

# The Use of e-Textbooks on the iPad to Support Post-Secondary Students with Disabilities

Linda Chmiliar

Athabasca University

[lindac@athabascau.ca](mailto:lindac@athabascau.ca)

## **Abstract**

As e-textbooks become increasingly available, many post-secondary institutions are looking at adopting digital text for use in courses. Research is beginning to emerge as to the effectiveness of digital text for students. Unfortunately, there is still limited data regarding the use of e-textbooks by post-secondary students, and less information regarding the use of e-textbooks to support students with disabilities. The purpose of this exploratory research was to investigate the affordances and limitations of three e-textbooks apps for post-secondary students with learning disabilities in reading, from the students' perspective.

## **Keywords**

e-textbooks, post-secondary, disabilities, learning disabilities, reading

## Introduction

Textbooks have been traditionally been used in post-secondary courses to provide students with the majority of the content in courses. In the last few years, many textbook publishers have developed digital versions of their textbooks (e-textbooks) either through their own software application, or through another provider (e.g. *CourseSmart*). The impact of the move to digital textbooks on post-secondary students has received some attention, but less is known about the impact on post-secondary students with disabilities. This study examined the perspectives of twelve post-secondary students with learning disabilities as they read passages for comprehension in one of three e-textbook platforms.

### *Background*

There is a growing body of research that examines the impact on the use of e-textbooks with students at the post-secondary level. The focus of these studies is generally on student performance and satisfaction when using e-textbooks. The results reported are mixed (Chulkov and VanAlstine 216). Chulkov and VanAlstine (221) reported that they did not find any significant impact of textbook format on the classroom performance of 158 students. Falc (1) surveyed a group of students regarding their use of an e-textbook on a laptop and found that many of the students experienced some frustration and technical difficulties with the e-textbook. However, most of the students reported that the e-textbook was helpful for assignments and studying. Rickman et al. in a study with post-secondary students, found that the majority of students in their study reported that e-textbooks outperformed physical textbooks and they preferred the convenience of the e-textbook (Rickman et al.). Jesse (235) found that 37% of the students in their study reported that e-textbooks had a positive effect on their learning and 41% stated there was no difference. In another study involving multiple post-secondary campuses,

Baek and Monaghan reported that more than one third of the students were satisfied with the e-textbooks and more than one half of the students indicated that the e-textbooks were easy to use (Baek and Monaghan).

For the increasing number of students with learning disabilities in post-secondary education, e-textbooks may offer an alternative way to access printed material. Students may be able to take advantage of the built in abilities and functions of the text to support their learning (Cavanaugh 56) as they are able to change the size of the text and the page display to meet their specific reading needs (Cavanaugh 59). Digital text may also offer the ability to write and save notes, highlight text, and bookmark pages which may help to increase the comprehension of the struggling reader. Dictionaries that allow the user to get a definition instantly can assist students with comprehension difficulties (Cavanaugh 60). E-textbooks that offer text-to-speech functionality could also assist students with decoding difficulties to understand text. These unique features and capabilities may be able to provide needed accommodations that “many students need to be successful with text-based materials” (Cavanaugh 61).

One study was found that focused on post-secondary students with learning disabilities and e-textbooks. Nee (vii) conducted a study that examined the experiences of eight undergraduate students with learning disabilities using electronically formatted textbooks. The results indicated that the use of the e-texts helped to improve their academic work, leading to increased self-esteem and self-confidence. Nee commented that there is a lack of research on e-textbooks and learning disabilities and that minimal research exists on the types of e-texts students perceive to be most beneficial (4).

The studies examining the use of e-textbooks with post-secondary settings typically focused on the use of e-textbooks on laptop computers. Little information on the use of e-

textbooks on mobile devices like the iPad is available. The number of college students who say they own tablets has more than tripled in one year and students “increasingly prefer the devices for reading” (Desantis). Bush and Cameron (71) found that the majority of students “perceived electronic course materials on an iPad in *iAnnotate* to be as good as or better than printed course materials” Students and faculty preferred and recommended digital course materials on a tablet devices. In a study by Geist (758), students thought that the iPad was most beneficial as an e-reader. Martinez-Estrada and Conoway (125) reported the successful use of *Kindle* eBooks on campus to support learning and course outcomes.

