Educational textbooks in digital surroundings

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Abstract

The Danish education system as well as Danish society as a whole are influenced by technology in many ways. Technology also has a significant impact on the decisions made by students in choosing their educational learning material. These issues are not limited to the Danish educational system but can be applied to a number of contexts. The following study considers the findings in a Danish study on the use of educational textbooks among students in Denmark. It also examines how and to what extent traditional educational text-books are used, student preferences regarding textbooks vs online books and whether these preferences differ according to education and gender. The study also investigates the way students handle textbooks – such as sharing, photocopying, or buying second-hand copies, selling and buying etc. The study compares themes identified across educational contexts and looks beyond the Danish educational context. Empirically, the study builds on a survey conducted among students enrolled in the Bachelor Programme in the Vocational Education and Training Programme (VET) (Health Care) and in Upper Secondary Schools. The study includes responses from 1146 students. The article discusses the findings from the perspective of work methods, communication and interaction, and concludes, inter alia, that even though the students still prefer traditional textbooks, eBooks supplement this traditional use in a beneficial

manner. The article argues that in order to satisfy different styles of learning, the textbook and the eBook should not be seen as competitors but rather as complementary.

Keywords: Education, textbooks, e-books, online learning, learning processes, communication

Introduction

Recent studies among 506 and 669 students enrolled, respectively in further education programmes in Denmark showed that in 2014, 79% of the students almost always preferred printed textbooks whereas 43% of the students attending further education prefer to read articles in digital format. Results from 2016 showed that 64 % of the students preferred printed textbooks (Fremtidens biblioteker, 2014; Fremtidens biblioteker, 2016).

Further, 26% of students would typically choose digital study material such as articles and educational textbooks if these were available (Fremtidens biblioteker, 2014). Among the male students, 18 % preferred digital educational textbooks compared to 6% of the femalestudents (Fremtidens biblioteker, 2014). In 2016, the numbers comprised 22% and 15% for males and females, respectively (Fremtidens biblioteker, 2016).

International studies have shown that the uptake of electronic textbooks has been slower than anticipated (Stone & Baker-Eveleth 2013), but studies also suggest that student satisfaction with e-books has improved over time (Gueval et al., 2015). Hence, it is no surprise that despite the recent trend towards digitalization in the educational environment in a number of countries, including Denmark, 79% (2014) respectively 64% (2016) of students still prefer the printed textbook. The printed educational textbook is a quite special form of literature, which is used to ensure that the syllabus is fulfilled.

Studies show that there is a marked difference between students' preferences depending on whether they attend vocational education and training programmes or university college level programmes.

Moreover, gender differences in preferences are evident: male students show a remarkably higher preference for digital textbooks than female students (Fremtidens biblioteker, 2014; Fremtidens biblioteker, 2016).

Educational textbooks have for centuries been the cornerstone for teachers in planning, carrying out and evaluating their teaching (Hansen, 2006).

The textbook may be considered an educational teaching aid, which, together with topics and targets, defines the knowledge and the skills specified in the syllabus. Thus, use of the textbook by students and teachers facilitates the fulfilment of the tasks in the syllabus.

The educational textbook provides a firm structure and clear guidance in the teaching process in the form of texts, exercises and relevant tasks. Educational textbooks provide a clearly defined and limited knowledge in relation to the specific subjects (Hansen, 2006; Hacker, 1980).

This has not yet been found to be the case in digital study materials except when the materials are an exact digital copy of the printed textbook.

The development of digital study materials provides fresh educational perspectives and new pedagogical possibilities. Hence, new ways of arranging and facilitating knowledge, teaching and learning have become possible.

Digital learning materials present a challenge to the use of the ordinary printed textbooks. Previously, standard textbook reading was tantamount to studying whereas today, the involvement of digital textbooks and other digital study materials prompt us to question whether the digital text-books and study materials can provide the same learning outcome as traditional textbooks. The increase in sales and the popularity of eBooks together with the decline in printed books, raises various points of concern amongst publishers, librarians, teachers and others having an interest in education. Will eBooks replace printed books? Have people abandoned print for eBooks? Who is likely to opt for eBooks and why? They wonder whether eBooks will come to replace printed books, the extent to how far people have already abandoned print for eBooks and who, exactly, is likely to opt for the eBook.

