Impact of tablet computers and eBooks on learning practices of law students

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ABSTRACT

In this paper we present first results from an ongoing pilot study at the law faculty of the Open University of the Netherlands. Students participating in a bridging course have been given the choice between traditional study methods and the use of a tablet-computer equipped with digital learning resources and electronic textbooks. In this paper we report first qualitative findings from this pilot study. A monthly questionnaire has been administered to let students rate statements on a 7-point-likert-scale. These findings are enriched with results from a focus group session in January 2012. The results are discussed and an outlook on future work is provided.

Author Keywords

pilot study, qualitative study, tablet-computer, iPad, law, eBooks

INTRODUCTION

With the growing diffusion of tablet computers the electronic book (eBook) has been receiving more and more attention in different business sectors. Large publishing houses have reported for the first time more sales of electronic books than printed books. Also in the educational context the introduction of tablet computers and eBooks is intensively discussed in several countries. To date, several studies have been conducted mostly using traditional eReaders instead of tablet computers. Three types of studies have been conducted about the effects of electronic books: Media comparison studies (printed books vs. eBook), literacy studies and studies that focus on the change of learning practices.

Prensky (2011) argues for the ban of traditional books in higher education institutions. He proposed this step as a sign of "moving education into the future". Besides this mere and ungrounded opinion about the role of electronic books there is also empirical work available. Woody, Daniel, & Baker (2010) have focused in their study on preference of students between electronic versions of a book and printed textbooks for learning. In their study the authors have taken into account the influence of computer experience on this choice. They found that students prefer traditional books instead of eBooks no matter how much computer experience they have. No significant differences have been found in terms of learning results. Rockinson-Szapkiw, Holder, & Dunn (2011) compare the motivation of students for a number of learning tasks when using eBooks in comparison with traditional books. The authors found a significant difference in motivation between the groups. The students with eBooks had a significant higher motivation to study the instructional material as the other group. It is an open question if this increase of motivation is only a novelty effect or if the effect would sustain a longer period of time. Only a longitudinal study would be able to answer this question. Weisberg (2011) has conducted a longitudinal study over 2 years in a business school. In this study the use of 5 different devices for reading electronic books are analyzed and compared with a group using traditional textbooks. In the study no significant difference in terms of learning results is found. The study shows that the acceptance and usage of the devices as primary or secondary sources for learning has grown during the study because of the further development of the devices but also because of market penetration and prior experiences with these devices.

Another group of studies has focused on the effects of eBooks on literacy and especially reading skills. Korat (2010) has conducted studies about the effects of eBooks on word reading, story comprehension and vocabulary of kindergarten children. The group that used en eBook reader and eBooks shows significantly better results in understanding of word meaning and word comprehension. In a different study (Shamir, Korat, & Shlafer, 2011) the authors have analyzed the impact of a tutor-supported use of eBooks versus individual usage on the writings skills of kindergarten children from families with a low socioeconomic status. The study shows that only a tutor supported scenario can lead to significant improvement of emergent word writing and phonological awareness. Jones & Brown (2011) have analyzed effects of electronic books on reading engagement of third-grade students. A traditional textbook, a website containing a collection of online-books for children and an eBook have been compared in the study. The study shows that the possibility to chose a book on the website had an effect on motivation and engagement of students. No significant effects have been found in the comprehension results of the book versus the electronic book.

Nie, Armellini, Witthaus, & Barklamb (2011) have focused in their study on the effects of eBooks and eBook-readers on changing learning practices. In the study they compared the use of an eBook-reader in a master program for occupational

psychology and a master program for education. Both groups report an increased flexibility in their learning due to new learning contexts that occur through the portability of the devices. Learners could use small time-slots more effectively and they developed new study strategies through notes, annotations and the preparation of assignments.

In this paper we present first results from an ongoing study at the law faculty of the Open University of the Netherlands. 12 students of a pre-master preparatory course have been provided with tablet computers equipped with content of 4 courses. In the study we have combined a mixed-method approach combining quantitative and qualitative measures. Our research question was if we can confirm findings from the study by Nie, Armellini, Witthaus, & Barklamb (2011) and how learners experience new learning practices and learning opportunities. In the next section we provide details about the study, discuss results and limitations and provide an outlook on future research.