This study will be one of the first to look at the possible impact of the use of e-textbooks on the iPad on post-secondary students with reading disabilities from the perspective of the students.

### *Method*

This qualitative study with twelve post-secondary students with learning disabilities in reading, investigated the affordances and limitations of e-textbooks as perceived by the students. Each student was asked to read three e-textbook passages in similar or identical books on an iPad in either the *iBooks*, *CourseSmart*, or *Pearson eText* app. The first passage was plain text and each participant was asked to read the passage and answer comprehension questions. The second passage was comprised of text annotated by the researcher, and each participant was asked to read the passage then answer questions. In the third passage, the students were asked to use the built in functions of the app such as highlighting and note-taking as they read. The students were provided with a demonstration of how to use the functions prior to reading, and were given time to practice. Following each reading task, a semi-structured interview was completed that focused on the student’s experiences with the passages and the perceived

affordance and limitations of the e-textbook. The data was analyzed using a qualitative approach to develop an understanding of the common themes that explain student's experiences with e-textbooks.

### Results

Seven female and five male students participated in the research with an age range of 22 to 62 years of age and an average age of 36. All of the participants had a diagnosed learning disability in reading and were registered in at least one post-secondary course (see table 1).

Table 1. Student Information

Student	Age	Gender	Disability	Technology Currently Owned	e-Textbook
1	35	male	Dyslexia, ADHD	smart phone, android tablet, Kurweil software	<i>CourseSmart</i>
2	32	female	reading, ADHD	smart phone, desktop PC, android tablet, eReader	<i>CourseSmart</i>
3	54	male	reading	iPhone, android tablet, laptop, desktop PC	<i>CourseSmart</i>
4	22	female	reading	laptop, iPad, iPhone, Read and Write Gold software	<i>CourseSmart</i>
5	23	female	reading, anxiety	iPhone, laptop, desktop PC	<i>iBooks</i>
6	62	male	reading	iPhone, android tablet, laptop computer, desktop PC	<i>iBooks</i>
7	57	female	reading, memory	Desktop PC, smart phone	<i>iBooks</i>
8	33	male	reading, writing	Desktop PC, android tablet	<i>iBooks</i>
9	22	female	reading	Macbook, iPad mini	<i>iBooks</i>
10	56	male	reading, ADHD	laptop, iPad, iPod	<i>iBooks</i>
11	25	female	reading	iPad, laptop, desktop PC	<i>Pearson eText</i>
12	43	female	reading	MacBook	<i>Pearson eText</i>

Students 1, 2, 3, and 4 all read and responded to textbook passages in an e-textbook in the *CourseSmart* app. The most consistent concern among these students was that they were not able to adjust the background, contrast, font color, or font size in an effective way, and they had to scroll off the screen to the right to read if they made any adjustments. Student 1 was very unhappy with the zoom function as it did not remain from page to page. Student 1 also indicated that he likes to adjust the contrast and sometimes read with white text on a black background. All of the students found the highlighting function in *CourseSmart* to be very awkward. Student 2 reported that the highlighting was “very irritating” as the block highlights were “not intuitive.” Student 3 indicated that she found the highlighting to be “awkward” and that it took her “out of the flow of reading.” Student 4 did not like the functionality of the highlighting in *CourseSmart* and said that she likes the ability to highlight in different colors, which was not available. All four students said, that although they like to take notes to study, they did not like the functionality of the note-taking as the note-taking window covered the text they were reading and wanting to take notes on. Student 1 summarized his experience by saying that the note-taking was “annoying.” Three of the four students indicated that the ability to export highlights and/or notes would be essential for studying. Three of the four students also reported that having quick access to a dictionary was very important as it helps them comprehend the text. In addition, three of the four students reported that text-to-speech helps them greatly in their reading. The dictionary, text-to-speech, and export functions were not available in *CourseSmart*. All of the students indicated that they were interested in reading textbooks on the iPad, but would not want to use the *CourseSmart* app to do so due to the difficulties that they experienced.

