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E-readers as a studying tool: a project by the NTNU University Library, Trondheim

The 'e-curriculum project' was launched by the University Library of the Norwegian University of Science and Technology (NTNU) in 2010. The project aimed to challenge the traditional formats and ways of teaching information literacy by delivering digital reading lists on e-readers for the participants and asking them to give feedback on the positive and negative sides of their study experience. This was a collaboration between NTNU, the Teachers Educational Program (PLU) and the NTNU University Library in Trondheim in an effort to promote the digital resources of the Library. It was evident that there was an increasing need to redesign Library educational programs in order to incorporate teaching of multiple literacy skills for the University students, including digital literacy and critical thinking.



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The project

The Norwegian University of Science and Technology (NTNU) is Norway's second largest university, with an annual budget of about US \$800 million. Its 53 departments are spread out over seven major campuses, and graduate about 3,300 students every year, two-thirds of which are masters or PhD candidates. The University has more than 100 laboratory facilities distributed among the different faculties and departments, and these are central elements in NTNU's education and research work. The NTNU University Library, with its 12 departments, supports staff and students by providing access to books and scientific journals, as well as library instruction courses and counselling on demand (in the form of a help desk and office visits to answer questions and help with problems).

The main loan collections are designed to be closely aligned with the curriculum, and are updated every semester. For many subjects, though, a curriculum 'compendium' in paper format is also printed for students every semester, consisting of a collection of articles and book chapters chosen by the teachers for the particular subject, and sold only in the University bookstore. Many students choose to buy the compendium and the books instead of borrowing journals or books from the Library, even though it can be extremely expensive.

The Library on the other hand is increasing its collections of digital books and journals and promotes a growing shift from a paper-based curriculum to an electronic one. This particular shift is not happening at the same pace throughout the University because it depends very much on the nature of the subject, the choices the teachers make and the curriculum itself. Some subjects, like medicine and chemistry, rely mainly on electronic journals while others, like history and archaeology, rely largely on books, which are often not available online. A very large part of the Library's budget is thus used each year to purchase electronic resources in the form of e-journals, e-books or reference databases, and that increases every year. The idea of investigating the possibility of an electronic information resource service seemed strategically important for the Library's direction.

The 'e-curriculum project' was thus initiated by the library board in 2009 after receiving NTNU University strategy funding. The goal was to increase access to the digital resources and to promote the use of digital article collections for the subject curriculum instead of paper ones. The project looked to establish a range of collaborations with academic departments in order to examine possible digital service applications for learning communities and to establish pilot projects that

could provide an insight into the challenges involved in such a process. The project also established a blog called 'libridgets'¹ for communication purposes and in 2010 initiated a network with other university libraries (Oslo, Stavanger, Agder) that were experimenting with the same technologies, in order to share experiences and technical support knowledge.

The first project (known as P1) in Autumn 2010 was a pilot collaboration between the library staff, the teachers and the students of the Institute of Archaeology and Religious Studies. The second project (P2) in Autumn 2010 was a product of collaboration with the Teachers Educational Program (PLU). For the purposes of these two projects, the Library purchased a range of different e-readers (three Irexes, two Sony Readers, five iPads and eight Kindles). Eighteen students participated in total (three archaeology students, three process engineering and 12 PLU students with different subject majors), testing the e-readers by reading their assigned subject material through these.

The projects also set out to observe and collect data on the technological and digital skills of the participants and to evaluate the impact of multi-purpose tablet technology on particular learning situations. Students could choose freely between e-readers, computers or print versions of the articles. The aim was to analyze and follow the way students handle technology and academic reading without any interference by the teacher or the librarian.

How do students use e-books? How do they look for relevant electronic articles? What do they rely on when it comes to writing academic essays? These were some of the questions we tried to answer by allowing students to work with their digital reading lists through a full semester. The structure of the course together with the e-readers introduced a didactic challenge both for the students and for the library staff involved.

Challenges and solutions

E-readers seemed to be becoming increasingly popular among the students, so the project coordinators decided to use them as a marketing tool as part of a pilot project, launched in the Spring semester of 2010 with six students. At that stage, technology such as the iPad and the new Kindle was not widely available on the market. As a result of investigations into e-book format compatibility

with Sony, Kindle and Irex Iliad readers, it became evident that there was an absence of copyright regulation on digitizing books and articles previously published in print. At the time, there was no common agreement between Norwegian publishers and writers or academic institutions regarding who was entitled to digitize material that was already published. As the reading lists we wanted to scan mainly contained books from the 70s and 80s, it was easier to ask for permission to digitize direct from the authors themselves. Eventually, the project team managed to contact all of the relevant authors and 80% of the ones asked were willing to allow the digitization of their books and articles for the purpose of the project, since they had not signed any previous contract relating to digital delivery of their texts. Most of the authors had signed a contract of copyright with the publishers relating only to the paper version of their work.

