# The Use of E-Textbooks in Higher Education: A Case Study

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**Abstract**

This paper will present a case study of e-textbooks usage in a 3,000 student, liberal arts college in Western New York, USA. Focus groups were conducted and a summary of results will be presented. Among the key questions are: Are e-books being used? What factors are considered in choosing an e-book over a traditional printed textbook? Is comprehension from an e-book the same as from a printed textbook? Are technology and users ready for broad adoption of e-textbooks? In summary, users may not be as informed as generally believed, the e-textbook technology is still advancing and educators and colleges have to be more involved in the transition process.

Keywords: e-book, e-textbook, higher education, technology diffusion, focus group

## 1. Introduction

E-book sales broke records in 2010 with a +164.4 percent gain, reaching $441.3M and comprising 8.32% of the trade book market. Amazon reported that for its top 10 best-selling physical books, customers bought the Kindle edition twice as often as the print copy. Kindle e-book sales also topped print sales of hardcovers and paperbacks for its top 25, top 100 and top 1,000 bestsellers.

In U.S. Higher Education, digital textbooks held a 3% share at the end of 2011. Reynolds (2011) predicts that over the next five years digital textbook sales in the United States will surpass 25% of combined new textbook sales for the Higher Education and Career Education markets, boosting revenues in excess of $1.5 billion. Inside of 7 years, they will become the dominant form in Higher Education textbooks.

A survey in the same white paper from Reynolds (2011) of 16,000 students, conducted by the National Association of College Stores, found that 42 percent of students have either purchased or at least seen an e-textbook. This represents an increase of 24 percentage points from 2007. Another survey by MBS Direct and Eduventures in 2010 shows that as many as 19% of traditional college students have actually purchased an e-textbook as part of their studies.

E-textbooks have many advantages over printed textbooks. They are environmentally friendlier; appeal to a generation accustomed to using electronic devices; can be revised and delivered quicker; and have a greater portability than printed texts. In addition, they are generally cheaper, require less storage space, and do not result in obsolete inventories.

Many states are also supporting open textbook creation. The State of Washington with a matching grant from Bill and Melissa Gates has funded the Open Course Library. The goals of this initiative are to reduce student costs, and to create engaging, interactive learning materials that will improve course completion rates. Florida has also supported the Orange Grove Texts Plus Project that seeks to provide low-cost, high quality alternatives to traditional textbooks. Digital textbooks are also easier to integrate with digital products than physical ones and, therefore additional learning opportunities become available such as links to explanatory material, iPod content, and interactive learning simulations.

The current e-Book market spans a wide variety of titles intended for leisure, professional and other purposes. It is important to note that the focus of this paper is on e-textbooks for use in colleges and universities. In the broadest sense, e-textbooks include any textbook or similarly structured text made available in electronic form. The research purpose is to understand the advantages and disadvantages of e-Textbook offerings to college students through focus groups. Following a literature review, focus group methodology and results will be discussed. The technology diffusion model and the Gartner Hype-Cycle were used to structure our findings. This report will conclude with a summary and will discuss opportunities for future research.

## 2. Literature review

### 2.1 Adoption of new technology

Drivers for change are frequently discussed in IT-literature as for example by Chwelos et al (2001) and center around inter-organizational, organizational and technological aspects. Inter-organizational drivers for change are oftentimes customers (or students), business partners and competing organizations. Organizational factors include management and administrational support, training, IT maturity and financial resources. Technological drivers are related to complexity and ease of use. For most of these drivers it is important to consider perceived risk, trust, relative advantage and the personalities and attitudes as part of the evaluation. In practice this means that we have to address all of the aforementioned drivers to initiate change.

Empirical evidence suggests that the ownership of technological products tend to stimulate the use of other functionally similar products (Atkin & LaRose, 1994; LaRose & Atkin, 1988). For example, cellular phone ownership and frequency of its use is predicted by computer ownership (Vishwanath & Goldhaber, 2003). This is an interesting point since most college students nowadays own a laptop, smartphone or another mobile device. Further it is commonplace that social media users spend great amounts of time each day on a computer. Therefore, considering the hours spent to stay in contact with friends online, read news or shop, we should assume that we are ready for an educational “online” revolution.

### 2.2 Usage and perceived benefits

A large online study by Gunter (2005) in the UK found that the main perceived benefit of e-books are that they can be obtained more conveniently than going to a bookstore and that they are often cheaper than printed versions. Further it became evident that early e-Book users regard electronic reading as something to use primarily for reference rather than for more extended leisure reading. Nonetheless, besides dipping in and out of reference works, e-textbooks show advantages by being able to search and annotate.

