2016

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Graduate Students' Experiences and Attitudes Toward Using E-Books for College-Level Courses

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Electronic books (e-books) are offered by a majority of book publishers in higher education, which increases the likelihood that printed books will be replaced by e-books. E-books have a number of visual, social, and audial features advantages which fulfill students' needs. Kissinger (2013) found that students who used e-books expressed competence in their use, thought the e-books enhanced their learning, exposed high self-efficacy feelings, and valued the use of e-books. However, a number of researchers have indicated that students prefer reading printed books to e-books (Pledger, 2010; Woody, Daniel, & Baker, 2010). In Pledger's (2010) study, 53% of participants indicated that they preferred reading printed books over e-books. Moreover, despite the strong visuals and interactive elements in e-books that are often considered strengths, Woody et al. (2010) found that students do not prefer e-books over printed books. Unfortunately, researchers have not provided analysis of the root causes of such results, but they have stressed the importance of evaluating e-books as substitutions for printed books (Woody et al., 2010).

The aim of this study was to explore the experiences and attitudes of graduate students toward e-books at a public state university in the western part of the United States. This exploration had the potential to provide information regarding how students utilized e-books to learn, how e-books supported their learning, and what obstacles related to e-books existed which hindered students' learning. For the purpose of this study, e-books were considered any electronic book comprised of higher education materials available online which allowed readers to navigate through the content, utilize embedded features, and search for external resources and multimedia objects. A theoretical lens consisting of three supporting learning theories (social constructivism, information processing, and self-efficacy theories) related to the constructivist learning approach (Bandura, 1997; Mayer, 2001; Piaget, 1973; Vygotsky, 1978) was utilized to analyze the results and provide insight about students' learning experiences.

Literature Review

In the 1990's' when e-books were presented to the market, several information technology experts anticipated that e-books would replace paper-based books. However, Gregory (2008) indicated that students' negative opinions toward e-books became undeniable as e-book usage

and productivity (both web-based and device-based) increased. When defining e-books, some points of view limit the advantage of e-book usage to the ability to be read on an electronic device. According to Lee (2002), an e-book could be defined as "An electronic representation of a book, usually a parallel publication of print copy, but occasionally born digital" (p. 43). On the other hand, Vassiliou and Rowley (2008, p. 363) highlighted the criticality of considering an e-book's features in their definition (e.g. search and cross reference functions, hypertext links, bookmarks, annotations, highlights, multimedia objects, and interactive tools). The e-books considered when conducting this study were those with higher education content that was identifiably 'book like' and offered electronically for reading on any device which allowed users to navigate through the content, utilize embedded features (e.g. bookmarks, annotations, highlights, and hypertext links), and search for external resources and multimedia objects.

E-books have multiple supporters due to features that are not available in printed books. They are more portable and accessible than paper-based books because students can obtain information and knowledge at their convenience and in their authentic environments, and then construct their own meanings and understandings. E-books are easier for students to carry than printed books (e.g. to classes or while traveling) and therefore more likely to be available when new learning opportunities develop in which they can connect the e-book's content with prior knowledge in the surroundings of their current environment. In their experiment with a constructivist learning environment, Zurita and Nussbaum (2004) found that students showed positive learning results when using wireless e-book

readers to develop an understanding of their own experiences within their surroundings (Kissinger, 2013). In addition, Ebied and Rahman (2015) correlated students' higher academic achievement with their feelings of freedom and flexibility when reading e-books. They stated that e-books provided opportunities for students "to view content anywhere, at any time without restrictions so that some students may download the e-book on their mobile phones to be able to review the information and study at any time they have it" (Ebied & Rahman, 2015, p. 79).

Furthermore, e-books support learning and knowledge construction by providing still and moving graphics, video clips, audio collections, and links to activities and websites. Constructivist learning theory can be defined as people's construction of their own knowledge and understanding based on their previous knowledge and experiences (Piaget, 1973). E-books provide multimedia features which can foster one's construction of knowledge. Learners may understand complicated concepts and ideas more clearly through the use of audio files, animated images, and videos than when only reading about them in a physical text. In their study, Azmi and Moradny (2010) concluded that images (static and animated) provided in e-books have a positive constructivist effect on achievement and learning efficiency among graduate students. Ebied and Rahman (2015) also confirmed an association between university students' higher achievement and the use of e-books which offer all the advantages of printed books and additional interactive multimedia features such as audios, images, videos, and interactive multimedia links.

