Don’t judge a book by its cover
– Using E-books in higher education

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Abstract

This thesis is about the use of E-books in higher education, specifically at Malmö University. The purpose of this study is to investigate attitudes students have towards the use of E-books for scholarly purposes in higher education versus their printed counterparts. This study looks at student preferences in the use of E-books compared to printed books, along with the effects these media have on students reading habits. By discovering in which situations E-books or printed books are most beneficial, students can make informed decisions about which medium will benefit them the most. An online survey and recorded interviews were used as methods for collecting data, which was then compared to previously published studies related to this subject. Students were found to prefer the printed book for studying purposes, and it still remains as the main source for reading and analyzing longer passages of text. E-books, on the other hand, were found to be most advantageous when preparing research reports. This means that both media still have their place in higher education, which is likely to continue in the foreseeable future.

Keywords

E-books, printed books, higher education, student preferences, reading habits, user habits, reading comprehension
Abstrakt


Nyckelord

E-böcker, tryckta böcker, högre utbildning, studenternas preferenser, läsvanor och användarnas vanor, läsförståelser
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**Introduction**

E-books are a new and emerging medium for entertainment and educational literature. A decade ago it was predicted that E-books would soon replace printed books, but recent history has shown that there is a certain resistance to leaving the printed book in favor of the electronic version. Publishers and electronic companies are trying hard to win people over to this new technology by introducing platforms such as the iPad to promote reading. One interesting area is education, where nearly every student owns a computer and/or a smartphone. (Murray and Olcese 2011, p. 44)

Regardless of the digital media explosion, conventional textbooks can still be seen carried around in students’ arms as they trod up and down school hallways (Foderaro 2010).

E-books are a very new phenomenon compared to the printed book, and only a handful of studies have been published on its impact in higher education. There is a rapid development towards the use of E-books in primary, secondary, and higher education. Some schools have decided to replace expensive textbooks with computers or other electronic reading devices and the impact on students and their educational accomplishments have not been sufficiently studied to decide whether or not the E-book is an adequate substitute for the printed book. (Fredrick 2011, 39-40; Schaffhauser 2012, p. 30) However, Jadhay (2010) states that E-books, along with other electronic media, are presently shaping today’s teaching methods and how students learn. More and more institutions are embracing this new technology in the hope it will amend access and learning, offer better opportunities, as well as cut down budget costs by possibly, but not preferably, providing inexpensive mass education. (Jadhay 2010, p. 110) According to McAllister (2009, p.2) studies show that within the realms of education, a notorious impact between digital and print publishing is observed, and Liu (2005, p. 707) states that teachers have noticed a change in students study, reading and writing habits because of the influence media has had in their generation.

According to Murphy et al. (2003, p.513), "With the rapid emergence of online materials, literacy researchers have begun to revisit and re-conceptualize the nature of text and what it means to learn from or with text”. College student comprehension levels have been studied, and it has been shown that student’s reading comprehension and reading rates could be affected depending on the medium upon which the passage was read (Beach 2008, p. 67).
1.1 Purpose

The purpose of this study is to investigate attitudes students have towards the use of E-books for scholarly purposes in higher education versus their printed counterparts. This study looks at student preferences in the use of E-books compared to printed books. By discovering in which situations E-books or printed books are most beneficial, students can make informed decisions about which medium will benefit them the most.

What interests me the most is to find out how other students relate to digital educational materials. I am also interested to see whether or not E-books are preferred over printed books as educational tools specifically in higher education. This is why I decided to do this study that involves asking questions and interviewing students in my educational realm.

1.1.1 Research questions

What are the attitudes to the use of E-books and printed books among media technology students at Malmö University?

How do these students actually use these media based on their preferences?

1.2 Limitations

Students cannot be assumed to have knowledge about the associated technology for E-books such as software, hardware, formats and different standards, and this is why I chose to rather investigate students’ preferences and attitudes towards the use of E-books vs. printed books. This study will not cover students’ attitudes towards leisure reading. Because of the vast differences in attitudes towards E-books at the different stages of education, this study is limited to only covering attitudes within higher education. This is a comparatively small study with few informants, which means that it does not yield any generalizable results on its own, but it does give an indication of the attitudes of a small group of students from the faculty of technical studies at Malmö University. In this study, E-books are defined as the content of an electronic document, which can be read on computer screens. This is because not all students own a dedicated reading device. E-books are here also referred to as “electronic text”.
1.3 **Target group**

The main target groups for this study are students within higher education, as well as university teachers who wish to guide students in making the best choice and most productive choice of reading media for different educational purposes.

1.4 **Disposition**

The second chapter describes my methods of investigation, the reasons why I chose them, as well as potential advantages and disadvantages of each method.

The third chapter focuses on theory and describes what an E-book is, different reading and user habits, the material used/its media, the books mobility, reliability and the study techniques used for each medium.

The fourth chapter presents the results from the conducted interviews and surveys. It describes the students reading habits, reading comprehension, user habits and the advantages and disadvantages that characterize each medium.

The fifth chapter is a discussion of both theoretical and empirical findings, which are presented in the third and fourth chapters.

The sixth and last chapter contains my conclusions with reference to the purpose of the study and the research questions.
2 Methods

This methods chapter deals with the fundamental research methods used in collecting data for the present study about the use of E-books in higher education.

2.1 Research designs

The choice of a suitable research method is a very important part of empirical studies, which needs to be considered carefully before making a final determination of the best method(s) for the specific study that is contemplated.

Qualitative research usually uses research techniques that obtain data from a comparatively small number of respondents, whereas quantitative research collects data from a large group of respondents for subsequent statistical analysis. It is not true that qualitative research does not deal with numbers, but it is more focused on fieldwork than laboratory research. Problems are defined, and determinants are identified by this kind of research. The qualitative research methods are also good at discovering and identifying human emotions, which often motivate people’s actions. (Lehmann 2006, p.3) Qualitative methods can result in findings that show the participants’ perspectives, and these findings can be used as basis for follow up action (Boeije 2010, p.33). Quantitative methods however, give descriptive numbers for the entire group, but it does not consider the individual respondent’s background, which influences their opinion about a particular subject (Thomas 2003, p. 44). Because this study focuses on finding out students’ attitudes and preferences, there was no need to have descriptive numbers, which lead to the ruling out of a quantitative method and instead qualitative methods were used. Several qualitative methods may be combined in the design of a qualitative project or a research program (Morse 2003, p. 834). This study used a structured qualitative survey and recorded telephone interviews in order to collect data from a small number of university students.

2.1.1 Research strategy

Both inductive and deductive reasoning are used in scientific research to obtain understanding and knowledge, as well as to make logical connections between observations and theory, as well as to develop theory from empirical data. Inductive however, is considered to be of particular importance in qualitative research. Inductive reasoning is used to formulate theories, and to make
statements about reality, using past experience to make generalizations, which can serve to make predictions about future events with a reasonable degree of certainty. Validity may be supported by methods of probability, statistical analysis, claims of being a representative sample, by triangulation, previous research, knowledge, experience, etc. Inductive reasoning is used to support the argument that data from a small study may be generalized when compared to past experience, and thus have implications for the general population. (Fox 2008) This research strategy has been chosen in order to place this small study on a larger scale through comparisons of previous studies presented in the theory.

2.2 Data collection techniques

Qualitative interviewing is probably one of the most frequently used methods when doing a qualitative research. Such interviews may be one-on-one, conducted in larger groups, or in focus groups, conducted face-to-face, by telephone or via the Internet. (Mason 2002, p.62)

After a careful consideration of the specific nature of my study, I decided that based on (Boeije 2010, p. 33; Lehmann 2006, p.3; Morse 2003, p. 834; Thomas 2003, p.44) a combination of two qualitative methods consisting of interviews and a survey would be the best methods to provide the data that I needed to answer my research questions. In order to minimize the risk of writing erroneous student preferences, each method was documented as a reference. The survey itself posed the risk of not presenting the underlying reasons to why students preferred a certain medium in specific situations, but these flaws could be counteracted by the interview results which had the opportunity to dig deeper into individual students’ reasonings.

2.2.1 Interviews

Personal interviews have many advantages, such as the possibility to obtain rich details; it is flexible in the sense that follow up questions are possible, and misunderstandings have a lower chance to occur. An advantage with personal interviews is that it includes the non-verbal aspects of communication, which often says more than words. The disadvantage with this is that their answers might be influenced by the interviewer’s attitudes and non-verbal expressions if they are not neutral (Kuniavsky 2003, p. 125-126). Since I used telephone interviews I missed of the non–verbal aspects but I did have the advantage of hearing their tone of voice and other non–verbal aspects such as: hesitation, intonation and I still had the possibility to make follow up questions. The reason I choose to use interviews as one of my methods is because I am investigating attitudes and want to get as much out of the responses as possible, and specifically why I used telephone
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interviews was because of the difference in schedules between myself and the interviewees as well as the flexibility in time and location it posed since I was out of town the majority of the time this study was conducted.