Definitions of e-textbooks differ. In this study, the definition of an e-textbook is borrowed from Hawkins: "an e-book is the contents of a book made available in electronic form" (Hawkins, 2000). Polanka (2011) further classifies types of e-textbooks. "E-references" are books which are used to find information that is factual in nature, which contain abbreviations, directories, etc. and are updated and published in regular intervals. She also mentions "e-literature", the typical fiction or non-fiction title typically not updated, and "e-monographs-in-series", titles that are published in separate parts or volumes.

Jamali et al categorized the main advantages of using e-textbooks into the following major categories: Online access, ability to search, cost, and portability. The main attraction of e-textbooks is that they are more accessible than print books. They are available 24/7 wherever and whatever time they are needed. This feature accounted for 55 percent of the advantages stated in the study. The ability to search, accounting for 15.4% of the advantages, allowed the user to find relevant content quickly using key work searches or phrases. The third category of cost accounted for 10.8% of the advantages. The study found that some e-textbooks were free or less expensive than their printed counterparts. Finally, portability was mentioned by 5.3% of the respondents as an advantage. They were lighter than their printed counterparts, and a number of books could be carried on a single computer, memory card or iPod. In addition to these major categories, a number of attributes were cited as an advantage by more than .5% of the respondents. These included: Eco-Friendly, Easier to Store, Multiple Users, the Ability to Copy and Paste text, and for some Easier to Read.

The main disadvantages cited by Jamali were categorized as problems of access, printing problems, saving and carrying problems. Long access times, technological problems or difficulties with certain platforms caused frustration on the user's part. Some users wanted to be able to print portions of the e-textbook to either read them while away from a computer or other device or simply to highlight or annotate them. Some e-textbooks are restricted in terms of the time they are available to students. Some students wanted to be able to save their e-books beyond the course semester. E-textbooks in html format presented problems in regards to pagination. Other students stated that being on a constant internet connection presented some distractions such as e-mails and web-surfing. Because of these distractions, reading time was longer and in many cases passages had to be re-read. Other mentioned disadvantages were: that an e-text could be accidentally deleted; it can be tedious if the Internet connection is not fast enough; it makes students over-reliant on computers; reluctant to use the library to do active research; and it reduces the control on plagiarism and increases the concern over copyrights.

Turner (2005) identified a number of the same advantages as Jamali et al. In addition, she notes that e-textbooks may have an interactivity component whereas a student can click on any word that is not understood by the user and be taken to an immediate definition of the word. Such items as music, sound effects, animation, pictures, hyperlinks, and supplementary material can be embedded into e-textbooks that provide a more diverse and richer learning opportunity. 3-D technology has also proven itself to be a valuable teaching tool. Some examples are the use of geographical maps, Air Traffic Controller simulations that allow the learner to observe how storm conditions influence landings of aircraft, and how medical students are allowed to interact with graphical representations of body parts. The ability to underline, highlight text and to make notes is also improving with e-books. In addition, Turner points out that e-books can create monetary advantages. They have a longer shelf life and can be updated electronically and be

redistributed. Disadvantages, however, are that credit cards are needed to purchase and download an e-textbook, lack of computer skills may limit access and/or research capabilities for some learners and access may be denied due to computer failure or other restrictions.

Quality control issues are also cited as a concern. Although e-textbooks are more easily updated than their print counterparts, Ardito (2000) cautions that it is important to know which edition the user has and whether or not the electronic text has been accurately maintained. The cost of the device necessary to read an e-textbook can be a deterrent for some users and may be a major drawback to widespread adoption. Another limitation is related to the Digital Rights Management (DRM) which is a general term for technologies that restrict access or use of digital content. Users frequently complain about the missing ability to download, to copy and the restricted printing capabilities.

The result of a broad University library study that included e-readers by Aaltonen (2011) in Finland reveals shortcomings related to the reader devices that create barriers for fast adoption. The utilized e-ink display technology was considered "rough", non-display like and was not what the students expected before participating in the study. All students expected faster response times and more functionality as available on a computer. Overall the use of common e-book readers did not lead to positive user experiences. Surprisingly, students in this study were reading most materials on computer screens, which are typically considered straining for the eyes.

