

E-Book Readers in Higher Education : Student Reading Preferences and Other Data From Surveys at the University of Agder

Arthur N. Olsen, Birgitte Kleivset and Henry Langseth

SAGE Open 2013 3:

DOI: 10.1177/2158244013486493

The online version of this article can be found at:
<http://sgo.sagepub.com/content/3/2/2158244013486493>

Published by:



<http://www.sagepublications.com>



Additional services and information for *SAGE Open* can be found at:

Email Alerts: <http://sgo.sagepub.com/cgi/alerts>

Subscriptions: <http://sgo.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

E-Book Readers in Higher Education: Student Reading Preferences and Other Data From Surveys at the University of Agder

SAGE Open
April-June 2013: 1-8
© The Author(s) 2013
DOI: 10.1177/2158244013486493
sgo.sagepub.com


Arthur N. Olsen¹, Birgitte Kleivset¹ and Henry Langseth¹

Abstract

This article reports on a research project at the University of Agder that has studied the use of e-readers as a tool for academic study. E-readers (Kindle DX and iPad) were loaded with texts from required reading lists in five courses with 94 participating students. Initially, 87 students responded to the invitation to participate in a survey, but eventually 13 of these submissions had to be removed, as the degree of completion was not sufficient. The final response rate achieved was 79%. Students were in general positive to the use of e-readers but still show a preference for print on paper as the best medium for serious academic study. When reading books, 54% preferred print, 28% a combination of print and e-reader, and finally only 11% were satisfied solely using an e-reader. The iPad scored significantly better than the Kindle DX on tasks that required active interaction with the texts such as highlighting and note taking.

Keywords

e-book readers, reading, academic study, surveys, Kindle, iPad

Introduction

The emergence of e-book readers as a realistic alternative for content delivery gives us the opportunity to reexamine usability issues with regard to e-books and other e-texts. Our main research question in the following article is whether current e-book readers loaded with curriculum-based e-books and articles can provide an effective learning experience for students in higher education.

Academic libraries have been purchasing e-books for quite a few years. Electronic versions of major reference work such as encyclopedias and dictionaries were natural candidates for purchase in the beginning. Pioneering vendors such as Ebrary and Netlibrary were successful in launching subscription-based collections for academic libraries at an early stage. An expansion of interest in the field seemed to occur around the year 2000. The journal *Library Hi Tech* devoted a special issue to e-books more than 10 years ago (D. Dillon, 2001a, 2001b)

The number of offerings from vendors and publishers and the percentage of library funds devoted to e-books have grown considerably the last few years. Duke University Press conducted a survey of libraries with regard to e-books in 2011; of the 265 libraries that responded, only 3 did not purchase e-books at all. A majority of the libraries have also increased the amount of funds devoted to e-books in spite of the current economic climate.

One factor that still limits the use of e-books in higher education is the limited availability of e-textbooks. Only 20% of the English language books on the required reading lists at the University of Agder were available for purchase as e-books when this was checked in 2010. The situation regarding Norwegian textbooks is even less satisfactory, almost none of these are available as e-books.

The e-books we have made available to patrons have mostly been for online PC-based usage with limited possibilities for downloading and printing. Access to an e-book version does not seem to fulfill the needs of our students and faculty members as interlibrary loan or purchase requests are often made. Preferences for print have been clearly documented at other academic libraries that have questioned faculty or students in regard to e-books. A recent survey of attitudes among business school faculty at Brigham Young University (Camacho & Spackman, 2011) showed that 61% would prefer a book in print format if they could choose. Ease of reading and portability were the two important reasons for preferring print.

¹The University of Agder, Kristiansand, Norway

Corresponding Author:

Arthur N. Olsen, Agder University Library, P.O. Box 422, 4604
Kristiansand, Norway.
Email: arthur.n.olsen@uia.no

The University of Agder has established a multiyear program to explore ways that the deployment of new or innovative technology can enhance learning for our students who belong to a generation of *Digital Natives* (Prensky, 2001). The program Learning Arena 2020 (LA2020)¹ offers funding for pilot projects that contribute to the implementation of ideas and projects aimed at improving student learning outcomes. A dialogue between LA2020 and Agder University Library resulted in funding for a project to explore the use of e-readers as a learning tool. Funds were provided to purchase 40 e-readers (20 Kindle DX second generation and 20 iPad first generation) in addition to some e-content course material and salary for staff. Extensive information from the project is available on our blog (mostly in Norwegian).²