Publishers are experiencing a recent decline in the sale of educational textbooks. It is not known whether this is due to students' giving preference to digital textbooks or if related to photocopying, selling and sharing. Although there is a tendency at some education programmes to consider sharing, copying and selling as legitimate this has not yet been systematically investigated (Brunet et al., 2011; Cuinas et al., 2017; Zhang et al., 2013).

In general, publishers aim to complement the market of educational textbooks with digital solutions. Initiatives take different paths and students' preferences should be investigated.

The aim of this study was to examine preferences for eBooks and printed books across educational contexts, which include the purpose of reading, the situation in which the reading takes place, and individual contextual factors such as age, gender, race/ethnicity, education level, price, content, readability and structure. This study aimed to identify factors that contribute to the uptake of eBooks. By enhancing our understanding of readers' choices and preferences for e-books and printed textbooks across contexts, publishers, librarians and teachers, who are to make important decisions regarding the choice of literature for the educational courses, may stand gain.

Research questions:

To what extent do students prefer printed educational textbooks?

How does this preference manifest itself? And is there a difference in the use and wishes related to the educational context?

Literature review

Reading online and the use of eBooks have been possible for decades. But it is only recently that researchers have begun to study behavioural patterns, quality and possibilities in the different ways of studying and reading (Cuinas et al., 2017).

A case study from 2015, seeking to determine the differences in costs between printed and eBook titles for an academic library showed that, on average, for academic libraries printed books are cheaper than e-books (Bailey et al., 2015). However, a study from 2017 comparing the use of printed textbooks and e-books with the same subject profile showed that eBooks were used more, while printed textbooks were read in greater depth and with increased weighting. (Horner, 2017). Thus, this study found that of approval books matching the same profile, eBooks are used more, but print books received more substantial use.

A study from 2017 on eBooks vs printed textbooks compared new trends of digital reading and traditional ones. It showed that despite the increasing offer of digital books on the market the printed textbook continues to survive (Cuinas et al., 2017). The study also revealed that low levels of expenditure on digital books had been observed, which makes it possible that the market, currently at least prefers a dual track approach, depending on the content and the reason for reading (Cuinas et al., 2017). The same study stated that some of the most relevant findings are that 89% of the respondents say that they have read a book in the last year, and 63% claims to have read between 1 and 5 books in printed format while only 37% did so in digital format. These findings indicate that the traditional reading format continues to resist despite the new ways of reading and the preference for the dual format. Moreover, an average of 75% of the respondents did not buy books in digital format; and birthdays were typically the most common occasion for giving books. Smartphones, tablets and note eBooks are the most widely used devices for reading eBooks. Finally, the study stated that 58% in the younger segment prefer to read the newspaper online (Cuinas et al., 2017).

A study from 2013 examining the preference for eBooks and printed books in the context of reading purpose, reading situation and different contextual variables found that eBooks have gained a secure place in people's lives, but are not yet positioned to replace printed books entirely. Both printed books and eBooks have unique attributes and play a vitally

important function in meeting people's reading needs. These may vary according to individual demographic, contextual, and situational factors (Zhang et al., 2013).

Research outcomes on student preferences for eBooks compared to traditional textbooks vary. Some researchers have noted that students prefer eBooks (Brunet et al., 2011; Jao et al., 2005), while others have found that students prefer printed books (Shepperd at al., 2008; Woody et al., 2010).

Another study from 2015 analysing the current relevant academic research in adolescent preferences for books found that, at present, the contention that adolescents prefer electronic books was not supported by evidence (Merga, 2015). The study concluded that until a number of studies that meet criteria such as including quantitative components or being entirely quantitative in nature, drawing responses from a large and representative sample size, and distinguishing between reading for pleasure and reading for information, educators should not assume that adolescents preferred eBooks, since such an assumption may have implications for student access to the type of books they prefer (Merga, 2015). Thus, future studies should be multicontextual, and preferably present findings from different countries or at least different educational contexts (Merga, 2015).