### 2.3 Impact on teaching and learning

The expansion of e-textbooks raises several questions on the expected outcome regarding students' learning. First, learning is to a great extend a result of motivation; dedication and time spend by students on mastering a subject. Second, promotion of learning depends on the interactive content, usefulness, ease of navigation and format of e-textbooks. According to Yager et al. (2011), the way professors apply technology in class also makes a difference in the approach students choose. An e-textbook allows students to take self quizzes and exams, search for key words through a comprehensive texts, communicate with professors or classmates and search for educational information while preparing for a test or working on an assignment.
Technological innovation is already embedded in most students' way of life and it gives them instant access to current and diverse information from many sources. This scenario adds to education by being entertaining, fast and relevant, and being part of the virtual interactive environment. Wang and Guthrie (2004) researched 384 Chinese and American Students and found that motivation is a key factor needed for text comprehension. Rockinson-Szapkiw (2011) compared motivation of students that use e-textbooks and traditional books. The results showed that students using print books had a difficult time connecting with the content; students who used e-textbooks on the other hand seemed to appreciate user friendly search options and the overall experience.
Academics are still challenged by to efficiently measure technology's influence on higher education learning. Many articles discuss the advantages and disadvantages of e-textbooks and agree that the current letter grading system may not be the best way to reward performance in this new environment. O'Donnell and Sharp (2012) highlighted in their survey that students think technology delivers greater performance and is better for preparation at the masters level compared to traditional methods, see also (O' Donnell, 2008).

The successful introduction of e-textbooks in the classroom requires professors to utilize the vast amount of features available to engage students in the discipline. The success of a web enhanced experience will require professors to learn new skills in order to effectively interact with students. Sun et al. (2012) suggest that the positive impact of e-textbooks is directly related to the incorporation of features in the learning process.

As e-textbooks move into higher education, promoting their advantages of enhanced content, speed and convenience, they also customize the individual learning experience and presentation of topics, especially in less scientific disciplines. In addition, e-textbooks allow students to explore further, expanding their exposure to topics and different ways of thinking. Printed books and even more so e-textbooks, can be interpreted by students as a substitute for lectures according to Arend (2004), he argues that information and communication technology affect student's communication behavior and the way they engage in different activities. Sun and Tanguna (2012) also suggests that e-textbooks facilitate the communication between professors and students, as well as among themselves. Students start to collaborate with one another, sharing class notes, and building a social environment that promotes better learning. Typically e-textbooks have been very similar in content to regular print versions, so that improved learning cannot be expected without progress and changes in available software packages and formats.

An important aspect besides technology and end-user adoption is the way professors utilize and introduce e-textbooks in the classroom. Unfortunately, most educators grew up in a time before computers were commonly used and have never experienced the use of technology in a classroom. Hence it will require dedication, a motivated effort to understand the potential benefits and limitations and willingness to change and adapt teaching style and curriculum. Before books were widely available, the spoken word was the only efficient way to pass on knowledge and learn new material. Information nowadays is abundant and can be made available conveniently with many new features to enhance understanding. The way we think about teaching today has to change and focus on individual skills and abilities instead of just delivering knowledge. The Internet and tailored applications offer new ways to blend courses, stay in touch, engage students and provide adapted learning environments for different student needs. Professors and students alike have to prepare for the opportunities and challenges ahead.

### 2.4 E-Textbook providers and alternatives

Due to the increase in textbook prices over the years, services that buy back text books or rent them for a certain period became popular, however, this development will serve only niche demands in the long run and will be replaced by digital offers for obvious reasons.

Publishers and start-ups are working on new e-textbook offerings. CourseSmart is one of the larger ventures which offers e-textbooks supported by partners such as Pearson, Cengage, McGraw Hill, Wiley and others. Recently also Chegg.com started adding an e-textbook component to their website, kno.com is another provider to consider.

In addition, publishers started to create virtual environments which in essence mirror the well-known learning management systems (LMS) BlackBoard and Moodle. This development is most likely linked with the intent to offer a complete and integrated set of products and services including e-textbooks, automatically graded homework, exam functionality and additional resources for students. Pearson started a LMS service called OpenClass, WileyPlus offers e-textbooks and online assignments and Cengage started MindTap. A trend to multimedia

integration and interactive exchange of information between students and instructors can be noted. Major publishers offer test packs for third party LMS solutions and applications that integrate their online environment with BlackBoard.

Inkling is a new venture often mentioned related to textbooks, they label their products "smartbooks", which offer features above and beyond scanned printed books. The goal is to create a union between right and left brain thinking and to stimulate learning in new ways by using the capabilities offered by modern computers. In the medium-run our perception of books as they are still available today will change, this is certain.

Flat World Knowledge is a provider of textbooks that can be accessed for free online. Printed copies can be ordered for a fraction of the costs of a regular textbook. The idea to customize books and use certain chapters only is not new, Flat World takes it a step ahead by offering instructors to modify the text of the available books to tailor content for a specific course. Another open source website for learning materials is MERLOT, serving staff and students of higher education from around the world to share their learning materials and pedagogy.

Google Books currently provides over 20 million scanned books online. These books are scanned and converted via optical character recognition. Google estimated in 2010 that there are about 130 million unique books in the world. Books in the public domain are fully available and free for download. For in-print books, Google limits the number of viewable pages through a variety of access limitations and security measures, some based on user-tracking.