The interviewer needs to be careful in formulating and asking questions in order to make sure that they are not leading in a certain direction, but rather to use a mixture of open-ended and closed-ended questions that are as free as possible from any personal bias. Ideally, this will produce answers that are truly representative of the informant’s own opinions and preferences, rather than being the result of trying to please the interviewer. This study has a mixture of open-ended and closed-ended questions, however I could say that I consider the majority of my interview questions to be open-ended because if the student would answer with either a yes or no, a follow up question of “why” would be asked. The follow up questions are however, not a part of the interview template, and were asked only when needed. The interview questions may be found in Appendix 1.

According to King and Horrocks (2010, p. 2), a qualitative research interview: “Emphasizes open-ended, non-leading questions, focuses on personal experience, [and] seeks to build rapport with interviewee.” They also state that when conducting this type of interview, the respondents usually expect anonymity and confidentiality. In my study all respondents remained completely anonymous.

Four students in their third year of higher education in the media field at Malmö University were randomly selected, by means of paper lottery selection, in order to be interviewed for this study, with their consent. The reason why this group of students were not individually hand picked, was to avoid any bias, such as obvious preferences toward a certain media.

I conducted four long telephone interviews, using a special interview guide, which I developed for this purpose (see Appendix 1). The interviews were recorded by permission, using a smartphone application called RecordMyCall that was downloaded from Marketplace onto my mobile device and activated when I called each interviewee. These recordings later served as a source when transcribing the interviews needed for my report.

2.2.2 Survey

“The best tool to find out who your users are and what their opinions are is the survey” (Kuniavsky 2003, p. 303). This is why I used a survey to find out more about students’ attitudes, opinions and preferences, regarding E-books versus printed books.
When it comes to a qualitative survey, it does not try to establish parameters like a quantitative survey does but instead the diversity of a given topic within a group of people. In other words, a qualitative survey does not count how many people have the same characteristics (value of variable), but instead it establishes the meaningful variation that group of people has (relevant dimensions and values). (Jansen 2010) In my survey I was not looking at which students preferred E–books alone, but the variation of preferences and attitudes between both E–books and printed books. This is why I chose a qualitative survey when conducting my study.

According to Kuniavsky (2003, p. 319) a survey should not include questions that can be answered in less than 20 minutes. A disadvantage is that there is no guarantee the survey questions will be understood as intended, so that is why I have combined this method with interviews in order to obtain broader and fuller results.

The students chosen to participate in the survey were students within Malmö University’s media field (at TS), with at least three years of prior university level studies. These students were chosen because of their media background and the higher use of technology throughout their studies, giving them good insight of the use of electronic media within the scholarly realm. The survey and results can be found in Appendix 2.

The types of questions used in the survey were closed–ended questions, where students did not need to elaborate their responses. However, two questions (See questions 8 and 9 in Appendix 2) were used both in the survey as well as in the interviews in order to get a deeper as well as broader response.

The survey was hosted on esurveyspro.com where specific students were directed to complete it. A total of 30 students were invited to participate but the final number of respondents consisted of 20 individuals both male, 60 %, and female, 30 %, where the majority, 80 %, was between the ages of 20–25. All were unmarried and had no children. Over half of these students, 65 %, had studied three years at university level, leaving the rest with varying responses. Most of the students, 65%, read both leisure and academic texts occasionally.

2.3 Analysis

Analysis involves dividing and rearranging the data with the ultimate aim of transforming them into findings, e.g. in the form of more or less theoretical descriptions, or interpretive views of the research subject. Qualitative research findings always include interpretations and explanations of
the research subject. Raw data should never be considered to be findings. (Boeije 2010, p. 94) Based on this knowledge I structured my research results accordingly.

The dialectical analysis of qualitative data thus consists of a more or less complicated process of combining, rearranging and rearranging data to look for patterns and relationships, testing ideas from literature, existing theories, hunches, common sense suspicions, etc. Each combination or synthesis is evaluated and examined critically, and is then rejected, or accepted with or without modifications, in a long and repeated process of testing various theories and concepts. (Jorgensen 1989, p. 111)

The data produced by both methods were stored electronically, both in audio form (recorded phone calls from the interviews) as well as results from the online survey on a database. This gave me a reference to go back to when later analyzing my results. The interviews were transcribed and analyzed, and the different results were compared with each other to see the relationship between the respondents’ answers. Survey results, after made into charts, together with interview results gave the research a deeper understanding of students’ preferences of use for printed or electronic media within higher education.

2.4 Method discussion

A qualitative study provides rich details from personal interviews with informants, who in this study describe their opinions of E-books and printed books in their own words, based on their own personal experiences. A survey was also used in order to cover a larger number of students, which gave information on who preferred various different alternatives regarding the use of E-books versus printed books. Combining both interviews and survey results in a much fuller picture of both group and individual characteristics.

Because the survey was hosted online, it gave students the flexibility of when and where to answer the survey, at their own convenient timing. Collecting the results through the online service decreased the risk of miscalculations of information and loosing the individual responses (such as if the survey were conducted on sheets of paper) giving more accuracy and reliability, since all input information was constantly saved and updated as statistical charts.

Telephone interviews also provided the students flexibility of participating, regardless of their location, either the commodity of their own homes or at their jobs, at a time that worked best for them. As mentioned earlier, I unfortunately missed an important non–verbal aspect, body language, that one–on–one interviews are advantageous of, but other non–verbal aspects were possible to be
observed such as intonation, tone of voice, and hesitation which combined with their responses gave me the insight of what I was after – the interviewees attitudes and opinions. I do not think that the lack of visual observation of body language crippled my results, because of the other latterly mentioned non–verbal aspects that could be observed through my telephone interviews giving me the information needed to conduct my study. One–on–one interviews give the possibility of asking follow up questions, digging for more information when needed, an aspect or benefit which I did not loose by using telephone interviews.

The results of my study confirm earlier research, and thus contributes to a verification of their validity. However, this is a small study which makes a minor contribution to the body of knowledge and by itself cannot be used as a basis for a generalization. It is only in the context of previously published studies that this adds a small contribution to the whole weight of evidence. The small number of participants in my study could bias the results and thus influence the validity and reliability, however there is a general agreement between my study results and previous studies which shows that my results are quite reasonable, and because of the small scale of my study, the random selection of interview subjects minimized the risk of bias data. With the surveys, 2/3 of the people who were invited to respond to the online survey chose to participate which is a good response rate, meaning I got the opinions of the majority of the invited students.

Another factor that could have affected the reliability of my results would be basic misunderstandings when it came to what exactly was being asked. In order to reduce this risk, a short introduction was given at the beginning of each telephone interview before the interview questions were asked, where the interviewee got to understand what the research consisted of, and E–books were presented as electronic texts which could be read on computer screens. The invitation sent out to students to participate in the survey had a descriptive text where the study was also briefly introduced, and the term electronic text was referred to as reading passages of text on a computer screen. The term E–book was not used in the survey or previous introduction in the invitation in order to reduce any chances or confusion or misunderstandings, and instead the only term “electronic text” was used.

### 2.5 Problems

The biggest obstacle I met while collecting my research information occurred while conducting my telephone interviews. Since I chose to download an application I had never used before, there were things I was unaware of that later caused me problems when recording two of the four interviews. During the very first interview I had plugged in earphones and used them throughout the recording,
and when it was completed I was going to review it, only to find that the volume of the recording was remarkably low and very hard to transcribe from. After running a series of tests, I realized that it was due to my use of earphones, so for the next survey I used my mobile phone without them. The results were as expected, which made me confident that I had finally resolved the issue. On the third interview, however, the recording stopped abruptly halfway through the process, without me being aware of it, leaving me without a useable reference. Luckily that interview had been conducted two times, one in the student’s native language, Swedish, and the second time in English imprinting the responses vividly in my memory and making it easier to quickly transcribe while the information was still fresh in my mind. By the last interview I made sure everything was working properly and no major problems occurred.
3 Theory

This section presents a literature overview, which will serve as the underlining foundation of my study. I here begin with defining what an E-book is, then move on to discussing user and reading habits in a scholarly setting, the material each medium presents its text on, their mobility and finally reliability and study techniques of E-books.

3.1 What is an E-book?

An E-book has several diverging definitions to what it is (Abdulla 2008, p. 593). According to Ormes (2001a) the word E-book is used to depict the concept of a body of text accessible in an electronic format. This can be anything from a simple story typed as a word document sent by email, to works published on web pages (Ormes 2001b). Nevertheless, the term E-book is more often delineated as text that relies on the use of software and hardware in order to be read. With the help of software and hardware, E-books can come close to reproducing the text quality of a printed book. (Ormes 2001a) Both definitions found in the Merriam–Webster Dictionary (2011) and Elib (2011) are in agreement with the latter definition, and add the use of reading devices, where they basically state that an E-book is a regular book which has been written in or transferred into a digital format in order to be read on a handheld device or computer screen. All this accords with the definition Van Dam, the man who conceived the term ‘electronic book’, gave the E-book (Chen 2003, p. 8). He said that an E-book is

“… the ability to store text in electronic form and subsequently retrieve it through the use of a computerized device - can trace its lineage back to the early methods of automated textual storage and retrieval developed as long as a century ago, as well as to the development of electronic document creation, storage, retrieval and output mechanisms.”