However, Woody et al. (2010) examined factors influencing preference for

e-books and they indicated that students do not prefer e-books over textbooks, despite the strong visual and interactive elements in e-books. Moreover, they highlighted the importance of evaluating electronic texts as learning tools before using them as an alternative option to printed textbooks (Woody et al., 2010). These divergent outcomes of research on e-book usage make evident the critical need to continue investigation of the characteristics of e-books and the degree to which they support learning.

The following sections review literature about students' experiences and attitudes toward the use of e-books for college-level courses from three theoretical perspectives which support the constructivist approach to learning (Bandura, 1997; Mayer, 2001; Piaget, 1973; Vygotsky, 1978). These theoretical lenses, social constructivism, information processing, and self-efficacy theories, were used in this study to analyze the data to gain insight about students' learning experiences and key factors which could contribute to successful production and enhanced learning while using e-books as a learning tool.

Social Constructivism

Social constructivism emphasizes the value of social networks and their influence on constructing understanding, knowledge, and experiences (Vygotsky, 1978). Roschelle, Tatar, Chaudbury, Dimitriadis, Patton, and DiGiano (2007) indicated that human communication, instruction, and active engagement could be fostered by using features embedded in tablets and e-books reader devices. E-books offer the opportunity to easily and immediately share online and exchange books, ideas, thoughts, comments, and questions. In this case, social interaction occurs during the development of meaning regarding the content of e-books. It also occurs during the experience of reading e-books while interacting with others, which is aligned with the social constructivism point of view.

Unlike printed books, e-books can be shared virtually with multiple users who desire to exchange books and ideas. The convenience of sharing e-books immediately through the Internet motivates students to construct and gain knowledge whenever and wherever they can. In fact, Ongoz and Baki (2010) reported that students are likely to buy e-books over printed books because they are easier to share.

According to Khanna (2015), e-books allow students to go beyond highlighting and adding notes, and some offer readers immediate social interaction opportunities while they are reading. Students can share e-books with their peers, and educators can also address students' queries through e-books. Other e-books allow readers to discuss material in an associated forum or discussion (e.g. Macmillan LaunchPad). Through these forums, e-books readers can discuss ideas, ask questions, and help one another construct knowledge. Such forums can be considered a resource for learning facilitation, especially for readers who are not comfortable asking questions in person (Glazier, 2016).

Information Processing

Information processing theory explains how information travels through short-term memory including sensory and working memory, and long-term memory. Sensory memory is the process of selecting specific information and filtering out unnecessary information. Unfortunately, human minds do not filter out much unnecessary information. Working memory, a part of short-term memory, is where information gets organized so it can be stored in long-

term memory. Finally, long-term memory is where information stored and recalled by individuals when needed. The ability to recall information depends on how it had been stored. The ability to store information depends on how it was received (Lohr, 2007).

Mayer (2001) suggested that visuals and words can facilitate learning when they are designed to help learners select, organize, and integrate information. The processes of these three phases are strongly connected with information processing theory. When reading an e-book that has text, still and moving graphics, video clips, and audio collections, learners aim to select, organize, integrate, and guide information as it moves from sensory memory to working memory and then to long-term memory. The use of technology devices to read e-books gives readers opportunities to search for graphics and visuals related to what they have read and therefore to obtain better knowledge construction than when printed books are used. Mayer's (2001) multimedia design principles use meaningful interaction to reinforce visual and verbal memories in order to extend memory and enhance learning.

Self-Efficacy

Self-efficacy is a subset of social cognitive theory. It explains how people take actions based on their feelings and beliefs of their abilities. According to Bandura (1997), "Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Self-efficacy research regarding learning and use of computers has found that students with high degrees of self-efficacy in respect to the use of e-books may show a higher degree of satisfaction and receive better outcomes. Kissinger (2013) found that students expressed feelings of high self-efficacy toward the use of mobile e-book technologies. Students' prior knowledge and experiences with the usage of technology may make them feel more comfortable and confident when using e-book readers. However, Woody et al. (2010) found that students' previous experiences with e-books do not increase preference for them.

The purpose of this study was to explore students' perceptions on the use of e-books and their impact on learning. The research questions were:

1. What are learning experiences of graduate students using e-books?
2. How do graduate students describe the use of e-books to support their learning?
3. What changes to e-books do graduate students recommend to better support their learning?