## 3. Hardware and costs

According to the Global Internet Phenomena Report Fall 2011 from broadband solutions provider Sandvine (2012), the post-PC era has been officially embraced.. For the first time more overall content was delivered to tablets, mobile devices, smart TV's, etc. compared to traditional desktop and laptop PC's. This trend is also visible in the classroom where more and more students use tablet computers. Using a PC requires a fixed location and it is formal in a way since devices are being used during certain times. Only limited ways of user-device interactions are possible, typically performed with keyboard and mouse. Mobile devices on the other hand can be used at any place, the use is more casual and can be done at in-between moments. Further, interactions are more natural through voice recognition, touch screens and motion sensors.

The typical cost of textbooks of about $1000 per year can be cut in half with e-textbooks according to Rickman et al. (2009). Yet e-textbook sales have been moderate in the past. The study also points out that students only preferred e-textbooks to print versions when cost savings could be achieved. Some of the reasons for slow sales in this particular market are related to the cost of devices, available content and features. It will take time to change user behavior and of course also the attitude and influence of professors, colleges administrators and parents. Additional costs of a device have to be balanced with the need to use it for e-textbooks and other applications. There are not many college students who do not have a mobile device or computer available already. This means that a new purchase might not be necessary in the process of transitioning to electronic media; decisions for new or replacement devices can be made with the intent of using e-textbooks. Most mainstream textbooks are already available in Amazon's Kindle e-book format, and it is remarkable that not more students take advantage of this offer.

Kindle e-textbooks are 20% to 60% cheaper than a new print version; this by itself can pay for an e-textbook reader within two semesters. Another option can be renting e-textbooks for a specified time which will further reduce costs. Free applications are available that allow for reading Kindle e-books on regular PC's and all common mobile device platforms, an option which makes them more convenient, even on an existing device without initial investment. However, the cost of the device necessary to read an e-textbook can be a deterrent for some users and may be a major drawback to widespread adoption.

## 4. Methodology

According to sun-associates.com, focus groups are efficient in gathering feedback and comments on a topic. They allow participants to express spontaneous reflections on a topic and provide information about perceptions. They are widely used by companies to assess customer opinions and to develop new products and services.

The qualitative information of this study comprises the results of three focus groups. Each group consisted of five or six randomly selected students from a liberal arts college in Western New York. The objective was to explore students' perceptions in higher education on the awareness, usage, hardware, learning, advantages and disadvantages of e-textbooks.

The process of conducting these focus groups followed directions of a qualitative survey starting with the definition of purpose and objectives, appropriation of time, allocation of a site and introduction of appropriate open-ended questions which allowed students to elaborate on the topic from general to more specific aspects.

The time established for each focus group was 90 minutes, which included introductory questions on the diffusion of innovations such as the personal usage patterns of telecommunications devices. The facilitator dedicated special attention to assuring that all participants were comfortable, that they had the opportunity to be heard, and that all sessions followed the same sequence. The sessions were recorded with the authorization of the participants.

In an initial question, participants had to assess themselves as innovators, early adopters or laggards regarding the usage of new technologies. The opening question probed students for the potential of accessing e-textbooks instead of printed versions. The following question examined if students were aware of e-textbook availability both from third parties and through the college library, and to what extend they were encouraged by faculty to use e-textbooks. Students were also asked about their general knowledge of open access educational platforms. The next discussion point was aimed at learning process and outcome from a student perspective. Finally, the facilitators probed for advantages and disadvantages of e-textbooks and asked students to rank them

At the end of the sessions, each group was asked to provide control variables on the number of hours of computer use per day, frequency of online research for educational purposes, usage of e-references, comfort level on reading from the screen and overall user-friendliness of e-textbooks.

## 5. Focus Group summary

All data was collected through the use of focus groups. The focus group questions and responses are found in Appendix A. The three authors each conducted a focus group with planned attendance of 6 students per group. Because of absentees, two groups only had 5 participants. Five males and 11 females made up the 3 groups. This reflects the general demographics of the College in regards to sex. The students were provided with an explanation of the purpose of the focus group and provided with the definition of an e-textbook. After this introductory period, the participants were asked to place themselves on a "technology diffusion graph" to understand their general attitude towards new technology.

The model described by Rogers (1995) was used to get an indication of the participant attitude towards their own general speed of adoption when it comes to new technology. The basic concept includes four main elements that influence the spread of a new idea: the innovation itself, communication channels, time, and the social system. Following this approach, individuals progress through five stages, typically defined by subjectivity, on their way to adopting new innovations, influenced by the social system and external opinion leaders. Categories used to describe and understand the process are Innovators (1), Early Adopters (2), Early Majority (3), Late Majority (4) and Laggards (5). The results of the relatively small sample that is available to us shows that there is no obvious difference between females and males in their attitude towards adopting new technology and innovations. On average, females have a mean value of 3.2 and males have a mean value of 3.4 (Figure 1).