Method

This study is a quantitative study. The study draws on a sample of approximately 1146 students from three different educational contexts. The study furthermore distinguishes between reading for pleasure and reading for information, as the survey was limited to educational questions on specific topics.

Using Survey Exact, a total of 29 questions were constructed. The survey comprised demographic questions regarding age, gender, education, and the region where the education took place. In total, a total of five demographic questions were asked.

Two further questions were produced regarding preferences concerning printed vs digital text-books, and whether the students bought, borrowed, shared or photocopied the printed books. Questions were also drawn up regarding the importance to the students of the use of the textbook vs the digital book and whether the teacher's recommendation and the price of the book were important factors.

Finally, two questions concerning a range of options were asked. The students were allowed to make several choices. These choices comprised 13 (printed books) and 23 (E-books), and were based on criteria such as price, language, illustrations, figures and tables, and coverage of the curriculum. The students were encouraged to write comments as free text after the questions.

A pilot study among Bachelor Programme students attending health care education programmes was conducted. The results from the pilot were used to adjust the survey questions. Only minor adjustments were made and only the results from the part of the pilot study where no adjustments were made have been included.

Distribution of the second survey took place about six months later and included the bachelor programmes from one of the university colleges in Jutland, the Vocational Educational and Training Programmes (VET – Health Care) from two schools in Jutland and on Funen, and two upper secondary schools from respectively Jutland and Copenhagen in Denmark. Thus, the population was from all parts of Denmark representing student perspectives from different ages and contexts.

The educational institutions received an e-mail inviting them to participate in the survey. Most responses were positive as many teaching staff found the limited use students made of educational textbooks to be problematic. An e-mail text including a link to the survey (one for each educational area) was written and sent to the person responsible for distributing the e-mail and the respective links to all the students. It is therefore impossible to specify the total number of students that received the e-mail with the attached questionnaire. Approximately 20 % have responded (1146 students), although not all answered all the questions in the questionnaire.

The respondents comprised:

Bachelor Programmes 716 students (91 male students).

Vocational Educational Programmes regarding Health Care Education 130 students (13 male students)

General Upper Secondary Schools 300 (61 male students)

The percentage of male (165) vs female (981) was 17%. This is probably because the study was conducted at educational institutions attended by a majority of female students.

Data were analysed in SurveyXact (https://www.surveyxact.no/) since they had been formulated on a basis that the programme could analyse. The questions where the students were asked to state their preferences and opinions were read thoroughly by both researchers and grouped to extract tendencies across answers.

First, data for each educational institution were analysed separately and themes or groups of answers were identified, and data were compared between educational institution to reveal inter-educational differences.

Results

Below results will be presented according to the findings in each educational institution.

The Bachelor Programme – (n=716 students, 91 male).

Most of the students (58%) were between 18 and 25 years old; 86 % were female.

They were studying in professions such as teaching, nursing, administration, physiotherapy, occupational therapy, medical laboratory technology, social education, radiography and social work.

A total of 74 % preferred printed textbooks (Figure 1), stating that they found it easier to read a textbook, because it is possible to annotate, and thereby gaining a better overview over the texts.