(Van Dam 2001, p. 4)

Although reading devices are in some instances also called E-books, a more specific term can be used to describe them: E-book readers. There are presently three accessible kinds of E-book readers: Desktop, Dedicated, and Handheld readers. (Ormes 2001a) A desktop reader is the software that has been programmed onto either a desktop computer or laptop, which enables the device to read E-books. This software displays fonts which are comfortable for the eye to read, and enciphers the book so that printing or copying is forestalled. Dedicated readers are made
exclusively for the purpose of reading E-books. They have a sensitive backlit screen that is either
gray scale or color, which enables the consumer to underline, write comments, do keyword
searches, put in bookmarks, and change the font size. These readers usually have around the same
dimensions and weight of a hardback book. The third type of reader, handheld readers, are small
devices that have similar functions to a computer, which can read E-books by downloading special
software. Their size facilitates mobilization since they can fit in practical places such as pockets,
and reading is possible due to the ability to resize fonts, but at the same time their size is a hinder to
the amount of E-books, which can be stored. (Ormes 2001a; Ormes 2001b)

The electronic book is an alternative and addition to the printed book, which extends college
students endless possibilities with multimedia, worldwide access, and transportability. It is not
bound to a physical object like the printed book is, but instead is connected either the hardware or
software of a reading apparatus. In short, the term E-book can be utilized when referring to its
content, device used to read the content which is composed of both software and hardware,
delivery conduit, and media format. (Chen 2003, p.10-11)

E-books are gaining popularity within higher education very quickly. They come in editable or un–
editable formats which are easy to find, quick to update, facilitate searching, and the best part of it
all is they do not require stacks of paper. Why then, do we not find more E-books in use within
higher education? We could say that one reason is because many publishers have not come around
to fully producing their commercial books in this format, but other challenges can be seen on the
horizon. (Jack 2007)

In this study, E-books are defined as the content of an electronic document, which can be read on
E-book readers.

### 3.2 Reading habits in higher education

Reading today is not the same as it was just a decade ago. There has been an exponential growth of
electronic texts which we are constantly exposed to in our every day lives. These have been
available through sms’, e-mails, websites, databases, online catalogs and E-books, all of which
potentially alter our reading habits and experiences. (Brown 2001, p. 390)

There are two aspects in which reading is evaluated: process and outcome. The process reading
aspect deals with the physical appearance of the medium that presents the text and its mobility.
Different factors are involved here, such as text alteration, eye movement, and how portable the
medium is. The second reading aspect is of how our minds process the tangible medium. This consists of reading comprehension, speed, fatigue, preference, and proofreading accuracy. (Baker 2010, p.6)

When we read, there are different means that aid the way in which we process texts whether it is on paper, in our mind, or on a screen. Brown (2001) mentions that there are different types of reading behaviors students have within higher education, one of which consists of reading texts in order to find information. This reading behavior, also termed as analytical reading, is characterized by factors such as making outlines, taking notes, as well as writing a synthesis. It usually occurs when the reader needs to acquire material for assignments, reports, articles, or tests. (Brown 2001, p. 392) According to Schilit:

"Active reading combines reading with critical thinking, learning, and decision making, whereas passive reading is less careful and less effortful. Active reading tends to involve not just reading per se, but also writing, especially annotating and note-taking. Passive reading, on the other hand, is what we tend to do with paperback fiction"

(Schilit 1999a, b)

The growing amount of time spent by college students on consuming the vast amounts of digital information that is available has led to significant effects on reading behavior. This behavior has been termed as the screen–based reading behavior, which is characterized by selective, one–time, non–linear reading, as well as keyword spotting. It is noticed that more time is spent on scanning and browsing, while at the same time, attention decreases which leads to less time spent on concentrated, in–depth reading. (Jadhay 2010; Liu 2005, p. 705) Certain researchers argued that the arrival and growth of electronic media has impacted reading in a negative way, due to the fact that students within higher education have an in–depth reading deficiency and are not as concentrated in extensive reading (Liu 2005, p.700).

A study was conducted by Chou (2009) about on–screen reading behaviors in academic settings of international graduate students. The study showed that graduate students tended to read digital texts on a screen much more often when they needed to write reports than when they studied for class. If they needed to study the content more carefully these students would print them out for further reading. It was also noticed that when reading for writing reports, the graduate students more frequently used screen reading tactics, such as highlighting, copy and pasting, than when preparing for class. (Chou 2009, p. 179) Liu (2005) conducted a similar study that was more focused on determining what medium is used more frequently by college students for annotation purposes. Of the 113 college students that participated in the survey, 85 % of them stated that they took notes on
printed material more often than they did on electronic material, whereas only 3% said they took notes more often on electronic material. Similar results were seen when highlighting on the different media. Many students apparently have the habit of searching for electronic documents and then printing them out for further reading and taking notes. (Liu 2005, p. 708; Sattong 2001, p. 77)

Both Hartzell (2002) and Karim (2007, p. 288) state that printed documents are the preferred medium when it comes to reading. This argument is supported with evidence given by Liu (2005, p.702) and Ramirez (2003, p.11) where they show that college students tend to print digital documents when they wanted to engage in further reading. This thought is also shared by Brown (2001) who said that the way college students read digital texts have shown a pattern in which screen–based reading is constrained to only small fragments or a few paragraphs, and when in need to read longer passages they habitually print them out. However, the advancements in screen resolutions that more closely resemble a paper–based reading experience, along with the rise of reading devices and E-book availability, are altering the reading habits that are so prevalent today. (Brown 2001, p. 392) The option of taking notes on the digital documents is open to users, but it requires more effort and skills than it does on a paper (Sattong 2001, p. 77).

Regardless of the digital growth around us, printing for reading is still one of the greatest motives to why paper consumption is yet increasing (Jadhay 2010, p. 113). Bill Gates himself stated in his 1996 Harvard speech that it was more common to print out documents if they are too long to read on a screen, simply because reading was easier that way. In this sense E-reading currently promotes the use of paper. A threat to the declined use of print would only occur once the quality of screen displays rival those of paper. (Sottong 2001, p. 76) This gives little reason to believe that paper will cease to be used, since it is evidently the preferred reading medium (Jadhay 2010, p. 113).

In today’s highly electronic dependent environment, reading from a screen has become second nature for the younger generation (McClelland 2006, p. 80). Every year, new students who have been raised using the Internet in order to obtain information enter into their first year of college, and fully expect that their scholarly material will be found in an electronic format. In a practical sense, digital publishing annuls students’ need of carrying heavy books to school. (McAllister 2009, p. 2) For this reason, it is important that universities stay up to date in order to meet these students’ expectations (Massis 2010, p. 349). However, according to findings by Foderaro (2010), as students’ transition to higher education, they still have a higher preference for printed books since it was the medium they used for learning when growing up.

In the near future, books will have a broader meaning for college students than it has today due to the convergence of e-publishing and print publishing (McAllister 2002, p.3).


3.3 Differences between the media

According to a report by Chen (2003, p. 15) digital media is preferred by users for text searching, while printed media is seen as a better reading option. Hart, the founder of the first E-book, wrote in a 1998 interview:

“We consider e-text to be a new medium, with no real relationship to paper, other than presenting the same material, but I don’t see how paper can possibly compete once people each find their own comfortable way to e-texts, especially in schools.”