Earlier Studies

There is a quite extensive body of literature that has studied digital reading. The transition from the physical book or print on paper to screen reading confronts one with a series of questions on how this changes the way we read and how this influences comprehension and learning outcomes. A. Dillon (1992) provides a detailed review and synopsis of early research on reading speed, accuracy, and comprehension when reading from paper in contrast to VDUs (Visual Display Units). These early studies generally favored paper for better performance in regard to the metrics mentioned above. Today's high-quality LCD- and LED-based screens are very different from the VDUs of the 1980s and 1990s. Despite great improvement in display technology, users still seem to dislike on-screen reading for extended periods. Results regarding learning outcomes have recently been reported by Ackerman and Goldsmith (2011). Their study shows that test performance was just as good for on-screen as paper reading when study time was fixed. However, when study time was self-regulated, the results changed for the worse in regard to on-screen reading. The authors explain this difference in terms of the varying quality of metacognition, in this case monitoring one's comprehension while reading. It seems that readers often overestimate their progress when reading on-screen.

Another recent study (Schugar, Schugar, & Penny, 2011) is one of the first that has analyzed differences in reading comprehension between print on paper and a modern e-reader based on e-ink. One group of students read the required texts on the Nook e-reader while the control group read printed books. Formal testing showed no discernible differences in reading comprehension levels between the e-reader and none-reader groups. One significant difference between the groups was the level of interaction with the texts; readers of the traditional texts were much more active as regards bookmarking, highlighting, and annotations. This result could be linked to limited and cumbersome functionality for interaction in the Nook e-reader.

Texas A&M University Libraries have pioneered the evaluation of the new generation of e-readers based on e-ink. The

university library launched a project to test the new Kindle e-book reader from Amazon in 2008. They recruited a group of 36 students for a long-term study of usability. A qualitative analysis of user viewpoints based on a survey and focus group sessions was held after the students had used the e-readers for 1 month. Results of the focus groups showed that students found the Kindle suitable for immersive fiction reading but felt that there were major problems in regard to document availability, graphics, and licensing issues. About half the students believed that the Kindle would never be a realistic alternative to the printed book (Clark, Goodwin, Samuelson, & Coker, 2008). Some of the negative viewpoints in regard to the Kindle in this study are less relevant for the current Kindle e-readers (third generation) that have better screen contrast and more refined software at a much lower price. Texas A&M University Libraries has followed this study with a lending program for Kindles that focuses on popular reading material as the devices were found to be less appropriate for academic study (Clark, 2009).

In conjunction with the launch of the Kindle DX reader in 2009, Amazon sponsored a pilot project involving seven U.S. universities the goal of which was to evaluate the feasibility of replacing students' paper texts with electronic texts presented on an e-reader. Many of the studies were cut short because of protests from the American Council of the Blind that the device could not be used by blind students. Some interesting results have been made public but mostly as reports and not in the peer-reviewed literature. A pilot project was established at Princeton University (2010) involving three faculty members and 51 students. Three courses, one undergraduate and two graduate in the humanities and social sciences, were chosen for the project. Three major goals were identified for the project: first, to reduce the amount of printing needed for the required readings; second, to evaluate if the Kindle DX could provide a better learning environment than the traditional paper-based experience; and third, to evaluate current technology and provide thoughts about key features for future devices.

The goal of reducing printing was achieved but students reported many unsatisfactory aspects of the e-readers in regard to the active learning process. Reading was deemed to be acceptable but interaction with the texts in the form of comments, highlighting, and annotation was difficult and much less intuitive than with paper-based documents.

Reed College is another of the participants in the Kindle DX pilot study that has reported their findings (Marmarelli & Ringle, 2009). The students praised the Kindle DX for good legibility and battery life among other features but criticized other aspects of the device. PDF handling was deemed as unsatisfactory with a complete lack of facilities for highlighting and note taking. Specific passages in the monographs in Kindle format could not be referred to by page. Using the e-reader made work with several texts at one time difficult. Reed has followed their Kindle DX study with a study of the Apple iPad in an academic setting (Marmarelli & Ringle, 2011). The findings from this study are more

positive to the device's potential as an efficient study tool than the previous Kindle study. Students consider the iPad to be responsive and flexible with adequate tools for highlighting and annotation. Students do not report excessive fatigue when reading due to the LCD screen.

A team at the Aalto University in Finland has recently studied five e-readers based on e-ink technology (Aaltonen, Mannonen, Nieminen, & Nieminen, 2011). The e-readers³ were first evaluated for compatibility in relation to the e-book holdings at the university library. In general, e-books from publishers such as Springer are fully compatible and easy to use with e-readers. E-books from aggregators such as DawsonEra are in general not usable due to digital rights management (DRM) incompatibilities. A high-quality usability study involving students was also undertaken. Only four of the e-readers were tested as the Amazon Kindle had to be dropped due to technical difficulties. Students liked reading material on the e-readers and also thought that they might purchase one for leisure reading. They found that the devices lacked necessary functionality for serious study. Note taking, highlighting, and annotation were viewed as cumbersome. Nonlinear reading requiring efficient navigation and browsing was too difficult.