Methodology
Theoretical Framework

The theoretical framework of this study is drawn upon both our theoretical lens and our deductive reasoning (Merriam, 2009). The theoretical lens of this study (social constructivism, information processing, and self-efficacy theories) pertains to the constructivist learning approach (Bandura, 1997; Mayer, 2001; Piaget, 1973; Vygotsky, 1978). The data was categorized under multiple themes; three of which were associated with the discussed learning theories and one which was associated with recommendations for better learning. The use of our theoretical foundation highlighted key factors to successful production with and use of e-books to enhance learning.

Social constructivism and constructionism theories were considered when conducting the study (Creswell, 2013; Crotty, 1998). Social constructivism theory claims that individuals develop subjective meanings of their experiences regarding certain subjects in order to obtain understanding of the world in which they live. Therefore, the researchers sought various and complex interpretations instead of limiting meaning to a few categories. The researchers developed findings based on the participants' views (Creswell, 2013).

From the view of constructionism theory, individuals do not create meaning, but they construct it in and out of interactions with the world. Constructionism allows researchers to reinterpret new meanings by exploring objects in a radical spirit of openness. As a part of this theory, the researcher-as-bricoleur was practiced. The researcher-as-bricoleur requires researchers to pay sustained attention to the objects of research and not limit themselves to the conventional meanings they have been taught. Researchers of this study did not limit themselves to the meaning they have learned about e-books. Hence, they exercised openness, imaginativeness, and creativity when musing over the data collected through interviews, in order to absorb new and richer meanings and explore new possibilities the data can offer (Crotty, 1998).

Participants

Participants of this study were four male and three female graduate students (ages 28 to 37) who pursued graduate studies at a midsize university in the Western United States. Table 1 depicts demographic information regarding the participants and information about their e-book reader devices. These participants were purposefully selected in order to gain perceptions from particular and the most relevant resources (Merriam, 2009).

Table 1

Participants Demographic and Devices Information

Name	Gender	Age	Devices
Adam	Male	37	iPad, Dell computer, and Lenovo laptop
Andrew	Male	33	Acer laptop
Dorothy	Female	28	iPad
Frances	Female	28	iPad, and MacBook Air laptop
Nicole	Female	30	MacBook Air laptop
Steven	Male	28	iPad, Kindle, and MacBook Air laptop
Thomas	Male	34	iPad, and MacBook Pro laptop

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The selection of the participants was based on two criteria: (a) the student had used at least one e-book during the last two years, and (b) e-books were used for learning purposes for college-level courses. These two criteria were clearly addressed in a study recruitment flyer that was distributed at the university. Students reached the researchers via contact information provided in the flyer and agreed to participate in the study voluntarily. Consent forms were distributed before interviews to give students an opportunity to understand the procedures of the study and to obtain their approval for participation. Interview times and locations that were convenient to students were scheduled. Interviews were conducted in quiet places to reinforce open and continuous conversations.

Materials and Procedures

A single, semi-structured interview lasting 30-60 minutes was held with each participant (Merriam, 2009). Students' responses to 10 interview questions were audio recorded and later transcribed. A semi-structured interview was chosen so question asking could be flexible and participants would have freedom to discuss related topics. The researchers selected this design to generate a deep understanding of the subject as it would afford participants the opportunity to provide detailed information regarding their learning experiences with e-books by not limiting their responses with narrow questions.

A semi-structured interview is responsive and the questioning route may change between interviews. In addition, it allows for probing questions such as, "Could you tell me more about that?" In this study, interview questions were developed to gain an understanding of students' learning experiences and attitudes toward the use of e-books within social constructivism, information processing, and self-efficacy learning frameworks. Questions such as "Do you believe that e-books enhance your learning? If yes, how? If no, why not?" and "Do you believe that e-books hinder your learning? If yes, how? If no, why not" were asked. In addition, questions such as "What changes would you like to see in e-books so they can best support your learning?" were asked to understand students' needs and what might improve learning as related to the use of e-books.