One student said: "Because it's easier to sit down with an ordinary textbook than with an online book. Also, it's easier to take notes and annotate in an ordinary printed book than in an online book."
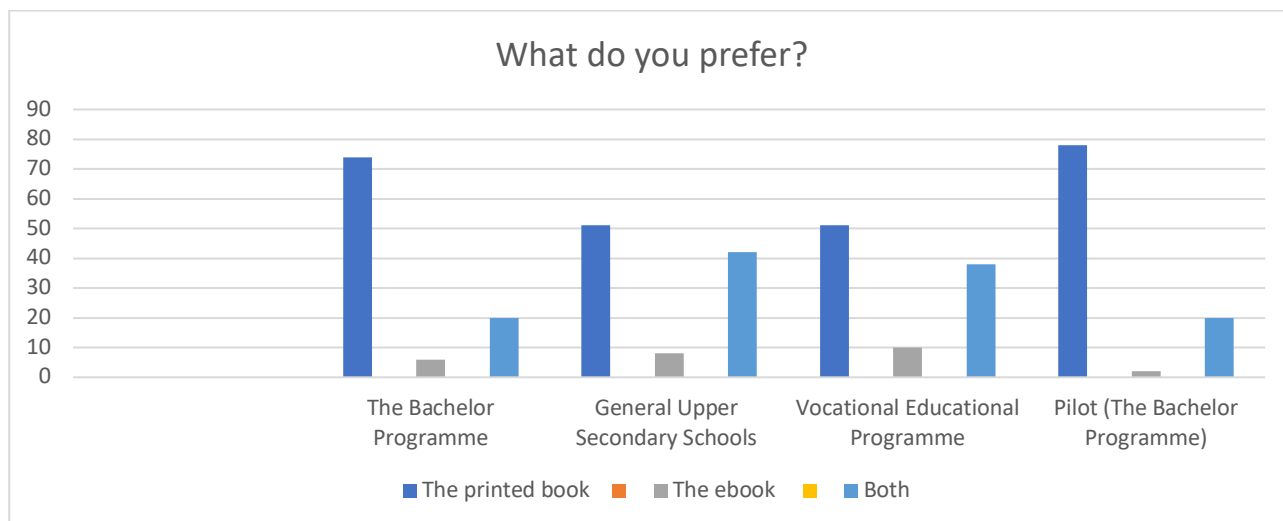
Figure 1 Preferred medium

Many students claimed it was hard to read an educational textbook online. They found it difficult to read on a screen and doing so often gave them a headache.

One student said: "I don't like reading on the screen. I can't find the points or highlights as fast as when I am reading an ordinary textbook where you can handle everything better and you've got better control."

Another student said: "I get a headache from reading on a screen and I learn best when I'm sitting with an ordinary textbook so I much prefer the printed textbook"

Almost all students said that a book with a good index and a table of content is crucial. The book should be easy to access and to consult on specific topics. Furthermore, it is essential that the book covers the curriculum, includes the most up-to-date knowledge and that there are enough illustrations to explain and support the written content. Finally, price is also very important.

Several students marked the following range of options:

" Good index/ good overview/easy to access and to consult on specific topics/covers most of the curriculum/highly readable text and print (writing) / logical structure/ well illustrated/ the most recent knowledge/ reasonably priced and with a hardcover"

A total of 35% of the students said that the price is essential; 32% said that the price has some impact on whether they would buy the book and 33% said that the price has no impact on their choice of buying an educational textbook. Thus, the price of a book was important to 67% of the students.

In comparison, only 64 % of the students bought between 75 and 100% of their study books; out of those who reported not buying their books themselves, 42 % answered that they bought second-hand books and 18 % photocopied books.

As to whether the teacher gave advice to the students in relation to specific choices, 76 % answered that they were advised to use both printed and online books.

Vocational Education and Training Programmes (Health Care) (n=130 students, 13 male)

A total of 34% of the students were between 18 and 25 years old; 11% were under 18 years and 50 % of the students were between 26 and 55 years; 89% were female. The respondents were pursuing an educational course in the healthcare sector. These educational courses are largely oriented towards typical women's occupations, which accounts for a large number of female students. Many of the students attending these educational courses have reading issues and a low level of literacy.

Among these students, 51 % preferred printed textbooks. The students stated that their preferred choices hinged on it being easier to read in a textbook, because it was easier to annotate and gain a better overview over the texts. These statements were made by the literate students. 38% preferred both the printed textbooks and the e-books. The reason why 38% use a combination of printed and digital books is the need, due to reading difficulties, to use the "Read out loud" function in the digital books (figure 1).

One student said: " Because you can underline the information you have to use… it's easier to find it again when you're going to use it for assignments instead of reading from scratch."