The first long-term study of the Amazon Kindle DX reader has been published by a group at the University of Washington (Thayer et al., 2011). The study examines the academic potential of e-readers by making use of A. K. Pugh's notions of reading strategies. Pugh identifies five student reading techniques—scanning, search reading, skimming, receptive reading, and responsive reading (Thayer et al., 2011). The study suggests that the Kindle DX supports receptive reading but is poor on skimming, scanning, search reading, and responsive reading. Students switch between reading techniques rapidly. A successful future for e-readers in academia “depends on understanding how to support students' varied reading practices more effectively” (Thayer et al., 2011, p. 2925).

There has been a range of projects at other Norwegian universities and university colleges involving e-readers in an academic setting. We have collaborated and exchanged information with colleagues in an informal network. Preliminary results have been published informally in blogs and other venues but formal publications are now appearing.

A project looking into e-curriculum at the NTNU University Library in Trondheim (Angeletaki, 2011) was conducted in 2010. E-readers loaded with material from reading lists were introduced to students in two courses. Of the 46 students asked, 12 willing students borrowed e-readers. After the test period, 80% of the 12 said they preferred reading on the digital readers rather than from printouts. The main goal of the project was “to investigate how library staff can help University researchers and students to easily access up-to-date electronic resources and assure quality service” (Angeletaki, 2011, p. s4). The use

of new technology in the project seemed to contribute to a user-oriented library service. The project manager Alexandra Angeletaki states that “this type of collaborative project allows the library to establish itself as a learning space and an important educational collaborator for the faculty it serves” (Angeletaki, 2011, p. s5).

A project based at Oslo University College (Eikebrokk, Knutsen, & Thauale, 2011) has explored whether the use of an iPad could improve students' study habits. The iPad was chosen as it was the e-reader/tablet that had the greatest degree of utility as regards the licensed e-resources at the institution. After a semester of use by students in two study programs, the students received an electronic survey and participated in focus group meetings. A major finding was that students thought that facilities for taking notes, printing, and accessing documents were less than ideal. The participants found that the iPad worked well for reading online documents and shorter articles but not so well for books. DRM-related issues contributed to reduced user satisfaction.

The earlier studies above regarding e-readers based on e-ink seem to point to the fact that this technology is now mature enough for immersive leisure reading but still deficient as far as serious study is concerned. Tablets such as the iPad are a different class of device with a stronger feature set for vital functions such as navigation, highlighting, and annotation. Very few studies have been done based on the iPad or other tablets, but these devices seem to have potential for higher education as the study at Oslo University College shows.

Chosen E-Book Readers

Describing current e-book readers is a challenge as technical specifications change rapidly. The number of offerings worldwide has grown immensely but the number of major players is limited. Readers based on e-ink screens have been available since 2004 but Amazon's launch of the Kindle e-book reader in late 2007 was a major turning point for market penetration. Most users prefer e-ink screens for better readability and ergonomics for extended reading, but there is little research that shows a definitive advantage in comparison with modern LCD/LED screens as regards visual fatigue.

Two different readers were chosen for further study at Agder University based on a study of availability and features. We focused on readers that were marketed as suitable for use in higher education. Delays were encountered due to limited availability in Norway. In all, 20 Amazon Kindle DX (first-generation international version) readers were purchased in June 2010 and 20 Apple iPad (first generation) tablets were purchased from June to November 2010.

The Kindle DX comes with a 24.6 cm (9.7 inch) E-Ink screen instead of the 15.2 cm (6 inch) normal Kindle screen. It has support for International 3G Wireless and native support for PDF documents. We were rather unfortunate with the timing of this purchase as Amazon launched the improved

second-generation Kindle DX (graphite) in July 2010. This version has much improved screen contrast and some improvements in PDF handling. As for all Kindles, the DX is only compatible with e-books in Mobi and Amazon AZW format.