Trustworthiness

Triangulating analysts (Patton, 2002) and triangulation using multiple sources (Merriam, 2009) were utilized through data collection, data analysis, and interpretations of the findings to strengthen the credibility and dependability of the data. Triangulating analysts were engaged as the researchers had "two or more persons independently analyze the same qualitative data and compare their findings" (Patton, 2002, p. 560). In addition, triangulation of multiple data sources was utilized through the collection of interview data from participants with different perspectives (Merriam, 2009). Findings and researchers' interpretations from other studies were employed along with the data.

Furthermore, member checks, also known as respondent validation (Merriam, 2009), was utilized to strengthen validity of the study. The preliminary data analysis was returned to participants for review and confirmation of the plausibility of the researchers' interpretations. Participants recognized their experiences and did not find misinterpretations. As the findings developed, peer examination was also adopted. Two fellow graduate students

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were asked to scan the raw data and determine whether the findings were plausible. Both participants and fellow students corroborated the findings. Hence, trustworthiness of this study was strengthened by the application of triangulation, member checks, and peer examination (Merriam, 2009).

Analysis of Data

The interview data was analyzed by following a procedure recommended by Creswell (2013): (a) transcribing, (b) reading and taking notes, (c) organizing data, (d) classifying statements as subcategories, (e) grouping common statements to construct thematic categories, (f) constructing meaning of experiences, and (g) making interpretations. The seven recorded participant interviews were immediately transcribed after they were conducted. In order to get a general sense of the overall data, the transcriptions were read attentively. Important segments in the transcriptions were determined based on the literature review and the theoretical framework.

Findings

All participants' statements were compared and coded into 21 categories by grouping statements that participants had in common. Subsequently, these categories were grouped under four major thematic categories. The first three thematic categories pertained to the constructivist learning approach and were predetermined in accordance with the learning theories discussed in the literature: social constructivism, information processing, and self-efficacy. The fourth category addressed recommendations for better learning. Table 2 delineates the 21 corresponding subcategories which were established from

the interview data and how they were grouped to represent the four major thematic categories. Categorization of students' insights into these categories yielded four findings as follows: (a) students valued using e-books for social interactions and anytime/anywhere learning, (b) students indicated that e-books offer better information processing opportunities, (c) students expressed feelings of high self-efficacy and convenience, and (d) students' negative perceptions and recommendations that could be considered to improve e-books to better support learning.

E-Books for Social Interactions and Anytime/Anywhere Learning

Social interaction via the Internet contributes to students' construction of meaning and understanding. According to the participants, e-books offer greater opportunities to immediately share and exchange books and ideas, and users can also contribute to the construction of the knowledge of others by sharing and discussing e-books online whenever they desire and wherever they are, unlike the sharing of printed books which is restricted physical contact. In this study, five participants indicated that they had shared e-books and communicated their opinions regarding the content with others.

As Nicole stated, "I have shared e-books with others. And when I do, I like to provide my thoughts about them too." Like Nicole, Andrew indicated that he had "shared e-books via email, Dropbox, or a flash memory. And I have shared my thoughts and opinions regarding a number of e-books through Twitter and Facebook."

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Table 2

Thematic Categories and Corresponding Subcategories

Categories	Subcategories
Social constructivism	Construct understanding through social interaction
	Share or exchange thoughts and opinions
	Share e-books
	Discussing e-books via Internet
	Anytime/anywhere sharing and learning
Information processing	Multimedia learning
	Cognitive load
Self-efficacy	Accessibility
	Value
	Competence
	Confidence
	Comfort
	Previous technology experiences
	Features
Recommendations for better learning	Price
	Embedded word definitions
	Advanced search features
	Handwriting ability
	Audio format
	File size
	Eye health

Adam had also shared e-books and his thoughts and opinions regarding them via email and Facebook, as he said,

> I like the fact that I can share e-books with whomever I want. I have shared them many times via email and Facebook. A number of my friends and I are always having online discussions in Facebook about e-books that contain topics that we all are interested in.

Steven shared his experience of providing personal reviews on sellers' websites of e-books he had read, "I've shared e-books with my classmates. And you know when I buy an e-book, I like to provide my review about it in the seller website." Similar to Steven, Thomas made the following comment about sharing e-books with classmates. Thomas stated,

> It is easy to share e-books with others via email. Especially if you are working with a group of students, you can share a book or a part of a book with them. Then, you both be able to discuss the content of that book online. Also I've recommended e-books for friends via the Internet many times and they have done the same thing with me.