(Lebert 2009, p. 6)

The experience E-books and printed books give students within higher education differs greatly, which leads us to investigate advantages and disadvantages which are perceived from each format and the different factors involved (Rowlands et al. 2007, p. 491). As Brown (2001, p. 329) put it, “Different acts of reading utilize different ways of reading”. There are diverging limitations and benefits that digital and printed media impose, each of which work best under different circumstances. Printed media, for instance, is preferred by university students for text analysis while digital media proves to be more advantageous when searching. (Liu 2005, p. 701)

E-books were before merely seen as an addition or supplement to the printed version, and they were not compatible with most E-readers. These impediments however, have been gradually diminishing over time, and various scholarly texts are becoming available in the digital format. (Johnson et al. 2010, p. 18) When it comes to ease of reading, E-books are not comparable to their printed equivalent. They are still considered however to be at the same level with printed versions of scholarly texts due to the steady progress of electronic reading technology where reading and interactive experiences are becoming more and more similar. (Johnson et al. 2010, p. 18)

O’Hara and Sellen (1997) studied the differences between screen reading and paper reading processes, and found that when reading for the purpose of writing, the advantages paper posed were much better than the advantages screen reading offered. They stated, “…The critical differences have to do with the major advantages that paper offers in supporting annotation while reading, quick navigation, and flexibility of spatial layout. These, in turn, allow readers to deepen their understanding of the text, extract a sense of its structure, plan for writing, cross-refer to other documents, and interleave reading and writing.” (O’Hara; Sellen, 1997, p. 340)

The most recent E-readers can simulate a lot of characteristics that distinguish printed books, such as type size, ink color, font, paper and even the way pages turn. Besides that they are capable of
storing over 1,000 texts as well as accessing Internet wirelessly. The access to Internet makes buying and downloading E-books a piece of cake. There is no need to go to a bookstore, it can be purchased at any hour of the day, and the E-book is received within the minute the transaction is completed at no additional cost. (Johnson et al. 2010, p. 17) By using an electronic reading apparatus, college students have the opportunity to easily store and study all of their course literature and important reference texts in one device (Johnson et al. 2010 p. 18). Additional characteristics that distinguish E-books from their printed counterpart is the fact that they enable browsing, hyperlinking, content sharing, fleet updating, saved views, interactive quizzes for personal study, save space, can be quickly edited and easily accessed, made copies of, and are available 24/7. (Sattong 2001, p. 77; Rowlands et al. 2007, p. 491; Deng 2010, p. 88; Massis 2010, p. 348; McAllister 2009, p. 2)

The defining factor that differentiates the E-book from the classical printed book, is the medium in which it is presented and the way it is distributed. Printed books are independent entities that have no need of a device to present its content. E-books on the other hand, are bound to their electronic device, which in turn ends up being an insuperable obstruction to their wide use. What is interesting to note however, is that the way college students interact with E-books imitates they way they would use a printed book, regardless of the fact that E-books have many different characteristics. (Chen 2003, p.15) From this, we can clearly see that:

"Electronic books are a new convergence of various traditional works and functions based on the application of new information technologies."

(Chen 2003, p.15)

Writing a paper, or researching does not only consist of taking a pen and paper any longer, due to the increasing use of computers where students access E–books on their campus’ networks. When printed books are used for studying, university students can be found with a pen in their hand jotting down findings on note cards, and reading from cover to cover. Highlighting and taking notes is common behavior with in–depth reading. (Liu 2005, p. 707) In contrast, when browsing E-books, university students look for specific information and once they find what they are looking for, cut it and paste it in a file that contains a collection of their other excerpts. The search tool is without a doubt one of the most beneficial functions of the E-book, creating a whole new user experience by giving the reader access to any word they search for within the text in no time. A person using a printed book would on the other hand, have to go through a lot of pages before they found what they were looking for. (Brown 2001, p. 395)
3.4 Material

The biggest factors that determine the quality of an E-book or traditional book are its materials display and contrast. The quality each display has is calculated by what its resolution is in dpi (dots per inch). There is a tremendous difference in contrast between the two media. The highest resolution screens displays have is 100 dpi, whereas printed books have an average resolution of 1,200 dpi. Printed books also have the lead when it comes to the second factor, its contrast.

Contrast can be defined as the difference between the highest possible brightness and the lowest darkness. Screens are, for the most part, backlit and this can be a problem if external light reflects on it. What happens is that the lighter the surroundings are, the more the screen looses its contrast, and in a similar manner a decreased contrast is achieved when the screen is tilted at a certain angle. (Sottong 2001, p. 74) The contrast between ink and paper is three to six times higher than it is on screens, and this contrast does not decrease with surrounding light due to the fact that paper reflects it. In order for screens to be practical, they need to be readable both outdoors in sunlight and in darkened rooms. (Sottong 2001, p. 75)

The fact that screens have a lower resolution, and that print on paper has a higher dpi density contributes to why students in higher education decide to print out long texts in order to read them (Liu 2005, p.702). Other factors were observed by Hartzell (2002), Sottong (2001), and Chou (2009) who noted that reading printed text is up to 30 percent faster and the reader has 10 to 20 percent more accuracy than when reading the same exact text on a screen. Additionally, because printed passages are more comfortable for our eyes to read, there is a higher chance we will attain an in–depth reading experience. (Hartzell 2002, p. 37; Liu 2005, p. 702) A study was conducted by Taylor (2011) in order to find out if E-books are just as educationally efficient for college students as printed textbooks are. She was lead to assume that printed books are a better instructional medium because of the statistics found showing that participants that had read E-books had significantly more eye fatigue and lower test scores than those who read printed books. (Taylor 2011, p. 163) Eyes that become itchy, blurry, sensitive to light, and fatigued are common symptoms which can be found among 50 to 90 percent of people who are exposed to a screen for at least two hours at a time. A screen should be at least an arm’s length away from the user’s eyes.

(Goldsborough 2007, p. 12; Sottong 2001, p. 75) Harris (2009) however argues that claims such as "the screen will strain your eyes, the devices are too heavy for comfortable reading” and "the print is too small” are merely common misconceptions of E-books. Brown (2001) adds to that thought by stating that the technical advancements in screens are coming closer to resembling the experience paper reading gives, making reading on screens less irritating, and lightweight. (Brown 2001, p. 392)
A study was conducted at The Ohio State University where the goal was to find out if students knowledge and opinions were influenced by reading persuasive texts off a computer screen rather than paper, and if there was any substantial difference between the influences each medium exhorted (Murphy et al. 2003, p. 525). The researchers conducting the study found that reading the digital version was just as persuasive as it was in print, and that there were not major differences when it came to the university students perceptions, which is the same conclusion Beach (2008) came to in her study of college student reading comprehension levels (Murphy et al. 2003, p. 527). However, students within higher education found that reading on printed paper was much more interesting, and 68% of them found it easier to understand, where the college students who read the text from a screen found it harder to comprehend, and even found the to be authors less credible (Chou 2009, p. 79; Murphy et al. 2003, p. 524). Students within higher education withhold more information when they read printed text according to researchers at Ohio State University (Murphy et al. 2000). Better screens and text presentation may make reading easier for students, but there is no guarantee that these improvements will aid information retention when using electronic media (Brown 2001, p. 393). Printed text will always have faithful readers because it boosts reading comprehension thanks to its tactile properties, such as the act of turning pages and scanning over the text to find information, which allows the location of certain information to imprint in their memories (Brown 2001, p. 394; Liu 2005, p. 703). In most digital documents however, this relationship is debilitated since scrolling does not provide the same information processing, leading to a sense of disorientation when reading long passages on a screen (Liu 2005, p. 703; Rose 2011, p. 518). Brown (2001) claims though, that E-reader software can make up for this lack of orientation due to its new capabilities for analytic reading which paper based reading does not provide (Brown 2001, p. 390).

Printed books also survive longer because they are physically sturdier than E-books in extreme situations. Unlike the E-book, their content still remains even if they get briefly drenched, have food or sand fall on them, get thrown from high altitudes and even have its pages torn out. In most cases books can be rebound and used even when their physical appearance deteriorates gradually. The devices used for reading E-books however, are not as durable, and it takes as little as just one defective chip to disable any reading possibilities. (Sattong 2001, p. 76)

### 3.5 Mobility

Mobility can be defined as the ability for university students to be situated in any place using their reading device in different changeable environments. This characteristic is essential if intending to
use E-books successfully. (Kissinger 2011, p. 117) Digitized texts can be accessed regardless of your current location and time. Marshall (2001, p. 55) brings up four advantages digital resources provide users. The first advantage is the ability to intersect digital resources with physical ones, which is an idea, also shared by Chen (2003, p. 10). For example, college students can start a research by reading printed books and later continue their research by moving on to digital libraries in order to make sure they have found the most recent information. The second advantage is that reading is opportunistic. The students can engage in reading and taking notes whenever it works best for them and when they have all the needed materials. The third advantage concerns being able to utilize digital documents in collaboration with access to human mediators through for instance reference interviews. The fourth and last advantage is the ability to intertwine content with other communication activities such as organizing materials or writing. (Marshall 2001, p. 55) According to Chen (2003) E-books are far more portable than the traditional book, and even though there might be a limit to how much content it may contain, it is still longer than a printed book (Chen 2003, p. 10).

3.6 Reliability

The majority of E-readers have access to internet which enables its users to frequently update current editions of a publication, usually implying that it is more updated than its printed equivalent (Chen 2003, p.9; Outing 2000; Sottong 2001, p. 77). It has been observed that the importance of printed books has declined due to the increased reliance on electronic materials (Falk, 2003). Ramirez (2003) performed a study that showed that university students’ skepticism towards electronic material is prevalent, where 29.2 % thought that the information found electronically was up to date, and merely 4.4 % thought it was reliable.