Students 5, 6, 7, 8, 9 and 10 all read and responded to textbook passages in an e-textbook in *iBooks*. All of the students reported that the highlighting and note-taking in *iBooks* was very

easy to use. However, two of the students indicated that they would have to use the tools more to become proficient, and Student 6 found that trying to take notes on the iPad while she was reading caused her anxiety. Later in the interview she reported that she could learn how to take notes in *iBooks* if she had to. All of the students liked how the app compiled the highlights and notes, but similar to feedback about *CourseSmart*, students reported that exporting the notes and highlights would be important for study purposes. Three of the four students indicated that the text-to-speech function helped them with their reading, but these students only required this support for single words and phrases. Student 5 found the voice in the text-to-speech to be “annoying” and indicated that he would not use the function for that reason. Student 8 was interested in using the text-to-speech even though he thought that the speech sounded very unnatural. Student 5 adjusted the brightness of the screen as he was reading, as normally reading on a desk top computer gives him headaches. Students 6 and 7 preferred the sepia background and Student 7 said it was “easier on my eyes.” Student 9 indicated that she liked to dim the background when reading, and needs to adjust text size. Students 9 and 10 found the dictionary to be very helpful for reading comprehension and Student 10 liked the search function. These features were all readily accessible in *iBooks*.

Students 11 and 12 read and responded to textbook passages in the *Pearson eText* app. Student 11 thought that the highlighting in this e-textbook was okay to use, but in order for highlights to be useful for her she would like the ability to convert the highlighted notes into something at the conclusion of the reading. This was different from Student 12 who indicated that the highlighting in this app difficult and was way too time consuming for her to use. Student 11 did not try the note-taking as she prefers highlighting as a learning strategy with reading. Student 12 also did not try the note-taking function as she thought that that using the function

would distract her from her reading. Student 12 also reported that the ability to get a definition of a word immediately was very helpful for her. At the conclusion of the reading, both students reported that they would not want to read using the *Pearson eText* app as they would not be able to replicate what they do on paper and as Student 12 said “I do not want to expend mental energy on things other than retaining what is read.” Both students also indicated that having to scroll off the screen to read each sentence something they were not willing or able to do.

### **Discussion and Conclusion**

All of the students thought that completing reading tasks on the iPad was a huge plus for them due to the mobility of the device. One student commented that she liked “not having the weight of all those books.” Several students commented that the text on the iPad was easy and comfortable to read, and it was almost like reading a book. A definite preference for reading on the iPad versus on a computer or android tablet was expressed. One student indicated that the computer gives him migraines and that he thought that being able to adjust the brightness of the iPad screen would help with his reading.

All of the students found it easy to navigate through the text and several reported that the e-textbooks were all very user friendly in terms of navigating from page to page. The two students who had not previous exposure to any mobile technologies found the touch on the iPad a bit tricky and indicated that they would have to learn how to tap to navigate before they could become proficient users of the features in the e-textbooks. Other students indicated that they would have to practice using the note-taking and highlighting features to be able to integrate them effectively into their reading.

There were considerable differences reported in the use of highlighting while reading across the three e-textbook platforms used. Students found the highlighting function in *iBooks* to

be very easy to use and one student indicated that she found it easier to use than the assistive technology Kurzweil program on her computer. This was very different for the students reading in the *CourseSmart* and the *Pearson eText* app who found the highlighting function to be very awkward to use. One student reported that trying to use the highlighting function in *CourseSmart* took her out of the flow of reading and she continually had to reread the text to find her place. Another student reported that highlighting was too time consuming in the *Pearson eText* app and she found the highlighting to not be intuitive.

The students also expressed differences of opinion regarding the note-taking function. Several students really liked the note-taking function in *iBooks*. They found it easy to use, and the function made sense to them. Several students commented that they “loved” the compiled list of notes made in the *iBooks* and found it to be “wonderful.” Another student thought that the note-taking function would help her to not lose her notes, which was a consistent problem for her. Students reading the e-textbooks on the other platforms did not like the note-taking very much. One student indicated that when he used the note-taking function he could not move the note to see text underneath. He thought this would hamper his reading considerably. Another student indicated that when she tried the note-taking she had to start the reading again from the beginning. One student expressed concerns about the move to e-textbooks. She felt that she finally had a note-taking strategy that worked for her that helped her cope with her disability and if she moved to e-textbooks she would have to find another strategy. Several students indicated that they would have to learn how to use the note-taking function effectively.