All seven participants indicated that e-books' portability gave them valuable opportunities to obtain information at a convenient times and locations, and then be able to construct their own

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understanding, which they considered an advantage. Frances stated, "I like e-books because I can use them anywhere and whenever I want." Thomas also said, "E-books provided me with more learning opportunities because I can access them from anywhere. I also can take them wherever I want. Unlike printed books, I can access a great number of e-books from my iPad or laptop instead of carrying these heavy books." Steven indicated his preference to read e-books, especially when he is traveling. He stated, "…if I decided to take printed books with me when I'm traveling, I have a very limited number. But when it comes to e-books, I can bring as many as I want in my iPad." Andrew and Dorothy did not like carrying the weight of printed books. Dorothy stated, "I can carry e-books wherever I go in my iPad instead of carrying the extra weight of printed books." Andrew explained his preference to read e-books when he studies, "Because I can carry a number of them in my laptop instead of carrying the actual heavy books." Furthermore, Adam considered the ability to easily store and obtain e-books as advantages. He explained,

> One of the main advantages that makes me believe e-books give me more learning opportunities is that I can store them wherever I want and then access them from wherever I am. So, I don't really need to carry my physical books wherever I go in order to read them for the sake of studying.

E-Books Offer Better Information Processing Opportunities

All seven participants said they used external resources such as graphics or visuals which facilitated learning while they were reading e-books. When asked, "Have you ever searched for additional resources while you are reading an e-book? And if yes, did you find it helpful?", all participants' responses were positive. Frances' response was, "Yes, definitely. I've searched for images and videos that were very helpful with facilitating the content. And I've searched for additional resources too." Adam provided a very similar response, "I do that all the time. When I read a book that did not explain the subject very well, I look through the Internet for additional information that often ends up very helpful." Steven's answer revealed the advantage of easy and quick electronic retrieval of additional resources as compared to gathering resources from printed books. Steven stated,

> You know when I read a printed book I hesitate to pause my reading in order to search for something I read about. But, when I'm reading an e-book, I can easily shift to a browser and look for additional resources that I need to better understand the content. It is easy to shift between an e-book and a browser. I usually search for images and videos regarding what I'm reading. I found it a helpful way to facilitate my understanding.

Andrew indicated that he likes to search for additional resources when he reads something challenging. He believed that "e-books help readers to use their time more efficiently where they feel more motivated to learn and willing to spend more efforts on understanding the content." He further explained," When reading a printed book, I would try to

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memorize the word and when I have a chance to be on my computer, hopefully I remember it and then I would type it."

Students shared their experiences of searching for videos and images in order to have a better understanding of a concept encountered in their reading. According to Nicole, Dorothy, and Thomas, they searched for videos and images via YouTube and Google images while they are reading e-books. Nicole said, "I have searched for videos in YouTube and images in Google images related to what I was reading. And these videos and images helped me with understanding the subject or the concept I'm reading about." Similarly, Dorothy stated, "I have searched for videos and images related to the e-book I'm reading. The videos and images I have searched for in YouTube and Google images were very helpful in terms of facilitating my understanding." In addition, Thomas shared how he feels about searching for images and videos while reading e-books and how they broaden accessibility. He said,

> When I read something that I could not understand or I'm not familiar with, I look for pictures and videos that would provide better explanations. And I can easily shift to Google Images or YouTube to do that while I'm reading an e-book. I can copy a word or something from an e-book and post it in a search engine and watch a video, look at a picture, or even read other resources. I don't have that easy access while reading a printed book. It enriches the resources that you use. In printed books, the access to other materials and knowledge

are very limited where I often found myself stuck with what's only available in that book. E-books broaden my accessibility that would eventually help me understand the content better.

Feelings of High Self-Efficacy and Convenience

The majority of students' responses to the interview questions indicated that their use of e-books and e-book readers made them feel confident and competent. E-books provide many features (for example keywords search, highlighting, and adding notes) which readers can take advantage of while constructing understanding. All students indicated use of these features while reading e-books. As Frances stated, "I usually do highlighting, page mark, keywords search, and writing notes." In addition, Dorothy used all features, but she "mostly likes to use keywords searching and highlighting." Thomas shared his various ways of using these features. Thomas stated,

> The searching ability is the most important feature for me. E-books make searching for words or a piece of information easier. And I like writing notes. I usually write professors' comments while I'm in a class. Also I like to do text highlighting. And sometimes I do screen capture of important graphics and charts which is better than drawing them out of printed books or taking a regular picture of them. And a couple of times I printed chapters from my e-books.