3.7 Study techniques

Reports show that E-books will be the primary tool within higher education, usurping the printed book, due to their dynamicity in including symbols, pictures and video clips. E-books are actually claimed to be able to improve teacher–student interactions, and will bring about change, not because it is in some way better than face–to–face teaching, but rather because it is notably cheaper. (McClelland 2006, p.80) Many believe that the electronic resources that are currently available in higher education have a great potential for improving research and education. However, these valuable resources are not being properly used for a number of reasons, including a general lack of time, awareness, training, and competence. (Deng 2010, p. 92)
Just because university students are comfortable using computers, does not mean that they will also find reading on a screen to be comfortable. For the most part, the time they have spent in front of the screen did not demand their undivided attention or analytical skills. This imposes a threat to university students learning because students need to progress through the “hierarchy of awareness that constitutes education—proceeding from the acquisition of information to knowledge to understanding to wisdom.” (Hartzell 2002, p. 37)

College student comprehension levels have been studied, and it has been shown that student’s reading comprehension and reading rates could be affected depending on the medium upon which the passage was read. A marked difference was noticed when reading texts digitally in varying speeds: the faster a text was read, the lower the comprehension rate. It normally took students longer to read off a screen, and even when not speed-reading, the student’s comprehension was still lower than when reading off paper. Research has also shown that reading from screens may affect the way in which minds retrieve and memorize information, which in turn can influence learning outcomes. (Beach 2008, p. 67; Chou 2009, p. 25,29,30)

Subbaram (2004, p. 47) agrees that it takes more time to read off a screen than when off a paper, but disagrees when it comes to reading comprehension and argues that studies have not found any differences when comparing the two media. Baker (2010, p. 25) conducted a study which supports Subbaram’s claim, where she provides evidence that no differences in college student comprehension rates where found between three different platforms, two of which were digital and the third was paper. However, differences in comprehension rates are tied with how familiar people are with reading from screens (Chou 2009, p.29).

Rose (2011) relates that focus and zoning out from surroundings when reading a printed book comes quite naturally and without any conscious effort for students within higher education. However, reading on a screen does not at all have the same effect. Becoming distracted is extremely easy, and in order to concentrate a lot of effort is required on the reader’s behalf. This is partly due to the fact that when reading on screens people tend to interrupt the reader more often than if they were reading a printed book, and when scrolling the text, the reader’s eyes scroll thru the text as well, raising the chances he/she will need to relocate where the they last left off. (Rose 2011, p. 521)

In a study conducted by Liu (2005, p. 707) it was shown that nearly half of the college students who participated experienced declined concentration and in–depth when reading on the web. One of the biggest faced challenges that reading on the web imposed were the prevalent recurring distractions such as pop-up windows and vivid, flashy, colorful graphics that had to be closed.
Screen–based reading can be considered as harder than reading on paper because of different properties such as the screen’s brightness, contrast, and the format and density by which the text is displayed (Chou 2009, p.30). One of the study’s participants stated that distractions, such as checking his email, were hindering his reading concentration and this was especially true when more than one window was open on his screen. Choosing what to read, where to find additional information and whether a page should be scrolled down or not, makes focused reading not an easy task for its readers. (Liu 2005, p. 707) Former studies done on university students on–screen reading behavior and efficiency have shown that students prefer not to read academic texts on a screen (Chou 2009, p. 81).

There are endless captivating distractions such as checking e–mails, chatting, and Facebooking that cause the student to have partial attention (Rose 2011, p. 522). She goes on to say that she does not agree with critics who assert that reading on screens consists of hastening from one thing to another. (Rose 2011, p. 524)

"Students are consciously and conscientiously making an effort to adapt to the new reading conditions by developing strategies for maintaining focus, and they are successfully disciplining their minds and bodies to read digitized papers in their entirety, when necessary.”

(Rose 2011, p. 524)
4 Results

Presented below are the results from four telephone interviews and one survey answered by twenty students at Malmö University. These results are presented in different sections with the sole purpose of clearly distinguishing the differences between the two media with greater ease.

4.1 Students reading preferences

Both for academic research and when studying for an exam, all four interviewed students preferred using textbooks. The survey also showed that the majority, 65 %, of the participating students preferred printed text more than electronic when studying for an exam, but the result was not the same when it came to reading academic text for research.

![Figure 1 Preferred medium for researching academic texts.](image)

The survey showed a variety of the students’ preferences where the majority, 50 %, preferred to use electronic text more than printed text, and over a quarter, 30 %, preferred the opposite as shown in Figure 1, which is in stark contrast to the interview results. When asked why they preferred printed text when reading academic text for research, the interviewed students responded: there appear to
be more printed books available in libraries than there are electronic; the information seems to be more reliable because the content should have been reviewed more times before publishing; when researching, writing comments on the paper itself is an important part of their learning process. The act of making annotations on paper, turning pages and highlighting different facts is also a fundamental reason given when studying for an exam.

In the survey, the question was asked if the medium in which the text was presented altered their perception of the source’s credibility, and 55 % answered no, whereas 45 % said yes. The students were asked which medium they found to have the most reliable, up to date sources and they all answered that E-books were the most reliable. The reasons given were that E-books are easier to update via the Internet compared to the printed book, and that nowadays it is expected that newly written information is presented as a PDF or online. One respondent added that when visiting a library there are greater possibilities of finding older textbook editions, but when borrowing an E-book it is expected and perceived that it is the most recent edition. An additional question was whether they thought E-books were updated regularly, and how often. The answers varied from that they believed it was updated but they did not know how often, to perhaps once a year, and another stated that they did not believe E-books were updated as often as printed books, but rather much more often.

### 4.2 Attitude toward reading comprehension

When reading on a screen, reading comprehension is lower compared to the printed version of the text. Results from the survey show that when studying content carefully, only 15 % of the participants chose to read from a screen, and when reading a long passage of text, 90 % preferred reading printed text (see questions 10–11 in Appendix 2). One of the interviewed students stated that when studying, it is harder to understand text on a screen than printed text, because the radiant computer screen produces fatigue after reading for a while. Another student mentioned that the feeling of the printed book, the ability to turn pages, supports and encourages their learning process, because they are using the additional tactile sense, besides only using sight, makes it significantly easier to remember its content. When asked if the way the medium felt altered or affected their reading in any way, one participant responded “Yes, with books I feel like I am getting somewhere, like I have intermediate goals. Each time I turn a page, I am done with that page and if I want to, I can even take a break. With a screen, however, it’s like a never ending flow and you never feel like you are done.” Curiously enough, when asked on the survey which of the two media presents the content in a way that is easier to comprehend, 35 % of the respondents
chose printed text, whereas only 15% chose electronic text, but the other 50% either did not know which was easier, or they did not have any specific preferences (See question 13 in Appendix 2).

How fast the text was read was another factor that affected the students’ reading comprehension. In the survey, the question was asked: If you were given the same text to read, both in print and electronically, would the format (being electronic or not) make a difference in how fast you read the text? The majority of the students, 70%, responded that it would (See question 14 in Appendix 2).

The speed estimated for reading each medium according to Figure 2a shows that most students, 65%, read printed text fast, but Figure 2b shows that when reading electronic text, the majority of students, 45%, read at a medium speed.

The interviewed students were asked if they thought they read E-books faster than printed books. They all responded that they did not think so. One added that the only occasion where she would read an E-book faster would be when not much concentration was needed and the purpose of reading was more to obtain an overview. An additional question was asked if the speed affected their comprehension of the content, and the answers boiled down to that if the text were to be read quickly, regardless of the medium either being printed or electronic, not much content would be fully understood. In order to actually concentrate and get a deeper understanding, it would be necessary to read slower.

Results from the survey show that in terms of concentration, 55% of the respondents considered that reading printed text was easy, and 20% even considered it to be very easy for concentration.
On the other hand, when it came to rating electronic texts, 50% rated it as requiring a medium concentration effort, and 30% as hard. During an interview, a student was asked whether only having access to an E-book for studying purposes would require more concentration in order to learn something from it. The response given was, not necessarily, but using the senses play an important role when learning something new, and that some people learn a great deal by simply using sight, while others need to feel as well, by for example using a pen to underline, and/or turning pages. That type of tactile support is not available when using an E-book.

### 4.3 Current reading habits

In the survey the question was asked: When reading electronic texts, how often do you print out for further reading? The majority of the students, 45%, answered that they did occasionally, 30% said frequently, 20% never made printouts, and 5% always did (See question 23 in Appendix 2).