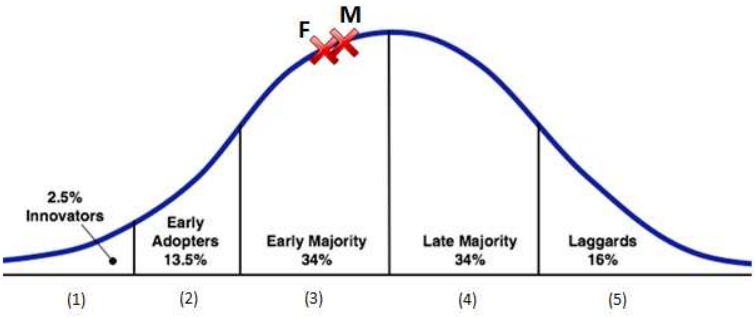


**Figure 1: Diffusion of Innovations – Participants' self evaluation**

One student categorized herself as an early adopter, 9 chose early majority and 6 chose late majority. There were no significant differences found between males and females. Therefore, it appears that the majority of the students (10/16) adopt technology before the average person.

In response to the question on how the participants felt that the new world of technology was influencing the way they communicate, there were both positive and negative responses. On the positive side, they believed that it aided globalization by reducing distance and allowing communication without the added expense of travel. It also provided companies with more opportunities to sell their products, and helped individuals communicate easier with their families and friends. However, on the negative side, there were concerns expressed about privacy, and the fact that relationships were becoming less personal because people communicate less on a face to face basis. This can lead to misunderstandings due to the lack of being able to hear intonation in speech and see a person's body language. In addition, they expressed concern about being perpetually connected and never having any downtime.

The next set of questions was designed to determine how aware the students were of the different options for obtaining textbooks--purchase a printed text, rent it or purchase an e-textbook. Some students appeared to be sophisticated in their ability to purchase e-textbooks. Many related the sites that they use to obtain the e-texts. Others, however, did not have any knowledge of where to purchase e-textbooks or even if their required texts were available in electronic form. They all agreed, however, that if an instructor listed the various options to purchase a printed test, rent, or buy access to an e-text, they would be willing to consider any of the forms. They also believe that instructors should make their students aware of the different options.

The students represented a number of different majors such as business, accounting, physical therapy, and natural science. The usage of e-textbooks in these majors varied widely. The Accounting majors were required to purchase a homework application and the e-textbook was bundled with the application. Others related that if a textbook was needed during class time, sometimes it was necessary to have a printed text to refer to problems, especially when the instructor was wary of students being online during class time. The most common usage of the e-textbook cited by all majors was the ability to quickly look up definitions of unfamiliar words.

When queried about hardware, students used tablet computers, iPads and Kindles to access their e-textbooks. The iPad was mentioned as the favorite and easiest to use. Most students felt that they tired easier when reading from a computer screen. The fact that they had access online also provided more distractions and they had a shortened attention span. Most students, if they were able to use an iPad or Kindle for more than one class, did not mind the additional cost of the hardware.

The impact on student learning came in many forms. Links to definitions and videos helped with comprehension of the material. Students could refer to the e-textbook and its resources if they did not understand a concept and did not have to ask an instructor to explain it more than once. Many e-textbooks also had links that would take the student to the exact part of the text that would demonstrate how to solve a problem or answer a question.

Students were then asked to rank the advantages and disadvantages of e-textbooks. The advantages were that they were convenient, cheaper than other formats, searchable, portable and organized. Disadvantages included the fact that an internet connection was needed in most cases to read the text, the student only had temporary access, pages can be numbered differently than in a printed text, it was tiring to read them, and being online provided distractions. Finally, students were asked where they perceived e-textbooks to be on the “Gartner Hype-Cycle” to understand their perception of e-textbook technology in terms of usefulness and its stage of technological maturity. This observation can be contrasted with the self-classification of students on the technology diffusion graph.

