

From pilot to practice: iPads at the University of Helsinki Faculty of Medicine

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Abstract

The University of Helsinki Faculty of Medicine started a mobile learning pilot by providing iPads to all incoming medical students in 2013 and 2014. A model describing how technology facilitates learning is used to portray how diversely iPads have been used by the students. After the successful pilot in collaboration with the Medical Library Terkko, iPads have been integrated into medical studies and will be provided to incoming students also in autumn 2015.

Key words: tablet computer; e-books; m-learning; medical education; problem-based learning.

Background

Tablet computers have been available since the 1990s but with very limited success from the start. Tablet type e-book reader devices and especially Amazon Kindle were popular in 2000s, but with the introduction of iPad in 2010, modern tablet computers started to gain success rapidly. The strong growth has slowed down, but according to Gartner, global tablet sales will reach 233 million units in 2015 (1).

With a large selection of e-books, massive information resources on internet and rapidly expanding and evolving mobile applications, tablet computers have quickly gained popularity education. Tablet is more mobile than traditional laptop computer and bigger screen makes it more suitable for reading e-books than in most smartphones. Many medical schools have explored the use of tablet computers around the world with different pilots (2-4).

From small to large pilot

The University of Helsinki Faculty of Medicine started to consider the use of tablet computers in medical education quickly after the iPad arrived to Finland in late 2010. First concrete step was taken by the Meilahti Campus Library Terkko, which is responsible for the information services of the

University of Helsinki Faculty of Medicine and the Helsinki University Central Hospital. The medical library started an iPad pilot named TerkkoPad in 2011. The idea was to loan iPad to medical students and teachers preloaded with several course e-books (5). Some of the e-books were interactive and provided by Inkling. Besides the large selection of interactive and traditional e-books, the iPads contained also applications to other resources e.g. PubMed.

With the positive feedback from the TerkkoPad pilot, the medical library proposed that tablet computers could be used more widely among the students and teachers. With TerkkoPad the iPad's function was mainly a reading device. The next step was to provide tablet computers to students to facilitate their learning. With a two-year-long grant from Jane and Aatos Erkko Foundation, the Faculty decided to provide tablet computers to every incoming students in autumn 2013 and 2014.

The pilot started in the beginning of 2013 when the experts from the faculty, library and IT department decided that iPad would be optimal device, after comparing iPad and iPad mini, available Android and Windows tablets and their selection of applications, security issues, need of support and compatibility and integration into University's

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infrastructure. Full size 32 GB iPad with wi-fi only was chosen because bigger screen was found better for reading, capacity was enough for storing e-books and applications and University's wi-fi network was deemed sufficient for internet access.

Funding included also iPads to teachers but the main goal was to provide mobile learning tool for students. Just like in the TerkkoPad, the second pilot included also interactive e-books from Inkling. All the students and teachers received three course books via Inkling application. After testing a large selection of applications, iPads were handed out to teachers with a selected general purpose and medical applications.

Medical library arranged the course books from Inkling and also ensured that the regular e-books available from library's web-site would work on iPads. Some of the e-books at that time required Adobe Flash which was not available for iPads, but compatible versions were obtained gradually.

Teachers were trained to use the iPad with several training sessions and workshops before the semester started. Later a more informal pop-up training sessions were introduced to make training more accessible and continued training and workshops were offered through the school year.

Students received the iPads on the third day of the semester in 2013 and they had access to help materials and pop-up training. The medical library delivered also training on the use of e-books and other information resources.

On the second year of the pilot students received the iPads couple days before the start of the semester so they could be used from the start of the first course. More training were also provided and iPad training was incorporated more deeply into compulsory IT course. Also a group of second year students formed an iPad tutor group that supported the incoming students. Their objective was to provide information on how the iPads were used successfully in studies and to offer peer-to-peer support as an addition to faculty's formal support.

Changes in the learning environment

Continuing training has been important part for the success of the pilot. The focus shifted quickly from technical training to support the use of technology in studying and teaching. Besides the available information resources, teachers have created

materials optimized for mobile learning, e.g. iBook e-books and instructional videos.

Previously study materials were printed, but with iPads students download course materials from medical library's digital course library portal. Also the use of Moodle online learning environment has increased with many teachers providing materials and links to useful medical videos. Also the selection of e-books has risen dramatically. Helsinki University Library increased the availability of e-books by 250 000 titles and the use of e-books tripled in 2014. Also almost 90% of the journals are available in electronic versions (6).