![Figure 3a & b Taking notes in each medium.](image)

Students were asked how often they took notes when reading texts in each medium. Results from the survey showed that when reading printed text, a quarter never took notes, nearly half did occasionally, 30% did frequently, and only 5% always took notes. When reading electronic texts, the majority, 75% took notes, 20% never did, 5% took them frequently, and no one took notes always. One interviewed student said she preferred taking notes when reading printed text because it was easier for her to process the information when having many books spread out and open to look at, making it easier to concentrate, to have an overview of the content, as well as being more relaxing for her eyes, than having several windows or tabs open on a screen, having to click back and forth between them.
The same question was asked about highlighting in each medium. When reading printed text, half of the respondents answered that they highlighted occasionally, 30% never did, 15% did it frequently, and only 5% always highlighted. On the other hand, when reading electronic texts, over half of the respondents, 60%, never highlighted, 30% did so occasionally, 10% highlighted frequently, and none always did. During the interview, several students mentioned that it was easier for them to highlight printed text, and one of them went on to explain how important it was for their learning process to be able to grab a pen and feel satisfied to be able to mark a sheet of paper with their own hands.

During the interviews, students were asked whether or not they owned a special reading device such as an iPad. All of them responded that they did not, but they had all tested one previously, although not used it to a great extent. When reading electronic texts they said that they either used their computers or cellphones. The question was then given: If you did own a reading device, do you think it would increase your likelihood of reading E-books? All answered that it would, where one added that when studying for an exam, a printed book would be preferred, but an E-book would come in handy when going through information for an assignment.

The students were later asked if they considered it easier to carry a paper book with them everywhere they went, than an electronic book, and different answers were given. Half of the students said they thought it was essentially the same, but the other respondents thought that it was easier to carry E-books if they were going somewhere, because it would be harder to carry around five or six printed books. One of them did mention, however, that they did prefer to use printed books when reading at home, and another said that they would prefer to print out the electronic text for further reading when needing to study.
4.4 **Advantages and disadvantages**

When reading e-texts, either online, on a computer, a handheld device, etc., the advantages seen by the interviewed students were: the easy access to text on any available computer regardless of their location; the ability to download electronic texts to their home computers instead of having to wait for a book to become available at the library; the possibility of easily deleting the text when no longer needed or wanted; reading updated information; access to the Internet when looking for something; and the ability to send information to others, for example reports or important documents between group members. The disadvantages, however, were: that it was harder to concentrate when reading on a computer screen due to factors such as emitted light and radiation, which tired and hurt the eyes, as well as side banners and flashy commercials; having a limit on how many E-books one can borrow at a library, and the risk of loosing the text if the computer crashes.

Students had varying opinions varied as to if they would completely stop using printed books if a screen gave them the same exact advantages as paper. Only one said that it was likely, and the rest said that they would not, where one of them elaborated, saying that they would read on a screen more often, but would not completely stop using printed books. A reason was because printed books lasted many years, and the risk of loosing electronic texts was much higher because the risk of their computer crashing, all the E-books would be gone in a second. The other reason given was that the respondent liked to have a bookcase where she could have her collection of books.

The last question asked in the interviews was if the student had experienced any factors that could have diverted their attention while reading electronic texts, which in turn would have made it harder –or easier– for them to concentrate on in–depth reading. One answered that if they had spent several hours in front of a computer screen prior to reading text that required concentration, it would be considerably more difficult than to read a printed book because they were fatigued by that point in time. It was easier to get distracted when reading a text online by taking a break on Facebook, and thereby loosing much concentration. On the other hand, when the text is printed on paper, they could sit on a couch at home or in the school library and fully concentrate on reading, which then becomes more coherent since there are much fewer distractions like music on a computer, or Facebook. Another student said that commercials and side banners were the main distractions when reading electronic texts. However, an advantage given by the third student was that even though being connected to the web potentially led them to check their Facebook while having to find articles for an exam, the fact that they were connected to the web was very useful, since when reading something that was unclear, it was easy to get answers by Googling. The last
An interviewed student said that even though the web had endless potential distractions, once she set her mind to only read specific texts that was all she would do. She added that on a computer it is much easier to get distracted, but not as likely when reading a printed text. By entering into some sort of study mode, these luring online distractions could be completely avoided.
5 Discussion

E-books in higher education have many advantages, which have been made possible through the advent of modern digital technology in the form of personal computers and other reading devices. However, despite the expectations of a higher student use rate of E-books, printed books still have a strong position on the educational arena.

Today's reading habits and comprehension are impacted in a great manner due to the increased use of electronic texts. Determining whether or not its impact has been of a positive nature may be an important step that brings us closer to enhancing students' learning in scholarly realms. According to Baker (2010, p.6), process and outcome are the two aspects in which reading is evaluated, where process involves the media mobility as well as its physical appearance, and outcome involves how fast the text is read, comprehension levels, fatigue, as well as preference. Different studies I researched show that the preferred medium for text analysis and reading longer passages of text is the printed medium (Brown 2001, p. 392; Chen 2003, p.15; Chou 2009, p. 179; Hartzell 2002; Karim 2007, p. 288; Liu 2005, p. 701; Ramirez 2003, p.11). On the other hand, when searching, and researching for writing reports, digital media is preferred (Chen 2003, p. 15; Chou 2009, p. 179; Liu 2005, p. 701).

In the interviews and survey I conducted, it was found that the majority of both interviewed students and those who participated in the survey preferred printed text when used for study purposes, which in turn concurs with researched results. However, when it came to reading academic texts for research, half of the survey respondents' answers were in agreement with previous results other research has shown, and the other half either had no special preference or preferred printed text more than electronic text.

When asked to motivate their preference of printed text, interviewed students gave different reasons such as: more apparent availability in libraries, seemingly more reliable content, and the need of commenting on paper when researching to enhance their learning process. What should be taken into consideration, however, is their lack of experience. None of these students own or have even used an E-book to a great extent, which could in turn affect their view of its use making it a bit hard to make comparisons between the two media. The interviewees all concluded, however, that if they had owned a reading device, they would more likely use it more often.
Previous studies show that the medium that is used to read text affects the students’ reading comprehension. Reading concentration levels were lower when reading on the web, because of factors such as the screen’s brightness and other flashy distractions, whereas research shows that students retain more information when reading printed text (Beach 2008, p. 67; Chou 2009, p.25, 29, 30; Liu 2005; Murphay et al. 2000). Results from my survey showed that when studying content carefully only 15% of the participants chose to read from a screen, in terms of concentration, 55% considered reading from printed text as easy and 20% as very easy.

An interviewee stated that the brightness emitted from a computer screen produced fatigue, matching results shown in previous studies. The survey also showed that 35% of respondents said that printed text was easier to comprehend, but over half, 55% of them, did not know which was easier or did not have any preferences. Subbaram (2004, p. 47) argues that there is no difference in comprehension rates between the two media, and a study conducted by Baker (2010, p. 25) supports this claim, but according to Chou (2009, p.29), comprehension rates differ depending on how familiar people are with reading from a screen.

The all students were also asked how often they print out text for further reading when using electronic text on a computer screen, and only 20% of the survey respondents said that they never did, while the rest including interviewees did so occasionally, frequently, or always. Chou (2009, p. 179), conducted a study were he found that students would read electronic texts more often when writing reports, but as soon as the information needed to be studied more carefully, the students would print it out. Printing out text for further reading is a common behavior nowadays, and the fact that print has higher resolution than a screen also contributes to this habitual act. (Brown 2001, p.392; Liu 2005, p. 702, 705; Ramirez 2003, p.11)

Another factor found to affect the students’ reading comprehension is the speed at which the text was read. According to previous studies, the comprehension levels would decrease the faster a text was read electronically, and even when not reading quickly, reading electronically in general would prove to produce lower comprehension levels (Beach 2008, p. 67; Chou 2009, p.25, 29, 30). It was found that printed text was read 30% faster, with 10% to 20% more accuracy, compared to reading the same text electronically (Chou 2009; Hartzell 2002; Sottong 2001).

The majority of students, 70%, who took my survey, said that the medium they read a text on would affect their reading speed. Interviewees were asked if their comprehension levels were affected by the speed at which the text was read, and they said that regardless of the medium, comprehension would be affected if the content were read too fast. When then asked whether they
read an E-book faster than a printed book, they all responded that they didn’t believe so, and the only occasion where they would read faster was when doing an overview.

When taking notes, printed text has greater advantages than electronic text, because of the ability to spread out the sheets of paper, enabling cross-referring to other documents, as well as the support paper offers for annotation while reading (O’Hara; Sellen 1997, p.340); Reasons which were also given by a interview student, when asked which medium they preferred when taking notes. However, results from my survey showed that there was a slightly higher rate of students, 80%, who took notes electronically compared to when reading printed text, but there was only a 5% difference between the two media. The study done by Liu (2005) had more distinctive results, where 85% of individuals took notes on printed material more often, and only 3% of respondents took notes on electronic text more often.

When highlighting on the different media, similar results were seen (Liu 2005, p. 708). Accordingly, my survey showed a higher percentage of highlighting when reading printed text than when reading electronic text, and an interviewee emphasized the impact using the tactile sense when using a pen, had for their learning process. It is possible to take notes on digital files, but it requires more skills and effort than it does on paper (Liu 2005, p. 708; Sattong 2001, p. 77)

My study found that using the senses in fact plays an important role in learning, findings which were also observed by Brown (2001, p. 394) and Liu (2005, p. 703). They say that the tactile properties printed books offer, like turning pages and scanning over the information, improves their reading comprehension. One of my interviewed students said that turning pages felt like an accomplishment, as in reaching intermediate goals, something they did not experience with a screen since text was presented as a never ending flow. Scrolling was found by researchers to give a sense of disorientation, and the information is not processed in an optimal manner (Liu 2005, p. 703; Rose 2011, p. 518).