It was agreed that all the digital versions of the articles and books would be destroyed at the end of the project. The students involved in the pilot signed a contract stating that they would not distribute copies to anyone else. All of the material that was delivered as part of the project and all the readers and their content were to be returned to the library by the end of the semester. The syllabus material for the archaeology module, ARK1114, was scanned by the Library and delivered to the students on two Irexes and one Kindle. Process engineering students had to study one particular book for their subject, and copyright was cleared for the project by the academic publishers of NTNU (Tapir) enabling the book to be delivered in e-pub format on three Sony Readers. During the semester, PDF compatibility on the Kindle changed and that made it easier for the students to use. One of the Irexes was also later swapped for a Kindle DX reader.

Curiously enough, none of the students expressed any interest in learning more about the e-readers and none used them for anything other than reading their assigned material. All six students seemed very puzzled by the experience of reading books and articles on an e-reader rather than on paper or on their computer, especially not being able to keep notes as they would do with paper books. In the questionnaire given to all six at the end of the semester they seemed positive about the fact that they could save money by using the e-readers instead of buying the books, but they all

preferred paper for their studying and learning process. They did not feel comfortable enough with the technology of an e-reader yet.

From the project team perspective, digitizing the material was very time-consuming and expensive because of format compatibility issues, which made the team realize that for the next project, material should be chosen that was 'born digital'. We therefore tried to find a subject where the reading lists consisted mainly of articles and books produced in digital formats, and concentrated more on supporting and observing the students in their learning and studying process. So, after many discussions and meetings with different departments at NTNU, we chose to work with the Teachers Educational Program (PLU) as our collaborator for the P2 project in Spring 2010. In both projects, the academics and teachers were very positive about the use of digital formats and tools, and that encouraged the students to be willing to participate.

During the period that the P2 project ran, compatibility between computers, iPads and Kindles was a problematic issue raised by the students and presented a challenge for us. Since both are restricted to their own software, tools and formats, the students had to find flexible ways of using their tablets as it suited them best and to keep themselves updated on changes on the functionality offered by the two companies. Several tablet-specific instructions were delivered to the e-reader users through 'itslearning'² in order to facilitate them. One student created a blog and informed the others about compatibility problems, solutions and new apps that appeared during the project period. The Library staff introduced them to the e-readers, but could not follow closely the challenges faced in their everyday studying. Most of the students managed to become acquainted with the technological tools and apps available and used them for reading other e-books as well. Only one complained, at the end of the semester, that she had found it too difficult to cope with the technological challenge.

E-readers as a study tool

During the fall semester of 2010, the Library delivered six iPads, two Kindles and four Kindle DXs to students undertaking masters-level qualifications in the PLU. The module, known as

EDU3130, was a 7.5 credit course in didactics. The articles chosen were delivered digitally in PDF format, and the students had to read the articles and contribute to a discussion through a wiki platform while working on specific written assignments. All 46 students who took the course had different backgrounds: some had been working as teachers for many years, some had just started working, and yet others had only just completed their teacher education and had no work experience. All had different subject majors and, as indicated by their answers at a pre-test delivered to them, their experience in using academic texts varied greatly. Students were offered an orientation by the Library on the aims of the project and a two-hour face-to-face class in using digital resources at the beginning of the semester. In the middle of the semester they also participated in an Endnote workshop offered by Library staff.

All 46 students were asked whether they were willing to borrow e-readers or preferred to read on their PCs or in paper format. At the beginning of the project, 90% indicated that they preferred to read in paper format. Since we only had 12 e-readers, the 12 most willing students borrowed e-readers and answered two questionnaires (one after four weeks and one at the end of the semester) about the actual use of the tablets in their academic study. All 46 of them were asked to participate in two surveys through their blackboard (itslearning), which is used by NTNU as a learning platform with VLE technology where students and teachers can communicate during the semester.

In a pre-test before the first class, they were asked whether they had read any e-books at all before the course. This revealed that 10% had used a tablet to read fiction books only, while 90% said they had never read an e-book on a screen or a tablet before.

Five different questionnaire surveys were developed by the project co-ordinator in co-operation with the subject teacher, Gunnar Grut, and they adjusted them to the course context for the participants to answer. In total, 72 responses were collected. We are still processing the data, so we can only make some general observations here:

- most of the participants have seen as a great advantage the possibility of having access to their course reading lists through multiple media like both iPhone and iPad no matter

where they were. As one student pointed out, "I got an overview of the stuff I had to read much earlier than I would otherwise"

- the fact that the Kindle and iPad had very good readability and longer battery life than the PC or Mac was also very important to the students
- Irex and Sony did not seem to satisfy the users for many reasons. First of all it was not easy to flip back and forth in a text and the battery did not last very long. A drawback of the Sony Reader was that PDF files had to be converted to e-pub, while for the Irex one could not zoom in the text without losing a part of it. Some of the students commented on the bad quality of the Sony Reader screen and the fairly large size format of the Irex as not being 'handy'
- high cost and compatibility limitations of Apple's applications has been a problem for the iPad users
- poor annotating tools on the PDF files have resulted in negative feedback from Kindle users
- students who had borrowed reading devices in both projects have given positive feedback on the cost savings and the practical advantages of using e-readers instead of buying books and journals.