We purchased the first-generation iPad WiFi with 16 MB memory. The iPad's touchscreen display is a 25 cm (9.7 inch) liquid crystal display (1024 × 768 pixels) with fingerprint-resistant and scratch-resistant glass. The iPad is a multifunction device which is especially suitable for media consumption. Our focus was reading e-texts, both e-books in flowable formats and PDFs. The functionality of the iPad can be extended in many ways by installing suitable Apps. Students who participated in our study were advised that the following iPad Apps were recommended:

- Dropbox for file transfer⁴
- iBooks and Kindle for e-books
- GoodReader⁵ or ReaddleDocs⁶ for PDF reading, highlighting, and annotation

Research Goals and Methodology

As stated above, our main research focus for this study was to establish whether current e-book readers loaded with the relevant electronic texts could replace printed books and journal articles in an academic setting. A correct analysis of the realism in the transition from print to e-reader is vital for academic libraries when establishing a future library media acquisition policy. Secondary research questions were related to a variety of usability issues of the studies' e-readers.

The University of Agder has more than 9,000 students. Teaching and research cover a wide range of subjects. In this study, we asked 94 students from four study programs to use the Kindle or iPad for one semester (47% men, 53% women, average number of years as students at the university 4.2). Participants were offered the opportunity to download books and articles from the reading list, or other types of relevant resources that they might want, if available. Due to limited availability in compatible e-formats, only about 40% of the reading list material was accessible for the students on electronic reading devices.

Students in four courses were given the Kindle DX or iPad:

- *European Integration*, a problem-oriented summer course for students at the master level introducing historical, economic, and political processes behind the development of a European Community. In the summer of 2010, 20 students were asked to use the Kindle DX, and the following summer, 20 students read texts from their reading lists on the iPad and 9 on the Kindle DX.
- *Social Communication*, a multidisciplinary, professionally oriented master's program in humanities and

the social sciences. From September to December 2010, 11 students received books and articles from their reading lists on Kindle DX. From January to June, 19 students were given iPads to read from.

- *English Renaissance Culture in Context*, a course about the socioeconomic change and technological innovation in Renaissance England. From January to June 2011, 7 students were offered the opportunity to download books and articles from their reading lists to the Kindle DX.
- *Communication Studies*, a bachelor's program about text, media, and communication from a humanistic perspective. From January to June 2011, 9 students read articles from their reading lists on the Kindle DX. Concise information about the trial courses are given in Table 1.

Results

Initially, 87 students responded to the invitation to participate, but eventually 13 of these submissions had to be removed, as the degree of completion was insufficient.⁷

In total, 94 students were invited to participate, thus leaving the survey with a final response rate of 79%. No incentives were offered for completing the survey, but the students were made aware of the obligation they had upon receiving the reading device. The project period spanned from June 2010 till August 2011 and involved five different classes from humanities and the social sciences. The students had 3 weeks to complete the survey and received a reminder after 10 days if no response had been given. To ensure a sufficient response rate, SMS, phone, and Facebook messages were also utilized to give reminders. A total of 46% of the participants left a comment using the open-ended question at the end of the survey.

Sample Surveyed

In all, 77% of the students were between 20 and 30 years of age, and there were slightly more female respondents (54%) than male. On average, the students had been studying for 4.2 years, and 83% of the respondents were master students at the time they completed the survey. In terms of how the students access the Internet, 91% of the sample surveyed use a PC several times a day for this purpose. In addition, 42% use a smartphone and 22% a traditional mobile phone for surfing. These figures are in-line with previous studies among Norwegians (Statistics Norway, 2012).

Device Characteristics

The students were enthusiastic about receiving the e-reader and were asked to describe their first impressions regarding some of the features. In total, 61% categorized the design as either good or very good, and 64% were also satisfied with

Table 1. Courses at Agder University Where E-Readers Were Introduced.

| Date | Course | Device | Responses |
|-------------|---|-----------|---|
| August 2011 | European Integration Summer School | iPad | 15 completed 5 no response |
| August 2011 | European Integration Summer School | Kindle DX | 5 responses 2 incomplete answers 2 no response |
| Spring 2011 | Social Communication master's program | iPad | 14 completed 1 incomplete answers 4 no response |
| Spring 2011 | Communication Studies bachelor's program | Kindle DX | 7 complete 1 no response |
| Spring 2011 | English Renaissance Culture in Context bachelor's program | Kindle DX | 5 completed 2 no response |
| Autumn 2010 | Social Communication master's program | Kindle DX | 11 completed |
| August 2010 | European Integration Summer School | Kindle DX | 18 completed 2 no response |