Most apparent changes have been seen in problem-based learning tutorials (PBL), which are integral part of studies as curriculum is based on problem based learning. Students and the teacher have instant access to massive online resources. Most medical students at the University of Helsinki owned already previously some kind of mobile device, especially a smartphone, but their use on classrooms and especially on PBL-tutorials were rare (7). With the iPads, all the students have a personal study tool that they carry with them every school day.

Interactive whiteboard application has also been adopted in PBL-tutorials to replace the traditional post-it notes in brainstorming. And with the monitors or projectors and Apple TVs installed on the PBL-classrooms teacher and students can instantly contribute pictures, diagrams and videos related to the topics discussed.

Studying the role of technology

The iPad pilot has been studied closely with several surveys, interviews and observations. One of the research topic relates to how the iPads can enhance and facilitate learning. A model originally designed for developing communal web-based learning environments describes also how the use of iPad can facilitate learning (8-11). The model includes four overlapping categories (*Figure 1*).

Pedagogical use of technology describes how the content is taught by an application itself. Interaction and action occurs between the student and the application. In iPad pilot students have been studying by for example reading e-books, articles and summaries (*Figure 2*).

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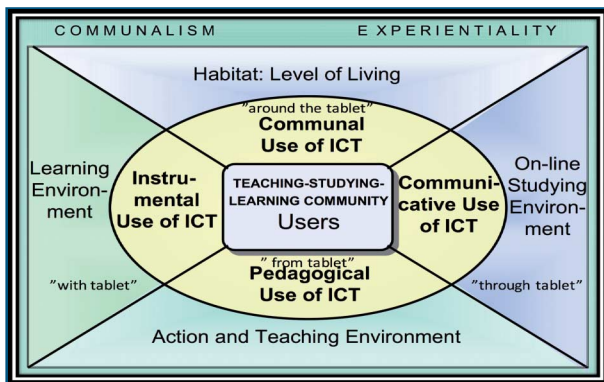


Figure 1. Model describing the relationship of technology and learning (11).

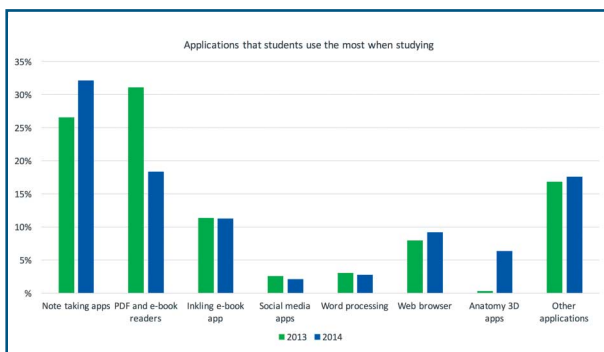


Figure 2. The most used applications in studying. From student surveys late 2013 (N = 155) and late 2014 (N = 136).

In instrumental use category technology is considered as a tool to for example to create content. In a sense student is working with the technology and the technology supplements intellectual tools (12, 13). In the iPad pilot (14) many have replaced traditional leaflets with a note taking app. In surveys conducted in late 2013 and 2014 note taking application was considered the most used application (26.6% and 32.2%) when studying (Figure 2).

The communicative use category is similar to instrumental category, but main idea is to enable social interaction. Instead of being a tool to create content, in communicative use learning is facilitated through technology. For instance students have been using instant messaging, video calls and social media applications to interact and communicate with each others.

In communal use of technology skills and content are learned through the structuring of the situation,

students learn around the technology. Students can share physical and virtual working space at the same time. In the iPad pilot this has been apparent with students using communal interactive whiteboard and studying together with shared flashcards. BaiBoard have been a primary application in PBL-teaching but some of the students have been using the application also when studying.

The role of social media and communality has been very important among the students. Students have been sharing notes and other learning materials via peer-to-peer AirDrop file sharing within the study groups and via cloud services with bigger groups or even with the whole class and other students. Facebook groups have been used actively with PBL groups with students creating a group among themselves. Instant messages have been used to keep in touch with fellow students.

Trends in applications

Large selection of applications is one the advantages when using tablets. Along the pilot several applications have been tested and gradually students have found the best applications for studying. In reading e-books and pdf documents the free Adobe Reader and Readdle's Documents applications and interactive e-book reader Inking are the most popular reader applications.

In note taking Notability is the most used application with almost all the students preferring the application even though it is not free. Interestingly most of the students have switched from the free Evernote to Notability. Students follow each others recommendations and adopts new applications rapidly. This is shown by the use of medical applications which has risen significantly in a year. Essential Anatomy is quite expensive application compared to other application, but students have adopted it quickly based on other students recommendations (Figure 2).