IPAD STUDY

At the Open University of the Netherlands we offer several bridging courses preparing learners to enter study programs on the master level. Learners who do not fulfil all requirements for a master program usually choose these courses. In the summer 2011 two versions of the bridging course for the master program in law have been offered to students. A traditional version with printed study books, textbooks and law digests and a digital version containing all the material in a digital version on a rental tablet computer.

Participants

In September 2011 we have kicked off the pilot study with 12 students who have chosen the fully digital version of the pre-master course. The sample characteristics are presented in table 1. The group consisted of 6 female and 6 male students which were mostly involved in part time studies. Their mean age was 32 years (range 39) and the participants were all rather experienced with the use of mobile devices, tablet computers and 50% have even used an app-store before. Most learners were intrinsically motivated to participate in the study,

Sample Characteristics	Results
Gender	Male 50% Female 50%
Study context	75% Part time 25% Full time
Age	Mean 32.25/Range 39
Experience	85% Have experiences with using an app store 100% use a portable computer at least weekly 50% have experiences with tablet computers
Voluntariness	85% intrinsically motivated 15% extrinsically motivated

Table 1. Participants iPad study

Material & Procedures

The learners who had decided for the digital version received an Apple iPad 2 preinstalled with the standard applications and additionally the iBooks application for ePubs and the Goodreader application for PDF files. The study material consisted of 4 courses with 7 modules in total. The study material consisted of approximately 3000 pages of printed text which is shown in figure 2.

Figure 2. Study material iPad study

Some of the textbooks used in these courses are coming from academic publishers who agreed to the use of digital versions of their textbooks in the pilot. The digital versions of the study material were to a large extent a transfer of the print design to the digital version. Only one functionality has been added: In the studybooks a self-test has been integrated via a pop-up solution. Reflective questions have been asked to the learner and the answer was then presented in the popup window. Besides textbooks some workbooks and law digest collections have been added. The material has been handed out to the students at the kick-off of the pilot. Questions about handling and use of the material have been answered at this event. In addition a telephone-helpdesk has been installed for the pilot in case of later questions. Students have been explicitly asked to use the device also for other learning purposes and they were allowed to install additional applications under their own account.

Data Collection

Data collection has been done via a monthly questionnaire administered with an online questionnaire administration software. The first questionnaire has been filled out just before the kick-off-event followed by a monthly update. In January 2012 a 2-hour focus group session (Grabowski, Massey, & Wallace, 1992) has been conducted. The focus group had been prepared with an interview handbook. The focus group was conducted with a moderator and an assistant. The session has been recorded and transcribed.

RESULTS

In this part of the paper we summarize the results of questions from the monthly evaluation related to learning practices. In addition we summarize the most important findings from the focus group session in January 2012.

Monthly questionnaires

We have administered a monthly questionnaire in which we have collected responses with regards to changing learning practices. The students have been asked to evaluate statements on a 7-point-likert scale ranging from 1 (completely disagree) over 4 (neutral) to 7 (fully agree). To see how stable the effects on changing learning practices are we have repeated the evaluation of the statements each month (Pre-M4).

Question	Pre	M1	M2	M3	M4
The iPad offers new learning opportunities	5.67	6.92	6	6	5.58
The iPad connects learning contexts which have been previously unconnected	4.5	6.33	4.5	5.18	5.5
I have ubiquitous access to learning content and learning environments	5.25	6.42	5.33	5.09	5.58
I am accessing other parts of the learning environment of the University	4.33	6	4.67	4.82	4.58
In the future I am intending to use the iPad for other courses	4.42	5.67	5.25	5.45	5.5
I am using the iPad to search for information I need at a specific location	5.83	6.33	5.75	5.82	5.83
I use the iPad to search for detailed information and references	5.33	5.92	4.58	5.18	5.33
With the iPad I have flexibly more material at hand compared to print	5.92	6.67	5.58	5.73	5.67
Through the increased access to information I can reflect about alternative solutions	5.08	6.08	4.83	5.18	4.83
I am using the iPad during discussions with other students	3.83	5.25	2.67	3.36	3.08