Another student said: " Because it's easier to have the printed book beside you and to consult it on specific points".

Almost all students said that a book with a good index and a table of content is crucial. The book should be easy to access and to consult on specific topics. Furthermore, it is essential that the book covers the curriculum, includes the most up-to-date knowledge and that there are enough illustrations to explain and support the written content. Finally, price is also very important.
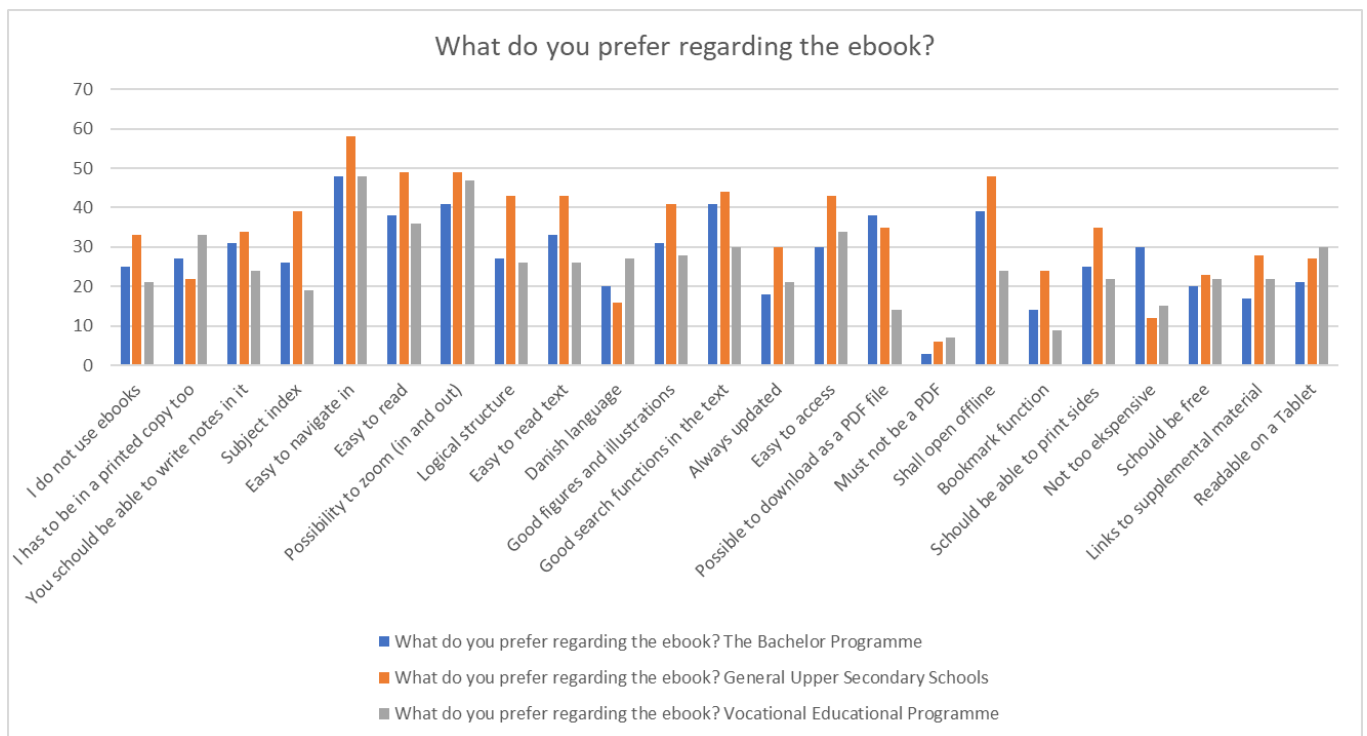
Figure 2 Considerations about e-books
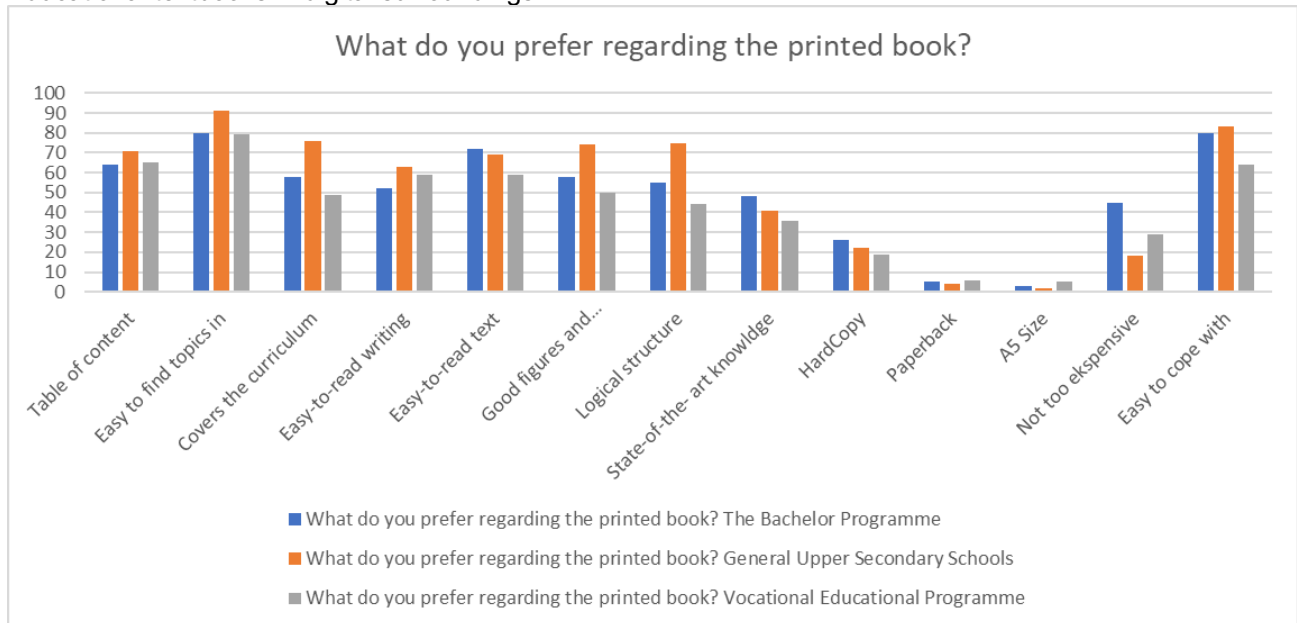
Figure 3 Considerations about printed books