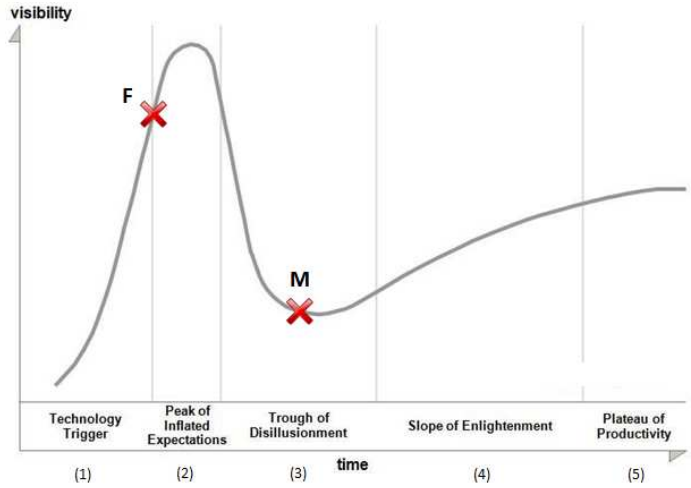


**Figure 2: Gartner Hype-Cycle - Ratings e-textbook technology**

As Sanders (2011) points out, life cycles are useful to understand how products and technology evolve over time and help to track the process of diffusion of innovation. Models like the one described by Rogers (1995) are commonly used in many disciplines and frequently appear in marketing textbooks, for example to set a baseline and further define strategic measures necessary, per product group and market. An adoption of this model is Gartner's Hype Cycle which is a graphic representation of the maturity of specific technologies and can be used by corporate decision makers when to invest in a new technology. This second model was used to answer the question on how each participant perceives e-Textbooks according to this framework after discussion of major e-textbook aspects in the focus Group. More information about this model can be obtained from Fenn and Raskino (2008). The results indicate that on average the perceived locus is somewhere in between "Peak of inflated Expectations" and "Trough of Disillusionment", with males scoring higher on average (3.0) toward maturity of this technology than females (1.5). Nine students chose the "Technology Trigger" stage, 2 chose "Peak of Inflated Expectations", 4 thought they were in the "Slope of Enlightenment" phase and 1 picked the "Plateau of Productivity" (Figure 2).

| | Innovation | Hype-Cycle |
|---|---|---|
| F (11) | 3.2 | 1.5 |
| M (5) | 3.4 | 3.0 |

**Figure 3: Averages of evaluations in Figure 1 & 2**

To summarize, the results from our sample show (a) that young and progressing college students are moderately traditional in their own attitude towards technology and (b) that the e-textbook technology needs further improvements and behavioral changes on the user side to be fully accepted. These assumptions are based on a small, non-random sample.

## 6. Conclusion and further research

In a biography by Isaacson (2011), the digital textbook market was quoted by Steve Jobs as a "$8 billion market ripe for digital destruction", a statement with validity.

On top of the list of advantages were cost and convenience of e-textbooks, while disadvantages were related to the fact that oftentimes Internet access is needed to use electronic versions, the unfamiliar and different page layout and the limitations of temporary access. In summary, we are well on the way but not there yet. Colleges, universities and its staff have to understand and promote advantages for students, be it cost, convenience or enhanced learning. Students as well as instructors may have to break with old habits and publishers have to find a way to deliver stimulating content without the current limitations for end-users due to rights management. There is already a lot of momentum in this market and once some of the technical and behavioral roadblocks will be lifted, another element of the educational landscape will have changed for good and for the better.

This study provided additional support regarding the use of e-textbooks. Focus groups, common in marketing research, allowed for an interactive way to compile all important advantages and disadvantages of e-textbook use as seen by sixteen college students. Most other studies employed a more static approach through the use of questionnaires. However, similar advantages and disadvantages emerged.

The integration of Rogers' diffusion of innovations and the Gartner Hype-Cycle approach added a new dimension to previous research. By identifying behavior of students in adopting technology we found that participants classified themselves on average as "Early Majority". Students who have been raised with the benefit of computers in all aspects of their lives are more apt to adopt e-textbooks. Also, by placement on the Gartner Hype-Cycle at the end of the focus group, we found that that on average males believed e-textbooks to be in the "Trough of Disillusionment", and females believed that e-textbooks are a technology at the "Peak of Inflated Expectations". In essence, both groups realized that e-textbooks still have some disadvantages which need to be resolved.

The findings in this study serve as the basis for future research. All students in this study believed that professors should inform them about the availability of e-textbooks for each course. A future research question could address if instructors, or which group of instructors, would be willing to actively introduce e-textbooks. Does the instructor's background hinder or help the adoption of e-textbooks, and what is the influence of college or university administration in this process?

Because e-textbooks can be purchased without going through a college bookstore, it may also be interesting to research the changing business plans of college bookstores to ensure their existence in the future. What types of products and services will be developed when their primary sources of income will not be through the sale of printed textbooks? In this context, a survey comparing usage patterns and attitudes in different academic departments could be used to shed light on this issue.

A third line of research may be to ascertain if students have used e-textbooks and related applications within their elementary and high school careers and to compare this fact to their current behavior. Would they continue using e-textbooks in the future? In the wake of

longitudinal projects in education, research questions designed to withstand the test of time could help to detect crucial trends in this still developing field.