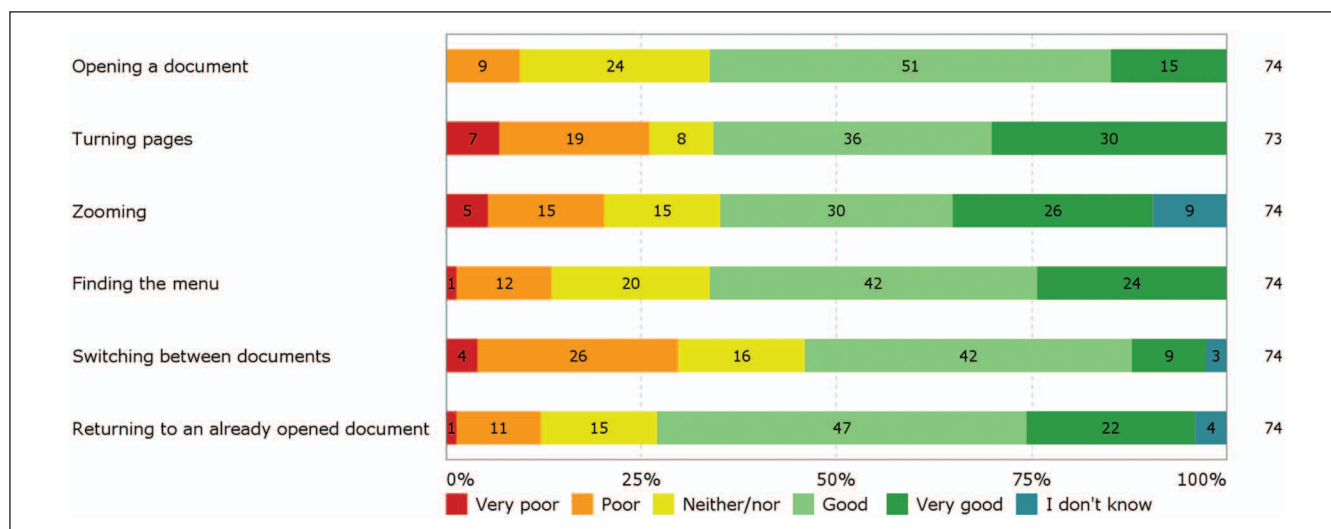


Figure 1. E-reader functionality: Starting using the reading device, what did you think of the following.

the weight of the device. The Kindle DX and the iPad used in this survey weigh 540 and 680 grams, respectively. Only 3% found the screen to be poor. As many as 81% were also pleased with battery capacity.

Navigation and Usage

As seen in Figure 1, the students were asked to rate different features of the e-reader. Only 40% found general navigation satisfying. However, 66% stated they were satisfied with finding the main menu on the device. Opening a document was found to be poor among only 9% of the students and 66% thought turning pages were either good or very good. The percentage of students who were less satisfied with the time it took to load a new page was 29%. As for zooming, 56% were satisfied with this feature. Switching between different documents was found to be poor or very poor by 30%

of the students. In all, 69% were satisfied with returning to a document they had previously opened. The possibilities to take notes within a document were categorized as either poor or very poor by 46% of the students, and also 23% found it neither poor nor good. Furthermore, only 21% thought the possibility to highlight text was satisfactory. In this case, as many as 14% stated that they did not know about this option.

Print or Electronic?

A total of 79% thought the e-reader was good or very good for reading journal articles but a little less, 61%, had a similar opinion as regards reading books. Despite a high degree of satisfaction with the e-readers, fewer saw themselves as solely relying on such a device. Having been given the opportunity to read literature from the reading list on an e-reader, 54% replied that they still preferred paper in terms

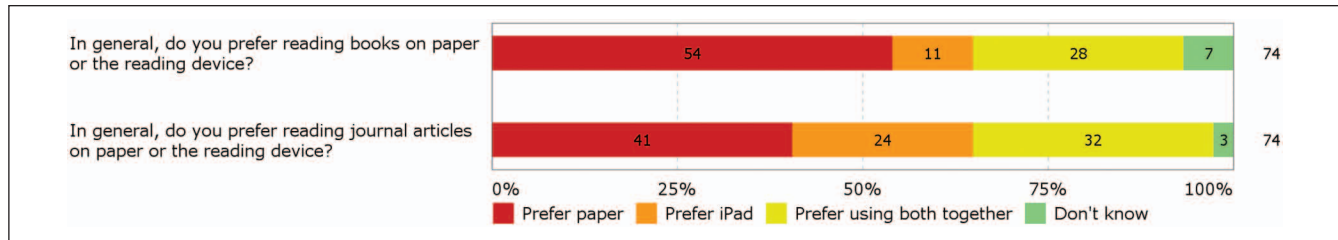


Figure 2. E-reader versus print.