Table 2. Mean scores for questions related to changing learning practices

Table 2 reveals some interesting findings about the acceptance and stability of effects with regards to changing learning practices. While the expectation of the students where rather neutral as depicted in the pre-questionnaire, after approx. 1 month of usage the experiences of the participants are positive to very positive. After the first month there is a decrease of values observable. In the third usage month a slight increase can be seen so that after 4 months all values show an increase compared to the pre-questionnaire and a decrease compared to the questionnaire after 1 month of usage. If we compare the questions in different categories we can see that especially the questions related to increased access to learning (Question 1-3) have been evaluated very positively and these effects are stable over time. Students are intending to use the iPad also for other courses, probably depending on the offer of the University. The students have evaluated using the tablet computer for accessing other parts of the learning environment more neutral. This could also be influenced by the usability of accessing other parts of the learning environment with mobile devices. Students seem to use the tablet computer and the learning material rather in individual learning contexts than in group learning contexts. They tend to disagree with the statement that they use the iPad in discussion with other students.

Focus group session

To enrich these results with personal accounts of the students we have conducted a focus group session in January 2012. All students in this session report newly created learning opportunities through the flexible way to carry the whole study material on the iPad. Especially in situations where a lot of changes of context is important, the digital study material is highly valued. But the use of the digital material is highly dependent on personal reading preferences and the personal learning context. Most students read the study material in different context like travel, holidays etc. and they mention the potential of using the material at any time also influences their long-term planning of learning. While the printed material is simply too much to be carried during travel the digital material adds much flexibility to the curriculum delivery. The students do not report much use of other parts of the electronic learning environment of the Open University of the Netherlands. So they seem to use the iPad rather as a reading device and they do not use the device to access the VLE of the University or other parts of the electronic learning environment.

Some students report the connectedness of the tablet-computer as a limitation since they are easily disturbed in concentration due to access to other apps they use for personal purposes (e.g. mail). Several students have visited voluntarily support lectures at the study centres of the Open University of the Netherlands. During these sessions they have faced problems of collaboration and synchronisation. The lecturer was using the printed version of the books while some students used the ePub version which has no fixed page numbers. This has lead to confusion and a mismatch between the study material used in a lecture. Students have only reported low usage of the opportunity to personalize the tablet-computer according to their own requirements. Only a few number of students report the installation of additional apps for productive work (Office apps), data sharing (Dropbox) and applications for flexible annotations. Since students of law have to combine different sources like a textbook, a studybook and a law digest most students report that it is not a good solution in terms of usability to switch between several books on the tablet-computer. This has led in some cases to the practice that the students have combined digital versions and a printed version of the law digest for example.

DISCUSSION AND CONCLUSIONS

In this short paper we have briefly summarized the results of the monthly questionnaire and the focus group session conducted in January 2012. In the study we can confirm findings by Nie, Armellini, Witthaus, & Barklamb (2011) who have reported an increase of flexibility and the emergence of new learning contexts and learning practices. The questionnaire has shown that the effects have been to date relatively stable. Nonetheless there seems to be also a novelty effect (Clark, 1983) involved although we would need to assess the data over a longer period of time to see if the values decrease even more after longer usage.

The focus group session has confirmed findings from the questionnaire and has revealed interesting details about the usage and adaptation of the device and the study material. Students have reported synchronisation problems while using the digital learning resources in lecture situations. While they have in general favoured the ePub-format over the study material in PDF-format the flexibility and use of specific reading preferences (size of text) has led to the problem that the information provided by lecturers using printed study material was not easy to follow due to the reformatting of the material according to these preferences.

The use of multiple learning resources at the same time was a common practice for the students. Especially the law digest was often used as additional resource. Students have reported a low usability in terms of switching between the digital material on the tablet computer. This has led to the practice that students have used the digital material in combination with printed resources. These findings deliver valuable input for the future development of digital learning resources at the Open University of the Netherlands and especially the School of Law. Instead of using isolated resources of the digital study material we will explore in the future the integration and intelligent linking of resources that are often used together.

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