Through the project, we realized that student participation depended mostly on the personal technological skills and interests in using the e-readers so that one could fully exploit their reader's possibilities. A student commented that "synchronizing across different standards and platforms can be just as frustrating as a twisted copy machine".³

A participant from the P2 project says in her article published in the University newspaper, "I'm going to the University for a Writing Task and what I carry with me is what I need. It is no longer five books and a compendium packed as it was when I began to study five years ago. The heavy bag is replaced with a small bag, and in that there are two digital tools – my iPad and my Apple. During the bus ride I can use the iPad easily to read. No thousand sheets to be kept track of, because I read on a black thin screen".⁴

Conclusions

The main goal of the e-curriculum 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. Library staff have run many courses on the use of electronic resources for staff and students, and still do, but the use of such resources varies among the different subjects. The e-curriculum project investigated the possibility of reaching new groups of University staff and students and adopted new technology to market its digital resources. The shift from the traditional instruction course to a collaborative teaching-studying environment with the use of new technology seems to contribute to a user-oriented library service. The growing popularity of iPad and Kindle at the time the project was launched motivated the curious students to participate. Students even seemed willing to gradually reduce paper consumption as they started using the e-readers. In the pre-tests, on the general question of whether they would prefer to have printed articles instead of digital reading lists, 94.40 % said they preferred to print out on paper rather than reading on computer screen or on the readers (See Appendix 1). Of the 46 students, 12 declared an interest in borrowing an e-reader. That seemed to change at the post-tests, where 80% of the students (i.e. 8 out of the 10) who used the e-readers during the whole semester said they preferred reading on the digital readers than from printouts.

Our project has shown that there was a change in attitude on the part of the students throughout the semester regarding using reader technology for their academic reading as they gradually became more comfortable with the technological demands of the devices used. A couple of them even reported buying iPads after the project was finished in order to use them actively in their work as teachers. Of the P2 students, 90% agreed that the fact that they could access their reading course materials any time of the day, wherever they were, was the most appreciated aspect of the project. Moreover, it was free of charge for them and much lighter to carry around, and they could start actually reading earlier on in their semester.

The current challenge of rapid developments in technology makes it difficult for libraries as public institutions to remain up to date and keep up with the cost-demands of investing in the latest equipment. But there will still be a need, for some years, to seek out texts of academic quality for students and researchers. There is no doubt that 'availability' and 'easy access' are the services everyone

expects and appreciates. Therefore in the future, the main focus of library services should concentrate on access together with programmes that enhance digital literacy and critical skills.

When we asked the students, how do you find, where do you look for, and how do you use subject-relevant literature for your thesis, it was interesting to see that their varied study background resulted in highly varied answers. As the numbers show, many relied on their own capability of finding the relevant material for their thesis using the library catalogue and Google, while others used course material or titles given to them by their supervisor (see Appendix 1). Very few used databases and even fewer felt confident about being able to evaluate critically what they found on the internet.

The overall result of the project, though, was that the participants and teachers realized the importance of teaching digital literacy among university students. The increased use of technology at universities all over the world has shown that mobiles and e-tablets can be considered as studying tools and, consequently, educational programmes using such technology are having to be planned and redesigned⁵. The rapid improvement in technological equipment and the increasing number of e-books published today forces universities to adapt to new learning environments and provide flexible and economical solutions for their students. As Meurant⁷ points out, there a need for teaching digital literacy and critical thinking to students on teacher training courses in a way that is adapted to the current learning environment.

My belief is 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. Tomorrow's graduates – in all areas – are faced with increased demands for digital literacy and university libraries can play an active role in strengthening this literacy. The aim should be to increase collaboration with the subject teachers and integrate educational programmes of literacy into the university curriculum so that students can meet the challenges that the rapid technological advancement of our era poses.

[The e-curriculum project culminated in a short film, produced by a professional film crew, to promote digital resources to the staff and students at NTNU. This was then put on YouTube, as this was considered to be an effective way to reach them.⁸]

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Appendix I

Questionnaire 1
 13 October 2010
 36 responses

Q6. What works best for me during this semester is to read course articles on:

pc/mac	44,40 %
e-tablet	22,20 %
paper	94,40 %
other	0 %

Q7. When I am looking for academic articles to use for my thesis the following works best for me:

course literature and supervisor	4
course literature	3
combine search in library catalogue, Google, library, books	17
supervisor and classmates	3
lectures	1
other books	2
other	6

Questionnaire 2 – at the end of the semester
 29 November 2010
 20 responses

Q4. Give an example of a book or article title that you will use for your thesis and indicate how did you find it.

course literature and supervisor	5
course literature	5
combine search in library catalogue, Google, library, books	8
supervisor and classmates	
lectures	2
other books	
other	

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