Credibility was taken up as a factor that might have some sort of impact on which medium students preferred to use. My survey results showed that even though the majority, 55 %, thought that the medium in which the text is presented did not affect the authors’ credibility/reliability, a great deal, 45%, did. This is quite different than the results from a study by Ramirez (2003), which showed that only 4.4 % thought electronic texts were reliable, however, all of my interviewees agreed that E-books were in fact the most reliable medium because of the higher chances that it would be a newer edition than its printed equivalent, findings which were also supported by studies conducted by Chen (2003) Outing (2000) and Sottong (2001).
A series of advantages as well as disadvantages were found when using both e-text and printed material. Advantages given by interviewed students for the use of E-books were: their easy access on different computers regardless of current location; ability to download without having to go to a library; access to the Internet for further research; likelihood of reading updated information; ability to share information with others, and being able to remove it from the platform without having to physically return it to a library. Most of this was also brought up in previous research (Deng 2010, p. 88; Johnson et al. 2010, p. 17; Massis 2010, p. 348; McAllister 2009, p. 2; Rowlands et al. 2007, p. 491; Sattong 2001, p.77).

Another advantage seen is the fact that E-books obviate the need for students to carry books with them (McAllister 2009, p. 2). Half of my interviewed students considered it easier to carry E-books with them wherever they went because it was much heavier to carry around several books, while the other half said it did not really matter. This contrast of opinions is supported by previous studies, where students incline towards the medium they are most used to and/or what they grew up using (Foderaro 2010; McAllister 2009, p.2; McClelland 2006).

Disadvantages seen by the interviewees in using E-books were: flashy commercials; that reading off a screen hurt their eyes and fatigued them due to its brightness; harder to concentrate, and the risk of not being able to access the text if the platform crashed. Because of the last factor, most of the interviewed students said that they would not stop using printed books completely, even if a screen would present the same advantages as reading off paper. Sattong (2001, p. 76) states that E-books are not as durable as printed books because of the chances of factors disabling all reading possibilities are much higher.

One of the disadvantages my interviewed students brought up was also supported by a study conducted by Taylor (2011, p. 163) where she found that printed books were of better use in a scholarly setting because her statistics showed that the ones who read E-books had much more eye fatigue and lower test results than the ones who read off paper. Distractions such as facebooking, chatting, and checking e-mail, proved also to be luring distractions (Rose 2011, p. 522): reasons which my interviewees also gave me, in contrast to printed books which enable full concentration when reading, augmenting its coherency, with no such distractions.

The only advantage for using E-books mentioned by a student was the ability to be connected to the web, which enabled quick searches when inquiring something. An interesting finding during this study was that students could develop strategies in order to maintain focus when reading digital texts (Rose 2011, p. 524). One of my interviewed students said that regardless of the distractions,
which were ever present when reading electronically, she had managed to block everything out by mentally concentrating on the school-related topic.

With the advance of technology, screens continue to improve and may eventually offer the same contrast and readability as the printed page. Because of the constantly growing need to be connected, the Internet will most likely always form a part of E-reading and distractions may become even more aggressive/prevalent than today. It is likely that there will be ways to block unwanted distractions when reading electronic texts, but the very knowledge of being connected can present an almost irresistible temptation for the reader to wander off into cyberspace, which can only be resisted with great discipline.

Tactile qualities of printed books are very hard or impossible to reproduce with E-books. However, much of the emphasis placed on the use of highlighters and pens for learning supported through tactile means, may eventually be reproduced through pen–like devices the user can hold while reading an E-book. This could potentially help to bridge the gap between paper and digital technology.

Using E-books in higher education will in all probability increase as the younger generations will be introduced to electronic media at a very early age, making E-books the generational preference.

Many believe that the electronic resources that are currently available in higher education have a great potential for improving research and education. However, these valuable resources are not being properly used for a number of reasons, including a general lack of time, awareness, training, and competence. (Deng 2010)
6 Conclusions

The purpose of this study was to find out what attitudes students in higher education have towards using E-books in a scholarly setting versus the printed book, along with which preferences they have when using E-books compared to its printed equivalent. The questions asked at the beginning of the study were: “What are the attitudes to the use of E-books and printed books among media technology students at Malmö University?” “How do these students actually use these media based on their preferences?”

Throughout the course of my study I observed positive attitudes from the students towards the use of both printed books as well as electronic texts. In other words, students had no problems with using both media within the scholarly setting. However, the use of printed text was overall slightly more favorable to the students than the use of E–books, showing a small grade of hierarchy between the media. This was an interesting finding, showing that E–books are not preferred over printed books or favored as a dominant educational tool within higher education.

It was observed that students had preferences as to the use of the individual media in differing scholarly settings due to the advantages and disadvantages each media posed. When it came to study purposes such as text analysis and reading longer passages of text, printed text was preferred by the students because of factors such as its tactile properties: turning pages, underlining, highlighting, taking notes (qualities which are nearly impossible to reproduce electronically), less distractions than E-books, and because it was easier on their eyes than a screen would be after extended periods of time reading.

When reading academic texts for research, 35% of the students preferred using printed text, whereas a small percentage had no specific preference and the rest agreed with results shown in previous studies by showing a preference for digital media. The main reasons for their electronic text preference was the seemingly more updated content, which was of importance for the students who wanted to have recent and credible data when researching, and the access to the internet which made it possible to search for additional information when needed.

However having access to the Internet seemed to be a double–sided coin, where students considered it also to be a disadvantage due to its endless distractions that affected their reading and learning comprehension negatively. A behavior was found where students read electronic texts to skim through information briefly, not necessarily taking their time, in order to get an overview and
consequently preferred to print it out when finding the passage relevant and worth looking into more carefully and get a deeper comprehension by reading it slowly at a more convenient time. This pattern showed that even though students initially started their reading in an electronic format when reading academic texts for research, the majority would often end up with printed text in their hands. Previous research shows that comprehension rates differ depending on how familiar the person is with reading from a screen. As it can be seen, the media technology students at Malmö University are more familiar with reading printed text. This explains why printed texts are also sometimes used when researching and not only used for study purposes, and why there is a slightly higher favorability towards printed books among these students.
6.1 Proposals for further development

It would be interesting to conduct a follow up study on students who initially had more experience using printed books, but where later trained and competent users of E-books and see which media is more favorable in an academic setting.

In order to have a fuller picture of how E-books impact students’ study behavior within Higher Education on a national scale, whole universities, or several universities together could be studied.

Regardless of significant time consumption, conducting experiments and observing first hand study habits students present while using each media could collect valuable information needed for deeper analysis. Through interviews and surveys alone, results rely solely upon students’ responses to what they believe to be their preferences to be, and not actual facts as to how each medium impacts their learning.
7 References


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Van Dam, Andries, 2011: 

Appendix 1 – Interview Questions

1. a) When reading academic texts for research, for example when preparing to write a scholarly paper, which do you prefer (textbooks or E-books)?
   b) Why do you prefer …………… for research?

2. a) When reading academic texts in studying for an exam, which do you prefer textbooks or E-books?
   b) Why do you prefer …………… for studying?

3. a) Do you own a reading device? (iPad, kindle)?
   b) Have you used a reading device?

4. If you did would that increase your chances of reading E-books?

5. Would you consider it easier to take a paper book with you everywhere, than an electronic book?

6. a) When it comes to finding reliable – up to date sources do you prefer E-books or textbooks?
   b) Do you think that E-books are updated regularly? How often?

7. What advantages and disadvantages do you see when reading E-texts? (Online, on a computer, handheld device, etc.)

8. a) Do you read an E-book faster than a printed book?
   b) Does reading an E-book fast affect your comprehension?
   c) Does reading a printed book fast affect your comprehension?