Several students noted the following ranges of choices/range of options:

 "Good index/easy to overview/easy to assess and to consult for specific subject/covers most of the curriculum/ highly readable text and print (writing) / coherent structure/good figures and pictures/ up-to-date knowledge/ reasonably priced and with a hardcover" .

The students from the VET education area noted that illustrations should supplement the subjects to make it easily comprehensible since a high number of these students found reading problematic. A total of 24% of the students said that the price is essential; 37% said that the price has some impact on whether they would buy the book and 38% said that the price has no impact on their choice of buying an educational textbook. Thus, the price of a book was important to 61% of the students.

In comparison, 78% of the students bought between 75 and 100% of their course books, and for those who reported not buying their books themselves, 20% answered that they bought second-hand books and 5% photocopied or shared books. As to whether the teachers gave advice to the students in relation to choices, 70 % answered that they were advised to use both printed and online books.

Upper Secondary Schools (n=300, 61 male)

A total of 37% of the students were between 18 and 25 years old; 63% were under 18 years; 77% were female. They were attending an upper secondary school preparing them for further education. 60% of the student responses came from an upper secondary school in Copenhagen. The rest of the responses came from an upper secondary school in Jutland

It was reported that 91% of students used the customary printed textbook; 98% stated that the school bought the textbooks for them.

They stated that their preferences were based on ease of reading a textbook because it was easier to annotate and gain better overview over the texts. Some of them stated that they used the usual textbook because they were accustomed to doing so in the municipal primary and lower secondary school. They also stated that they felt they would retain the information better if they read it in a standard printed textbook.