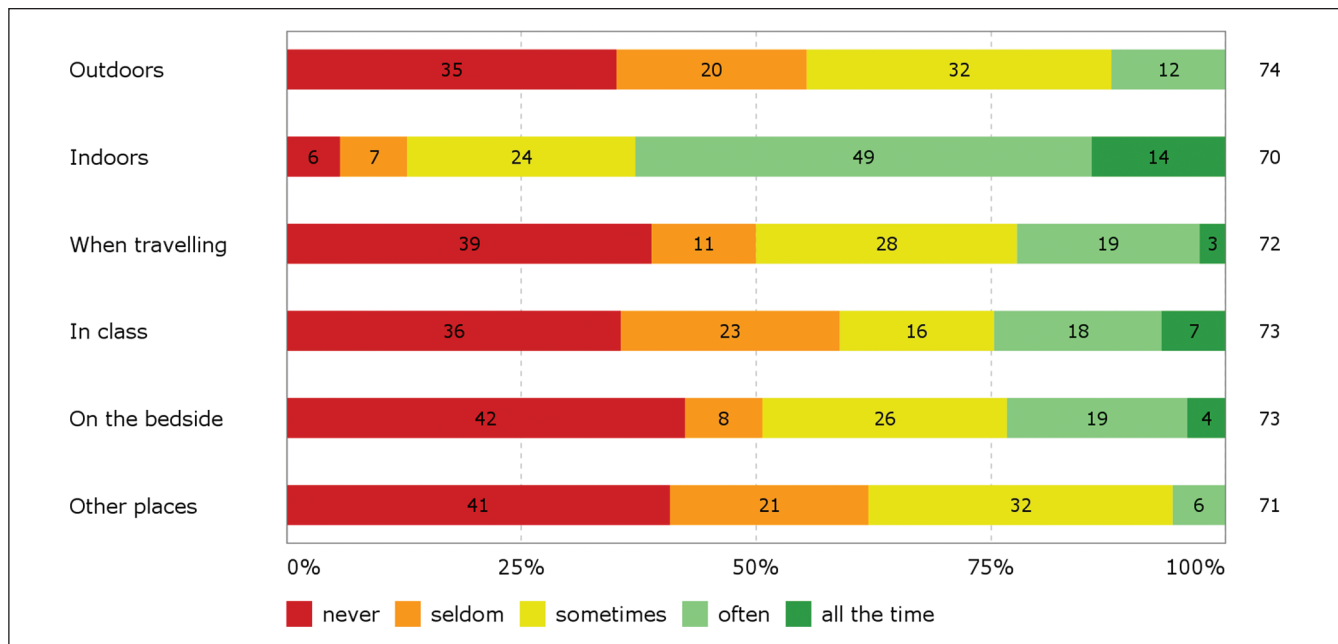


Figure 3. Location of e-reader usage: Where have you been using the reading device?

of books. Only 11% would rely solely on the device, and 28% found that combining paper and an e-reader was best for study purposes. Seven percent answered that they did not know what kind of format they preferred books to be in. This is illustrated in Figure 2.

The results for reading journal articles were somewhat more positive for e-readers. In all, 24% preferred just using the e-reader, and 32% saw themselves using a combination of print and the e-reader. However, 41% still wanted to stay with paper versions of journal articles, and 3% were not sure which format they preferred such documents to be in.

Academic Setting and Learning Outcomes

Location. In regard to location of use, Figure 3 above shows that 59% of the students never or seldom brought it with them to class. A total of 44% sometimes or often used it outdoors, and 50% had also used it when traveling. Interestingly, 49% had also taken the e-reader with them to bed.

Purpose. The students had the e-readers in their possession from 1 to 4 months, depending on which course they were

attending. In our study, we wanted to find out to what extent the e-readers had been used for entertainment only. Surprisingly, 56% never or seldom used the e-reader for entertainment; however 26% stated they did sometimes. Of the sample surveyed, 19% used it either often or all the time for entertainment.

When asked to what extent they had used it for academic purposes, only 19% seldom or never used it for academic studies and 46% replied that they used it sometimes for this purpose. There were 27% who used it often for academic studies while 8% used the e-reader all the time.

Asked what the main purpose had been when using the e-reader, a majority of 39% used it mainly when preparing for lectures as illustrated in Figure 4. Next, 34% stated their main purpose was studying for exams. Sixteen percent had used it in class, and last, 11% replied they mainly used it during group work and similar sessions.

Kindle Versus iPad. Although this study has not had its main focus on the student's perceptions of the Kindle and iPad, some findings should still be mentioned as the results clearly show differences between the two reading devices.