Another feature that the students identified as helpful was the text-to-speech function in *iBooks*. Students really liked the ability to have instant access to text-to-speech to read words

and phrases they were having difficulty with. They also liked the ability to change the type and speed of the voice, although they found the voice to be a bit unnatural.

Overall, the post-secondary students with learning disabilities in reading reported very positive views of their reading of e-textbooks on the iPad. One student said, “If this was available when I was younger, I would have gone into law school.” Another student reported that she would “rather read textbooks on the iPad rather than the computer.” She felt it was easier to work on comprehension, easier to sit longer, and the number of pages that she had to read was not intimidating. Still another student said, “I don’t think I would have passed my English course without reading on the iPad.” The research also revealed that not all e-textbook platforms are created equal. The students felt that the highlighting and note-taking functions could be very useful supports to them in their reading, but these tools did not function well in some platforms, and in some cases became a hindrance or deterrent to learning. In addition, students reported that they felt they needed to learn how to use these functions effectively.

Post-secondary institutions are moving to the use of e-textbooks in courses. Unfortunately, some of the e-textbook platforms have poorly designed features that can cause students with learning disabilities to experience difficulties while they are reading. The quality of e-textbooks appears to be steadily improving (Rickman et al) and all three of the platforms used in this research study have made steady improvements in the features since this research concluded. That being said, it is imperative that effective and well-designed e-textbook platforms be selected for students with learning disabilities, with features that actually support and not hinder the reading and learning process.

**Works Cited**

- Baek, Eun-Ok and James Monaghan. "Journey to Textbook Affordability: An Investigation of Students' Use of eTextbooks at Multiple Campuses." *IRRODL The International Review of Research in Open and Distance Learning* 14 (2013): n. pag. Web. 20 April 2015.
- Bush, Michael, and Andrea Cameron. "Digital Course Materials: A Case Study of the Apple iPad in the Academic Environment." *Dissertation*. (2011). 1-208. Web. 20 April 2015.
- Cavanaugh, Terence. "EBooks and Accommodations: Is This the Future of Print Accommodations?" *Teaching Exceptional Children* (2002): 56-61. Print.
- Chulkov, Dmitriy, and Jason VanAlistin. "College Student Choice among Electronic and Printed Textbook Options." *Journal of Education for Business* 88 (2013): 216-222. Web. 20 April 2015.
- DeSantis, Nick. Tablet ownership triples among college students. *Chronicle of Higher Education* 58 (2012): n. pag. Web. 20 April 2015.
- Falc, Emilie. "An Assessment of College Student's Attitudes towards Using an Online E-Textbook." *Interdisciplinary Journal of E-Learning and Learning Objectives* 9 (2014): n. pag. Web. 20 April 2015.
- Guist, Eugene. "The Game Changer: Using iPads in College Teacher Education Classes." *College Student Journal* 44 (2011): 758-768. Web. 20 April 2015.
- Jesse, Gayle. "College Student Perceptions of e-Textbooks and E-Readers: New Ways to Learn?" *Issues in Information Systems* 15 (2014): 235-247. Web. 20 April 2015.
- Nee, Elizabeth. "College Students with Learning Disabilities: Experiences Using E-Texts." *Dissertation* (2012): 1-136. Web. 20 April 2015.

Jesse, Gayle. "College Student Perceptions of e-Textbooks and E-Readers: New Ways to Learn?" *Issues in Information Systems* 15 (2014): 235-247. Web. 20 April 2015.

Martinez-Estrada, Pedro, and Roger Conoway. "EBooks: The Next Step in Educational Innovation." *Business Communication Quarterly* 75 (2012): 125-135. Web. 20 April 2015.

Rickman, Jon, et al. "A Campus-Wide e-Textbook Initiative." *EDUCAUSEreviewonline* (2009): n. pag. Web. 20 April 2015.