E-book features make students feel more confident and comfortable. As Nicole

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stated, "E-books' broad features make me feel confident and comfortable compared to printed books." Similar to Nicole, Steven believed that the use of searching capabilities enhance his learning opportunities. He added, "E-books are better than printed books in regards to browsing for a certain words, pages, sections, or chapters. I can find what I'm looking for pretty fast and then feel motivated to understand it. I don't like wasting my time on searching for something in a printed book." Adam also had a similar point of view. He indicated that he mostly uses word definitions that are embedded in some of the e-books and the searching capabilities. He believed that these searching capabilities empower e-book readers as compared to printed book readers because it is not easy to find a certain word or information in printed books. In addition, Andrew had similar opinions that were clearly addressed in his response,

> I use keywords search, writing notes, and mark important pages. I like the fact that I can search for certain information in e-books by using keyword search which is much easier than doing so in a physical book. Also, I print some pages from e-books if I want to discuss them with someone such as my advisor or peers for example.

All seven participants perceived the accessibility and lower cost of e-books as valuable features. Six students identified both of these beneficial aspects in their responses. Nicole indicated that she would buy e-books over and over due to their advantages, but what would drive her mostly to buy e-books is the fact that they

are cheaper than printed books. Frances said, "I buy e-books because I have them immediately available in hand and they are also cheaper than printed books." Similar to Frances, Steven valued e-books' accessibility, including the option to browse through books, read samples, and "…then I buy the one I need in seconds. Instead of waiting for the expensive printed format to be delivered to me." Thomas also stated that he buys an e-book when he wants to have the book immediately. He explained, "When I buy a book online it takes days to be available in hand. But when I buy an e-book, I can have it available in seconds. They are cheaper than the printed books too."

Adam considered the lower price of e-books as one of their main advantages, especially for students. As he stated, "As students, we tend to optimize our spending and e-books are often cheaper than printed books with almost the same quality." He added, "In fact, e-books offer more advantages like giving a chance to access additional resources to fully understand a subject." Andrew also shared his experience, which reflects the value of e-books' immediate accessibility,

> Usually, I use e-books to have more access to resources which makes me believe e-books enhance my learning compared to printed books. Mostly, I look for additional resources when I do research or I study for an exam. Search engines provide a massive number of resources that I could have immediately. And, I prefer to use e-books over printed books because they are easy to obtain compared to printed books. When ordering a printed book,

I would waste my time waiting for it to be delivered to my home.

Students' perceptions on the use of e-book readers were positive. They all indicated that they were able to deal with the technology devices properly. When asked about the potential challenges associated with the technology devices that students use when reading e-books, Thomas said, "The technological experience required for using e-books readers is basic and almost everyone with little experience can use them." Steven also replied, "Reading e-books is not that complicated. It is super easy to open an e-book, write a comment, or highlight a text." However, one student, Dorothy, indicated that she does not prefer to read e-books over printed books, even though she has the technological skills required from previous experience with e-books. She explained,

> I have used some of the features offered in e-books. Mostly I use keywords searching and highlighting. I also used to write some notes, but I did not like it. Because there is one time when I went back to read my notes, I found them deleted! I don't feel comfortable to completely rely on typing my comment in e-books. But, I feel confident with the use of technology itself.

Negative Perceptions and Recommendations to Improve E-Books to Support Learning

Six out of seven students indicated their preference of using e-books over printed books. However, when asked if they still prefer reading e-books for learning activities which require them to fully

comprehend the information, four out of the six students shifted their preference to printed books. Nicole's response was, "When I have to study for an exam, there is nothing better than holding a printed book in my hands." Thomas provided a similar answer, "When it comes to serious studying, I like the traditional style of printed books in which I can hold it by my hands, turn the pages, and know exactly where each piece of information is located in the book." Steven's response was, "I prefer to hold a printed book when I study for an exam or something like that." He added, "I don't know why, but I can focus more on the information when I'm reading printed books. Maybe it is because I've been using printed books since my childhood." Frances also shared a similar opinion,

> When I study for something that requires deep understanding, I definitely prefer reading printed books. I don't know why I feel more able to absorb the content when reading printed books. I would rather hold a physical book in my hands and go through every page. It is probably because I'm not use to e-books yet. But, I prefer e-books for general reading and simple assignments.