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**Appendix A: Focus Group Responses**

Demographics:

- Gender: Female (11), Male (5)
- Major & Status: Business Administration (8), Accounting (2), JU(3), Physicians Assistant (2), Natural Sciences (1)
- Computer use: Once or more a day (all)
- Internet use for educational purposes:
  Once or more a day (5), A few times a week (7), A few times a month (3), Hardly ever (1)
- Level of comfort using online sources: Very comfortable (8), Somewhat comfortable (7), Not very Comfortable (1)

Q2: How would you classify yourself in terms of technology adoption (curve)?

- "I like learning about new things and how they work. I tend to have the newest technology before the average person and I can pick up on new things fast"
- "Depends on the price, if cheaper than a regular textbook, I will make the transition as soon as I can".
- "As a college student in my age range, we are more likely to adopt and seek technologies that make our lives easier".
- "I like to have new technology before everyone else, but I usually hear about it through a friend or family member who already has it".
- "I fell as though I do not need these products right away. By waiting to purchase these products or ideas I save a lot of money. There will always be something else coming out that is better than what was made previously".
- "I am so used to using books the old fashioned way that I don't really want to change. I like actually having the book in front of me and reading it. I think that when everyone else is trying it out, I may give it a try just to see if I may like it better".

Q3 i): How do you feel about this new world of technology influencing the way we communicate?

- Social networking out of control, people using it during work hours. Businesses are advertising too much online, almost like turning on the TV.
- Good for companies, more opportunity to sell products.
- Much easier to communicate now with computers. Allows for globalization, online meetings, etc..
- No privacy, no escape, more informal, instant communication,
- Reduce distance – connect with family through texting and voice
- "Online text attitude can be misunderstood such as capital letters means that people are angry, but they aren't."
- Going international helps people to feel less homesick.

Q3 ii): What are your thoughts about e-Textbooks?

- Cheaper, easier to carry.
- Reading format not good, should be more similar to an actual book (compared to Connect online books).
- Some glitches in the software, computer can crash.
- Like printed textbook better, because I can write in it.
- Need offline access or textbook that can be downloaded.
- Convenient when travelling but cannot access online content when on a plane.
- Convenient, otherwise the same but cheaper.
- Usefulness depends on class, not so good for accounting.
- Problem if reading the chapter and if need to access statistics table and use Excel at the same time all on one screen.
- I am getting confused about where I am when reading a Textbook.
- Publishers should offer buy two e-Textbooks get one free.
- E-Textbooks have more options and can combine content as for example video, link to related examples, explanations and step by step instructions.
- I don't like them. Too hard. Pages are different from real hard copy text book.
- I like reading printed books, not computer screens. I get tired
- But, I like that it is cheaper. The difference paid for my Kindle reader.
- It depends on the price. If text books are 20 dollars more, I rather have printed textbooks.
- I hate scrolling down pages. It doesn't flip the pages like a book.
- When the semester if over, the book disappears. You don't own the book.

Q4 i): How aware are of of different Textbook options (e-Textbook, renting printed textbooks, etc.)?

- Renting is a hassle, buying is better. Have to give book back after deadline, difficult if same book is needed for two semesters. Price difference is marginal or non-existent when the same book s needed for two semesters.
- Chegg.com is a good place to rent books.

- I started using Amazon after I became savvier and compare options and costs.
- Bookstore does not pay enough money for used books.
- Amazon has e-Textbooks to download at about ⅓ of the cost. A Kindle Fire cost only $200, this investment can pay off after buying three e-textbooks for it.
- I always rent. I don't know where to get e-textbooks.
- Only some books are offered. I like to sell it back. Whatever is cheaper
- Used books are a little more expensive than rented, plus I can get some money back.
- I bought it the first time and didn't like it and this is the last time I'll do it.
- I was influenced by my brother who was in college.
- I only know e-textbooks through publishers.
- I use cheapesttextbooks.com and compare prices.
- Always compare e-textbooks and rent.
- Only know them through Connect – the e-textbook came with Connect. I printed it, but didn't like it.

Q4 ii): Should professors introduce different formats of Textbooks to students?

- Yes (all). Two students bough e-Textbooks because it was mentioned in the syllabus.
- More affordable options are good and may lead to more students having any textbooks available in class at all. An estimated 85-90% of students have textbooks available; a declining trend can be assumed.
- Keep access to e-Textbooks open, not only for a limited time (similar to iTunes).
- If professors recommend it, I would take a look at it.
- Yes, if professors give me the option. If professors are comfortable with computers.

Q5: How are textbooks being used in your program and why?