9. If a screen would give you the same exact advantages as paper, would you completely stop using printed books?

10. Does the way the medium feels alter or affect your reading in any way? (i.e. turning pages, scrolling)

11. Have you experienced any factors that could have diverted your attention while reading electronic texts, which in turn would have made it harder - or easier - for you to concentrate on in-depth reading?
## Appendix 2 – Survey

### 1. Sex

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>60.00%</td>
<td>12</td>
</tr>
<tr>
<td>Female</td>
<td>30.00%</td>
<td>8</td>
</tr>
</tbody>
</table>

**Number of respondents** 20

### 2. Age

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;20</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>20–25</td>
<td>80.00%</td>
<td>16</td>
</tr>
<tr>
<td>26–30</td>
<td>20.00%</td>
<td>4</td>
</tr>
<tr>
<td>31–35</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>36–40</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>40+</td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

**Number of respondents** 20

### 3. Marital Status

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Unmarried</td>
<td>100.00%</td>
<td>20</td>
</tr>
</tbody>
</table>

**Number of respondents** 20

### 4. Children

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>No</td>
<td>100.00%</td>
<td>20</td>
</tr>
</tbody>
</table>

**Number of respondents** 20

### 5. How many years have you been studying at University Level?

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>65.00%</td>
<td>13</td>
</tr>
</tbody>
</table>
Using E-books in higher education

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>20</th>
</tr>
</thead>
</table>

6. How often do you read for leisure?

<table>
<thead>
<tr>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Never</td>
<td>0.00%</td>
</tr>
<tr>
<td>2 Occasionally</td>
<td>65.00%</td>
</tr>
<tr>
<td>3 Frequently</td>
<td>30.00%</td>
</tr>
<tr>
<td>4 Always</td>
<td>10.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>20</th>
</tr>
</thead>
</table>

7. How often do you read academic texts?

<table>
<thead>
<tr>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Never</td>
<td>0.00%</td>
</tr>
<tr>
<td>2 Occasionally</td>
<td>65.00%</td>
</tr>
<tr>
<td>3 Frequently</td>
<td>40.00%</td>
</tr>
<tr>
<td>4 Always</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>20</th>
</tr>
</thead>
</table>

8. You are reading academic texts for research, and are about to write an important report. Which do you prefer?

<table>
<thead>
<tr>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Only printed text</td>
<td>5.00%</td>
</tr>
<tr>
<td>2 Printed text more than electronic</td>
<td>30.00%</td>
</tr>
<tr>
<td>3 No special preference</td>
<td>15.00%</td>
</tr>
<tr>
<td>4 Electronic text more than printed</td>
<td>50.00%</td>
</tr>
<tr>
<td>5 Only electronic text</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>20</th>
</tr>
</thead>
</table>

9. You are reading academic texts when studying for an exam. Which do you prefer?

<table>
<thead>
<tr>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Only printed text</td>
<td>30.00%</td>
</tr>
<tr>
<td>2 Printed text more than electronic</td>
<td>65.00%</td>
</tr>
<tr>
<td>3 No special preference</td>
<td>5.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of respondents</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4. Electronic text more than printed</strong></td>
<td>5.00%</td>
</tr>
<tr>
<td><strong>5. Only electronic text</strong></td>
<td>0.00%</td>
</tr>
</tbody>
</table>

**Page 2. Survey - Anna Juneby**

<table>
<thead>
<tr>
<th><strong>10. When do you read from a screen most?</strong></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>when writing reports</td>
<td>85.00%</td>
<td>17</td>
</tr>
<tr>
<td>when studying content carefully</td>
<td>15.00%</td>
<td>3</td>
</tr>
</tbody>
</table>

**11. When reading a long passage of text, which medium would you prefer to use?**

<table>
<thead>
<tr>
<th>Medium</th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed text</td>
<td>90.00%</td>
<td>18</td>
</tr>
<tr>
<td>Electronic text</td>
<td>10.00%</td>
<td>2</td>
</tr>
</tbody>
</table>

**12. Does the medium in which the text is presented affect the author’s credibility/reliability?**

| Yes | 45.00% | 9 |
| No | 55.00% | 11 |

**13. Which of the two media presents the content in a way that is easier for you to comprehend?**

<table>
<thead>
<tr>
<th>Media</th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Printed text</td>
<td>35.00%</td>
<td>7</td>
</tr>
<tr>
<td>2. Electronic text</td>
<td>15.00%</td>
<td>3</td>
</tr>
<tr>
<td>3. Both are same for me</td>
<td>45.00%</td>
<td>9</td>
</tr>
<tr>
<td>4. I don't know</td>
<td>5.00%</td>
<td>1</td>
</tr>
</tbody>
</table>

**14. If you were given the same text to read, both in print and electronically would the format (being electronic or not) make a difference in how fast you read the text?**

<table>
<thead>
<tr>
<th>Format</th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>70.00%</td>
<td>14</td>
</tr>
<tr>
<td>No</td>
<td>30.00%</td>
<td>6</td>
</tr>
</tbody>
</table>
### 15. How would you estimate your reading speed for Printed text?

<table>
<thead>
<tr>
<th>Speed Level</th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very slow</td>
<td>5.00%</td>
<td>1</td>
</tr>
<tr>
<td>Slow</td>
<td>5.00%</td>
<td>1</td>
</tr>
<tr>
<td>Medium</td>
<td>15.00%</td>
<td>3</td>
</tr>
<tr>
<td>Fast</td>
<td>65.00%</td>
<td>13</td>
</tr>
<tr>
<td>Very fast</td>
<td>10.00%</td>
<td>2</td>
</tr>
</tbody>
</table>

**Number of respondents** 20

### 16. How would you estimate your reading speed for Electronic texts?

<table>
<thead>
<tr>
<th>Speed Level</th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very slow</td>
<td>5.00%</td>
<td>1</td>
</tr>
<tr>
<td>Slow</td>
<td>5.00%</td>
<td>1</td>
</tr>
<tr>
<td>Medium</td>
<td>45.00%</td>
<td>9</td>
</tr>
<tr>
<td>Fast</td>
<td>35.00%</td>
<td>7</td>
</tr>
<tr>
<td>Very fast</td>
<td>10.00%</td>
<td>2</td>
</tr>
</tbody>
</table>

**Number of respondents** 20

### 17. How would you rate Printed text in terms of concentration:

<table>
<thead>
<tr>
<th>Level</th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very hard</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Hard</td>
<td>5.00%</td>
<td>1</td>
</tr>
<tr>
<td>Medium</td>
<td>20.00%</td>
<td>4</td>
</tr>
<tr>
<td>Easy</td>
<td>55.00%</td>
<td>11</td>
</tr>
<tr>
<td>Very easy</td>
<td>20.00%</td>
<td>4</td>
</tr>
</tbody>
</table>

**Number of respondents** 20

### 18. How would you rate Electronic text in terms of concentration:

<table>
<thead>
<tr>
<th>Level</th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very hard</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Hard</td>
<td>30.00%</td>
<td>6</td>
</tr>
<tr>
<td>Medium</td>
<td>50.00%</td>
<td>10</td>
</tr>
</tbody>
</table>
Using E-books in higher education

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Easy</td>
<td>20.00%</td>
<td>4</td>
</tr>
<tr>
<td>5 Very easy</td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

Number of respondents 20

19. How often do you take notes when reading Printed text?

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Never</td>
<td>25.00%</td>
<td>5</td>
</tr>
<tr>
<td>2 Occasionally</td>
<td>40.00%</td>
<td>8</td>
</tr>
<tr>
<td>3 Frequently</td>
<td>30.00%</td>
<td>6</td>
</tr>
<tr>
<td>4 Always</td>
<td>5.00%</td>
<td>1</td>
</tr>
</tbody>
</table>

Number of respondents 20

20. How often do you take notes when reading Electronic text?

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Never</td>
<td>20.00%</td>
<td>4</td>
</tr>
<tr>
<td>2 Occasionally</td>
<td>75.00%</td>
<td>15</td>
</tr>
<tr>
<td>3 Frequently</td>
<td>5.00%</td>
<td>1</td>
</tr>
<tr>
<td>4 Always</td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

Number of respondents 20

21. How often do you highlight when reading Printed text?

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Never</td>
<td>30.00%</td>
<td>6</td>
</tr>
<tr>
<td>2 Occasionally</td>
<td>50.00%</td>
<td>10</td>
</tr>
<tr>
<td>3 Frequently</td>
<td>15.00%</td>
<td>3</td>
</tr>
<tr>
<td>4 Always</td>
<td>5.00%</td>
<td>1</td>
</tr>
</tbody>
</table>

Number of respondents 20

22. How often do you highlight when reading Electronic texts?

<table>
<thead>
<tr>
<th></th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Never</td>
<td>60.00%</td>
<td>12</td>
</tr>
<tr>
<td>2 Occasionally</td>
<td>30.00%</td>
<td>6</td>
</tr>
<tr>
<td>3 Frequently</td>
<td>10.00%</td>
<td>2</td>
</tr>
<tr>
<td>4 Always</td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

Number of respondents 20
### 23.
**When reading electronic texts, how often do you print it out for further reading?**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>% of Respondents</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Never</td>
<td>20.00%</td>
<td>4</td>
</tr>
<tr>
<td>2 Occasionally</td>
<td>45.00%</td>
<td>9</td>
</tr>
<tr>
<td>3 Frequently</td>
<td>30.00%</td>
<td>6</td>
</tr>
<tr>
<td>4 Always</td>
<td>5.00%</td>
<td>1</td>
</tr>
</tbody>
</table>

**Number of respondents** 20