Many students have mentioned the advantage of e-books' compatible prices. However, two students indicated that some e-books are not available for prices comparable to their printed counterparts, which could improve e-books' presence in the market and be advantageous for students. As Adam explained, "Since we are students, we would rather buy the cheaper format. It would be beneficial to offer

books that are often used by students with comparable prices." Thomas also said,

> The prices of e-books are not always cheaper than printed books. There are some e-books that have almost the same prices as the printed copies. I understand that this is because of the value of the contents but still it does not create incentives for users to switch to e-books. E-book developers should pay attention to such a fact if they want to improve e-books' presence in the market.

Finally, participants provided various recommendations when asked about changes they would like to see in e-books to better support their learning. Recommendations included embedded word definitions, advanced search features, handwriting ability, audio formats, and protections for eye health. Nicole believed that it would be great if "the word definitions were embedded in the texts so the reader doesn't have to use a dictionary." Steven wished "that e-book reader devices would give me a chance to handwrite my comments just like the way I do on my printed books."

Dorothy recommended considering advanced search features. She explained, "When I use keyword search, small changes in the spelling will interfere with the recognition of the word." She added, "I wish the keyword search was more flexible where I can write more than one word and it would be able to recognize at least one of them." She also mentioned the fact that highlighting and page marking are not provided in all e-books even though they are very important features for many users. Andrew stated, "The only thing that I

have in mind is the large size of some e-books. If an e-book has a large size it might be difficult to save it or share it." Finally, Thomas shared the following suggestions,

> The light of the screen bothers my eyes. I know that there are some reader devices in the market with white screens that consider eye health, but that don't provide many good features that are available in other devices, like the iPad for example. I don't want to carry a book reader just because it is a book reader. In addition, it would be great if e-book readers could shift to audio format. So, I can continue going through the content via audio format while I'm driving, for example. Combining text and audio format would be a good integration.

Discussion

It was once thought that e-books might replace printed books, but this study offers confounding evidence that when learning matters students are not ready to surrender printed books even though they mostly prefer reading e-books. The emergent evidence is supported by the following: (a) six out of seven students indicated their preference of using e-books over printed books, and (b) four out of these six students shifted their preference to printed books when asked if they still prefer reading e-books for learning activities which require them to fully comprehend the information. "I like holding the book in my hands" was the most common reason for their preference of a printed book when it comes to comprehending the content. Participants also expressed "I understand

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better when I read the book in my hand", noted in Tosun's (2014) study as well.

When recalling their learning experiences of using e-books, the majority of participants reflected on their positive experiences. They indicated that e-books enhance their learning and perceived them as flexible, accessible, shareable, and easy to use learning tools. All participants addressed the advantage of using e-books to obtain information at their convenience and current location and then to be able to construct their own understanding. According to the participants, e-books offered a greater opportunity to share and exchange books and ideas than traditional books.

According to the participants, having an e-book reader in hand allowed them to search for additional resources, graphics, or visuals which could facilitate learning as they read. In addition, the majority of students' responses to the interview questions indicated that their use of e-books and e-book readers made them feel confident and competent. Based on data gathered, these students were more likely to purchase an e-book over a printed book if the electronic format was more affordable. Participants also perceived portability and accessibility of e-books over paper-based books as valuable advantages. One student indicated that she did not prefer to read e-books over printed books even though she had the technological skills to do so based on previous experience with e-books, confirming that experience does not predict a student's preference for the format. In addition, students provided recommendations to improve e-books to better support learning which included embedded word definitions, advanced search features, handwriting ability, audio formats, and protections for eye health.

Finally, two limitations to the study were (a) there was an increased probability that students who volunteered for this study had already adopted the use of technology, and (b) all participants in the study were in their twenties and thirties. Younger participants whose lives have been immersed in a world replete with technological devices maybe more better acquainted and more comfortable with the use of technology than older populations. In terms of future research which might increase the overall understanding of learning experiences e-books, researchers could explore the perspectives of first time e-book users, exactly how students use e-books for learning purposes, and copyright issues in play when students share e-books with others. Furthermore, this study focused only on graduate students' perceptions and it would be beneficial to consider the views of course instructors about e-books as tools for learning.

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