In social media the students prefer Facebook which is very popular in Finland in general. Students use Facebook approximately once a day or more often with their iPads whereas Twitter is hardly used at all. LinkedIn, Instagram, Pinterest, Tinder, Snapchat and Redding are other social media services used by the students, with Instagram being more popular than Twitter.

In general students have been downloading many

applications. 42.5% of the students had installed 10-20 applications and 43.3% had installed over 21 applications. Students prefer free application and paid applications have not been required or needed. But students have been willing to buy an application that is found to be useful.

Conclusion: from pilot to practice

The two-year-long pilot is reaching its end with the class of 2014 moving to second year and the class of 2013 completing their second semester and moving to clinical phase in autumn. The pilot continues in part because the students continue with their iPads to clinical phase and will use the iPads until they graduate.

With the successful pilot the faculty have decided to continue the mobile learning project by providing tablet computers to the incoming students in autumn 2015 funded by the faculty. The pilot has shown that students print only rarely and the need for dedicated PC classroom with desktop computers is unnecessary. Students have also been very careful with the iPads with only few have broken or stolen during the two-year-period among the approximately 350 students.

Based on the experiences of the pilot, the incoming students will be getting the iPads and training on the week before the teaching starts. And all the students will receive also training on how to use the iPads in PBL sessions so they are to start studying effectively from the start of the semester. Additional help materials including faculty's iPad user guide and iPad instructional videos are also available from the start. It is also essential to continue teacher training and research.

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REFERENCES

1. Gartner says tablet sales continue to be slow in 2015. Available from <http://www.gartner.com/newsroom/id/2954317> [Accessed: 30.4.2015]
2. Ellaway RH, Fink P, Grave L, Campbell A. Left to their own devices: Medical learners' use of mobile technologies. *Med Teac.* 2013;36:130-8.
3. George P, Dumenco L, Doyle R, Dollase R. Incorporating iPads into a preclinical curriculum: A pilot study. *Med Teach.* 2013;35:226-30.
4. Robinson RL, Burk MS. Table computer use by medical students in the United States. *J Med Syst.* 2013;37:1-4.
5. Englund, J. TerkkoPad: lääketieteen kurssikirjoja lainattavalla lukulaitteella. (TerkkoPad: medical course books on a reader device available to loan). 2011. Available from <http://blogs.helsinki.fi/t-e-r-k-k-o/2011/09/14/terkkopad-laaketieteen-kurssikirjoja-lainattavalla-lukulaitteella/> [Accessed: 30.4.2015]
6. Helsinki University Library (2015). Kirjaston vuosikertomus: E-kirjojen käyttö kolminkertaistui vuonna 2014. Available from <http://blogs.helsinki.fi/librarynews/2015/04/30/yliopiston-kirjaston-vuosikertomus-ilmestyi-e-kirjojen-kaytto-kolminkertaistui-vuonna-2014/> [Accessed: 30.4.2015]
7. Hervonen H, Masalin T, Selänne L, Viranta-Kovanen S. Student attitudes and use of tablet computers in medical education in Helsinki. Abstract 8AA/13, Prague: AMEE; 2013.
8. Goldsworthy R. 1999. Lenses on learning and technology: roles and opportunities for design and development. *Educational Technology.* July-August: 59-62.
9. Vahtivuori S. Verkko toimintaympäristönä – käyttäjät verkko-opetuksen suunnittelun polttopisteessä. (The net as an environment of action – Users in the focus when designing net education). In: Buchberger I (ed.). *Opettaja ja aine* 2000. Ainedidaktiikan symposiumi 4.2.2000. Osa 2. Research Reports 225, s. 494-512. Department of Teacher Education, University of Helsinki; 2000. (in Finnish).
10. Vahtivuori S, Masalin M. Designing communal web-based learning environments. In: Tella S (ed.). *Media, mediation, time and communication: Emphases in network-based media education.* Media Education Centre, Department of Teacher Education, University of Helsinki; 2000. Media Education Publications 9: 59-82.
11. Vahtivuori S, Masalin T. Challenges of designing

- web-based learning environments. In: Montgomerie C, Viteli J (eds). Proceedings of ED-MEDIA, World Conference on Educational Multimedia, Hypermedia & Telecommunication. June 25–30, Tampere, Finland, 2001(1):1924-9.
12. Jonassen D. Supporting communities of learners with technology: A vision for integrating technology with learning in schools. *Educational Technology*. July-August 1995:60-3.
13. Vygotsky LS. *Thought and language*. Newly revised and edited by Alex Kozulin. Cambridge, MA: The MIT Press; 1986.
14. Sundvik M, Masalin T, Hervonen H. iPads in teaching and the attitudes of the medical teachers at the Medical Faculty at University of Helsinki. Abstract, AMEF, Helsinki; 2014.