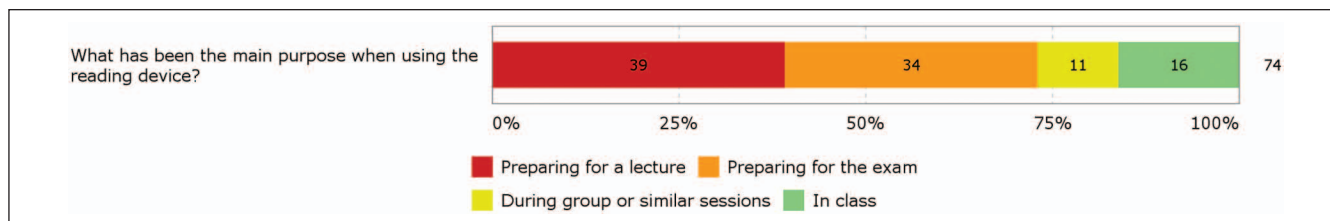


Figure 4. Main purpose of using the e-reader.

First, the iPad receives better scores in terms of turning pages. In total, 46% thought this feature was very good using the iPad and 20% gave the similar score for the Kindle. Next, zooming receives far better score with iPad. A total of 61% thinks this is very good, in sharp contrast to only 4% giving the same score for the Kindle. Taking notes and highlighting text are two very important needs students have when studying. As for the possibility of taking notes, this was categorized as either good or very good by 28% using the iPad. Only 7% answered with these categories when using the Kindle. Highlighting text also received better scores with the iPad, 32% of iPad users finding this feature good or very good versus only 11% with the Kindle. Last, the reading devices did not score very differently as regards reading books, but for reading articles 92% of the iPad users found this to be either good or very good in contrast to 72% saying the same about the Kindle. We also observe the iPad is more of an entertainment device in comparison with the Kindle, but this should not be a surprise to anyone familiar with these devices.

The above-mentioned features seem to be the areas where the iPad is ahead of the Kindle. The remaining features present so little variation that it would only be of interest if a larger sample was surveyed.

Learning Outcomes. Only 4% of the students participating in the project thought they had a better learning outcome using the e-reader for studying. But 46% thought they had learned about the same, and as many as 41% stated they had learned less well using the e-reader in comparison with printed text. Nine percent did not know.

Discussion

Despite the fact that students in general were positive to the use of e-readers, our research suggests that current e-book readers loaded with curriculum-based e-books and articles cannot, to a full extent, provide for an efficient learning experience in higher education. Students report unsatisfactory aspects of the e-readers in regard to active reading. Interaction with the texts in the form of comments, highlighting, annotation, and nonlinear reading is difficult. The technology still seems to be immature for serious study in an academic setting.

The main results of our study as to student preferences are still in line with what other investigators have found. Students of today still seem to prefer print on paper as the primary delivery mechanism for texts as part of their education. The current technological infrastructure as to e-readers and content is not yet as functional as traditional printed media. This outcome is also related to work habits and how familiar the current generation of students is with using e-readers. Our study reports the subjective viewpoints of the participating students who were relatively inexperienced users of e-readers. The courses surveyed were all in the humanities and social sciences; results might have been different if students from the natural sciences, medicine, or mathematics had been included in the study.

Due to student preferences and uncertainty as to learning outcomes, the field is still in a state of flux. The major publishers of academic textbooks have still not embraced e-readers. Universities and academic libraries should possibly moderate plans and projects for a transition to e-texts and continue studying current e-book readers.

In this study, the iPad received better scores than Kindle DX as to taking notes and highlighting. The students also reported that they brought the iPad to class. This might point to this device's potential as an effective study and reading tool, and should be more thoroughly investigated.

Recent developments in smartphone technology are also of great interest. The widespread adoption of smartphones with large screens, powerful processors, and a sophisticated software environment means that most students will already have a device that could be a suitable tool for academic study. An added advantage of smartphones as a learning tool is that students already know how to use them. A new study focusing on these ubiquitous devices would be of great interest.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research and/or authorship of this article: This project

received financial support from the program *Learning Arena 2020* at the University of Agder.

Notes

1. <http://www.uia.no/no/div/prosjekt/la2020>
2. <http://lesebrettuia.blogspot.com/>
3. Amazon Kindle, BeBook, Booken CyBook Opus, Foxit eSlick, Sony Reader Touch Edition PRS-600
4. <http://www.dropbox.com/>
5. <http://www.goodiware.com/goodreader.html>
6. http://readdle.com/products/readdledocs_ipad/
7. Complete survey results are available from our institutional repository at the following address: http://www.nb.no/idtjeneste/URN:NBN:no-bibsys_brage_29484