One student said: "Somehow I feel that it's easier to learn if I have a normal textbook in my hand. I just don't feel that online books have the same impact on my ability to learn or my professional level. I think I retain the information better if I use printed textbooks or articles".

Another student said: "It's nice to sit down with a normal textbook and it is easier to remember the content when you can turn the pages".

Almost all students said that a book with a good index and a good table of content was essential. The book should be easy to access and to consult on specific subjects. Further, it is essential that the book covers the curriculum, includes the most recent knowledge and that there are sufficient illustrations explaining the content.

Several students noted the following range of options:

" Good index/ good overview/easy to access and to consult on specific topics/covers most of the curriculum/highly readable text and print (writing) / logical structure/ well illustrated/ the most recent knowledge/ reasonably priced and with a hardcover"

Mention was made also of the format on several occasions, specifically with reference to the carrying of the books, "..the size should be A5, [because the A5 size books fits better into the school bag] and easy to have an overall view of".

A total of 82 % of the students stated that the price was not essential, since the school bought the books for them. As to whether the teacher gave advice to the students in relation to choices, 70 % answered that they were advised to use both printed and online books.

Discussion

The local nature of this survey and the low overall response rate (1146) limits generalizability of the results, but it is still possible to compare themes identified in this study across educational contexts previously described (Brunet et al., 2011; Cuinas et al., 2017; Horner, 2017; Zhang et al., 2013). These earlier studies report similar results, even though they have been conducted outside Denmark and in other educational contexts.

One of the most revealing findings in this study is that the use of the ordinary printed textbook is a habit inherited from the municipal primary and lower secondary school which is then carried over into the upper secondary school, and possibly (as the findings show) also into further educational contexts. The educational textbook has been the teacher's cornerstone for planning, carrying out and evaluating their teaching for decades. It is still the preferred didactic teaching aid and defines the knowledge to be gleaned by students. Students find that the printed textbook helps them to see what the curriculum is.

Furthermore, the educational textbook often provides a firm structure, guiding the student though the material in the teaching as is evident in the texts, the exercises and the accompanying tasks. Thus, the educational textbooks provide a defined and delimited knowledge in relation to the subjects (Hansen, 2006).

A similar association has not yet been noted in digital study material except when the study material replicates digitally the printed textbook (Rasmussen, 2004). Rasmussen stated that the use of the internet and eBooks (digital media) often causes what he calls a potential information overload. Students lose the established structures and they sense that order and sequence are less accessible. As a precondition for and an essential aspect of learning order and sequence must therefore be handled by the students themselves (Rasmussen, 2004; Hansen, 2006). However, Rockinson-Szapkiw, Courduff, Carter & Bennett (Robinson-Szapkiw et al., 2013) found that most students (four out of five) preferred print textbooks, even though no differences in cognitive learning or final grading were found in a study of 538 university students.

By contrasts a Norwegian study (Mangen et al. 2013) found that students who read texts in print scored significantly higher in a reading comprehension text than students who read the texts digitally and they also found that students with reading difficulties in printed text had increased difficulties in reading on a screen. Further, in-depth studies (Mangen et al. 2008; Mangen et al. 2013; Mangen & Kristiansen 2013; Mangen et al. 2016) on the differences between digital reading and traditional reading suggest these might stem from the vital role of our bodies in reading involving fingers and hands; relevant here also are the differences in tactile cues such as the material of the paper and the haptic feedback of a touch screen as a possible explanation of the challenges in reading on a screen.

The students in this study refer to similar issues when they explain why they prefer the textbook to the e-book. If eBooks were better structured and had better indices, they might enjoy greater popularity among students.

However, the development of digital study material leads to opportunities and new pedagogical possibilities and new ways of arranging and facilitating knowledge, teaching and learning will be possible. These opportunities would benefit from being guided by more research into these areas as also suggested by Mangen et al. (Mangen et al., 2016)

Moreover, it would be beneficial to conduct a similar survey to ours among the teachers at

all education levels as they are the ones preparing the student for their studies.

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