- Taking notes on paper next to the e-textbook to understand the chapter structure.
- Hardest part is to work with e-Textbooks, not always user friendly.
- Mostly used for reference.
- When studying, I am using resources in the following order: 1) my notes, 2) slides, 3) Textbook as a reference. (majority of participants)
- You don't always know where you are in an e-textbook chapter.
- Good in combination with Connect online homework. Direct link to the part of the book that is needed and additional explanations are available.
- Depends on the class. When I was PT I rather print books. I like to do Math in printed books.
- Convenience - To have all e-books in one place.
- If high schools adopt it, everything will change.
- I only have my Kindle. Basic graphs.
- I like when you put the cursor on top of words and get the definitions. Search for certain topic
- Portable. I can use at work and prepare flash cards for key terms
- Exercises are hard to find due to paging system. I never know where I am when scrolling. By page would be better.

Q6 i): Hardware: What would be the best equipment?

- Definitely a tablet computer, iPad and Kindle are good platforms, especially because of the availability of e-textbooks.
- "Can use them to access BlackBoard as well."
- iPad seems to be the favored, but most expensive platform.
- "Before" were computer. iPads navigate with your fingers.

Q6 ii): Hardware: How comfortable are you reading from a screen?

- "Get tired faster and have to take breaks."
- "Like reading from a tablet computer in bed at night without additional light."
- Retention about the same (all).
- Can be distraction, but risk is equally high when using a cell phone hence not perceived as a problem.
- Easier to procrastinate work since a computer is always available to look at the material.
- I get distracted and see myself doing something else than studying
- I like the isolation of a text book, easier to keep focus.
- If I don't print it, I won't read it. I can read one article, but 5 or 6 pages I will have to print.
- I focus less on computer. I forget. Computers are associated to exciting things.
- Computers shorten attention span. I get tired.

Q6 iii): Hardware: Are you willing to pay the additional costs?

- "Not worth for one semester only to buy a tablet computer, otherwise no problem."
- "Can use tablet computer for many other applications as well."
- I always go with the cheapest.
- No. I rather pay 20 bucks more for a hard copy.
- Pages of e-book should be the same as hard copy.
- I like that I get more use of my iPad

Q7: What are learning results and the impact on the process of learning?

- McGraw Hill's Connect homework provides link to the needed textbook part.
- Depends on presentation of textbook and other resources. Statistics textbook has good examples already. Content more important than form of delivery.
- Link to video's and step by step instructions can make a live instructor partially obsolete.
- "I am afraid to ask an instructor twice about the same issue that I don't understand. Online resources can support learning in these cases."
- I couldn't print. I couldn't do the exercise. I am willing to pay more for hard copies. I don't read e-textbooks.
- E-books will help to read definitions.
- I wouldn't learn because of too many distractions. Computer is for fun things.
- I didn't get the best grades when I used it. Class adopted it. Students didn't.
- I have it, but I don't look at it for more than 5 minutes, because I am not used to it.
- Text book is more relaxing
- I would like to be able to connect with professionals who can explain more in-depth.

Q8: Please rank the Advantages and disadvantages of textbooks?

Advantages (D): 1) price, 2) homework integration and additional explanations, 3) convenience, 4) Compatibility between hardware platforms (laptop, phone, tablet computer), 5) E-Textbooks deliver information in "chunks"
Advantages (P): 1) Convenient; 2) Cheap; 3) Search key terms; 4) Portable; 5) Quick and fast; 6) Organized
Advantages (K): 1) Cheaper, 2) Search-able, 3) Portable

Disadvantages (D): 1) Need Internet for access, 2) Only temporary access, 3) Structure of an e-textbook chapter sometimes hard to follow
Disadvantages (P): 1) Unfamiliar; 2) pages are different; 3) Don't retain as much information; 4) Distractions; 5) I get lost in the middle of the chapter; 6) Hard to read long sections.
Disadvantages (K): 1) Internet needed, 2) Only temporary access, 3) Page numbers are different, 4) Distractions from being on the Internet.

Q9: Where do you perceive e-textbooks on the Gartner Hype - Cycle?

- "Not all books are available as e-textbooks. I feel e-textbooks are just starting and need to improve".
- "It is not a mainstream technology yet but people are beginning to understand the basic and are starting to adapt."
- "I think it is an affordable technology, but not everyone knows about it or desires it just yet"
- "I think it hasn't reached its peak yet, but will very soon. I think that it will eventually mature and may be very common".
- "I think that e-books are starting to get noticed even more now. I think that more people are starting to try them out because they are realizing they are more affordable and convenient".
- The e-book has become easier to use because of iPads and Kindle Fire. This has made e-textbooks a better and easier way of learning.