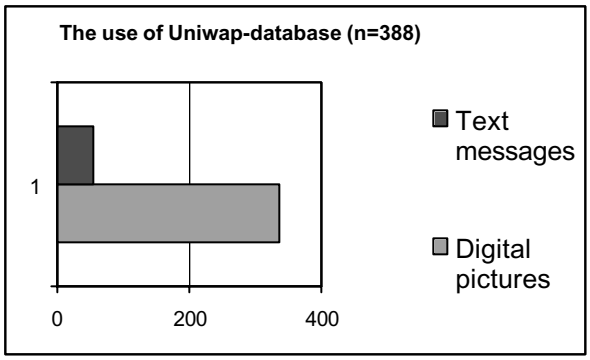


Table 1. The amount of messages and digital pictures in Uniwap-database.

The use of Uniwap was very active in the end of weeks, because of most of the trainee lessons were held then. The use of Uniwap were also active almost around the clock, messages were sent by SMS between 9.39 am and 12.11 pm. Especially supervising teachers sent SMS-messages quite late. All together there were sent 30 SMS-messages. The main reason when SMS-message was used was that after teacher had read student trainee's plan for trainee lesson, teacher gave feedback to database. This part of teachers work usually took place at home and late in the evening. One supervising teacher said that when you have a possibility to get touch with students by using mobile device and Uniwap database in any time of the day, it helped your supervising process. So there was no delay in feedback process.

Students wrote and sent SMS-messages (7) in Uniwap, but not so often than teachers (21) did. When analysing the contents of SMS-messages, we found three kind of situations, in which SMS was used: information, supervising and feedback. (see table 3.)

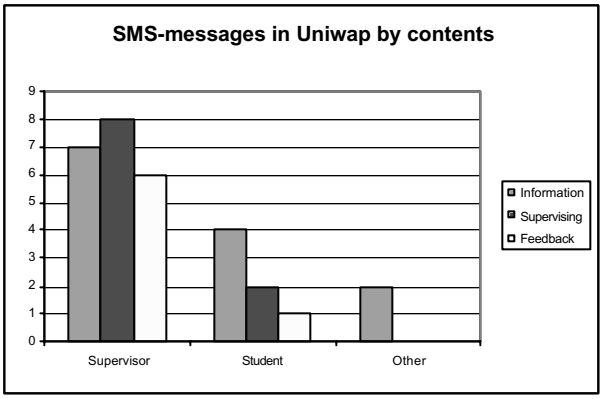


Table 3. SMS-messages in Uniwap by contents.
1 Noticed that Other is pilot co-ordinator from Educational Centre for ICT, University of Helsinki

Mostly SMS-messages were used in common information. Supervising teachers sent information of next meetings or notified students that their feedbacks were now available. Also students notified other students and supervisor when their plans were ready and needed feedback.

The most interesting in this pilot was although the amount of digital pictures which were taken and uploaded to the Uniwap-database (see table 1). As researchers we were quite surprised that this possibility was so actively used. The reasons to this huge amount of digital pictures were that teachers and students found the possibility so fun and they wanted to take many pictures of every trainee lessons and situations. Because you could upload the picture and notes right away to the database, everybody were able to comment and give feedback instantly. This immediacy, the third element of mobility, was very important and without this "right-away –possibility" the transfer of digital pictures were not been so much used.

Students thought that digital pictures grew their professional identity as a teacher of home economics. They saw, even first time, how they looked in front of elementary school class and how they taught them. The usage of still-pictures helped students and supervisors to see things that they did not notice in actual situations. This was very helpful in supervising discussions between student and teacher when student analyzed one's own teaching methods and made notes to one's portfolio.

Koskinen et al. [9] point out in their research that digital picture without text is not interesting. With text you can clarify the situation in picture, why it was important to take or what happened afterwards. In our pilot the text was added in digital pictures during or after they were upload to Uniwap-database. Students changed titles of pictures and wrote little message what is happening in picture. Supervising teachers continued writing the picture message by giving feedback or asking questions about situations in classroom. This way the digital pictures came alive also to people who were not present in actual teaching situations, such as other trainee students and researcher.

Conclusion

The mobile pilot on Department of Home Economics and Craft Science showed that the educational use of mobile device and pedagogical opportunities of mobile learning are worth further researching and testing. The Educational Centre for ICT continues to use education and testing pilots to spread these innovative methods to other units at the University of Helsinki and possibly to the Finnish Virtual University. The long-term goal is to create flexible teaching solutions, which will enable access of information with all kinds of devices, and to produce materials flexibly in a variety of situations.

Mobile technology is only beginning to take its first steps in academic teaching and studying. The opportunities it creates have been recognised and the idea of a wireless campus is spreading to universities. The integration of the Internet and mobile solutions will transform the use of ICT in teaching and take it in the direction of open teaching, provided that mobile technology is seen as a choice for the development of academic teaching and education. The core characteristic of mobile learning is that it enables learners to be in the right place at the right time, that is, to be where they are able to experience the authentic joy of learning.

Mission of Radiolinja is to create and facilitate the way of wireless life - Mobile Society. The role of Technology Center of Radiolinja is to participate in innovative research and development projects. Main target in those projects is to explore future of wireless life. To support learning and teaching with mobile devices is seen one of the future possibilities in Radiolinja. Taking part and supporting these innovative research works Radiolinja can certain that it can also be promoting the way of wireless life in the future.

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