References

- Aaltonen, M., Mannonen, P., Nieminen, S., & Nieminen, M. (2011). Usability and compatibility of e-book readers in an academic environment: A collaborative study. *IFLA Journal*, *37*, 16-27. doi:10.1177/0340035210396775
- Ackerman, R., & Goldsmith, M. (2011). Metacognitive regulation of text learning: On screen versus on paper. *Journal of Experimental Psychology: Applied*, *17*, 18-32. doi:10.1037/a0022086
- Angeletaki, A. (2011). E-readers as a studying tool: A project by the NTNU University Library, Trondheim. *Serials: The Journal for the Serials Community*, *24*(Suppl. 3), S1-S6. doi:10.1629/24S1
- Camacho, L., & Spackman, A. (2011). Transitioning to e-books: Usage and attitudes among business faculty. *Journal of Business & Finance Librarianship*, *16*, 33-45. doi:10.1080/08963568.2011.530856
- Clark, D. T. (2009). Lending Kindle e-book readers: First results from the Texas A&M University project. *Collection Building*, *28*(4), 146-149. doi:10.1108/01604950910999774
- Clark, D. T., Goodwin, S., Samuelson, T. P., & Coker, C. (2008). A qualitative assessment of the Kindle e-book reader: Results from initial focus groups. *Performance Measurement & Metrics*, *9*, 118-129. doi:10.1108/14678040810906826
- Dillon, A. (1992). Reading from paper versus screens—A critical-review of the empirical literature. *Ergonomics*, *35*, 1297-1326. doi:10.1080/00140139208967394
- Dillon, D. (2001a). E-books: The University of Texas experience, part 1. *Library Hi Tech Journal*, *19*, 113-124. doi:10.1108/07378830110394826
- Dillon, D. (2001b). E-books: The University of Texas experience, part 2. *Library Hi Tech Journal*, *19*, 350-362. doi:10.1108/EUM0000000006540
- Duke University Press. (2011). *Survey of library e-book acquisitions*. Retrieved from http://www.dukeupress.edu/Assets/Downloads/SurveyofLibraryEbookAcquisitions_DukeUP.pdf
- Eikebrokk, T., Knutsen, B. G., & Thaulle, J. (2011). Exploring handheld devices and digital learning: The iPad project at Oslo University College. *ScieCom Info*, *7*(3). Retrieved from <http://nile.lub.lu.se/ojs/index.php/sciecominfo/article/view/5277>
- Marmarelli, T., & Ringle, M. (2009). *The Reed College Kindle study*. Retrieved from http://web.reed.edu/cis/about/kindle_pilot/Reed_Kindle_report.pdf
- Marmarelli, T., & Ringle, M. (2011). *The Reed College iPad study*. Retrieved from http://web.reed.edu/cis/about/ipad_pilot/Reed_ipad_report.pdf
- Prensky, M. (2001). Digital natives, digital immigrants: Part 1. *On the Horizon*, *9*(5), 1-6. doi:10.1108/10748120110424816
- Princeton University. (2010). *The E-reader pilot at Princeton: Fall semester 2009* (long version). Retrieved from <http://www.princeton.edu/ereaderpilot/eReaderFinalReportLong.pdf>
- Schugar, J. T., Schugar, H., & Penny, C. (2011). A nook or a book? Comparing college students' reading comprehension levels, critical reading, and study skills. *International Journal of Technology in Teaching and Learning*, *7*, 174-192. Retrieved from http://www.sicet.org/journals/ijttl/issue1102/6_Schugar.pdf
- Statistics Norway. (2012). *ICT usage in households, 2nd quarter of 2012*. Retrieved from http://www.ssb.no/english/subjects/10/03/ikthus_en/
- Thayer, A., Lee, C.P., Hwang, L.H., Sales, H., Sen, P., & Dalal, N. (2011, May). *The imposition and superimposition of digital reading technology: the Academic potential of e-readers*. Paper presented at the SIGCHI Conference on Human Factors in Computing Systems, Vancouver, BC, Canada. doi:10.1145/1978942.1979375

Author Biographies

Arthur N. Olsen is a research librarian and coordinator of electronic services at Agder University Library. He has many years of experience regarding library automation and electronic services in academic libraries. He is a graduate in librarianship from Oslo University College with later postgraduate education in documentation and automated systems for libraries.

Birgitte Kleivset is a research librarian at Agder University Library. She was the project manager of the e-reader project at Agder University. Her interests are focused on supporting faculty and students at the Faculty of Humanities and Education, often utilizing social media, blogs, and other novel methods. She has a degree (Cand Phil) in Nordic languages and literature from Agder University College.

Henry Langseth is a research librarian and team manager for the subject librarians at Agder University Library. He has published in the area of small- and medium-sized enterprises and entrepreneurship. He has a MBS in entrepreneurship management from the University of Limerick, Ireland.