

Exploring Perceptions of E-Books Among CEGEP Students and Faculty

Exploration des perceptions relatives aux livres électroniques chez les étudiants et enseignants au cégep

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Abstract

Because they are believed to be able to lower the costs of an education, e-books have been factored into the technology plans for community colleges and CEGEPs during the current decade. But adoption is a function of perceptions, which this study explored: (1) General perceptions of the CEGEP (collège d'enseignement général et professionnel, a community college-like institution in Quebec) students and faculty towards e-books and (2) the factors that drive those perceptions. Previous studies found that users generally had neutral and positive impressions of e-books and that the following factors drive overall perceptions of e-books: (a) previous experience, (b) reading preferences and tasks; (c) reading habits; (d) convenience; (e) costs; and (f) ownership issues. A survey of the 2,260 faculty and students at a CEGEP in Quebec was conducted, with 247 students and 19 faculty responding. Results indicated wide awareness of e-books and at least some experience with them. Results validated that previous experience drove perceptions, that printed materials generally had more credibility than digital ones (this was more pronounced for books), that many students read online but do not take notes when doing so, users perceive e-books to be more convenient than printed ones, that e-books become attractive when their price is 50% that of print, and that most users think that they own e-textbooks even though most publishers merely rent e-textbooks. The results suggest adoption barriers beyond technology and general perceptions that need to be addressed to increase general use and that designers of zero-cost (Z-degrees or Zed-Cred) degrees should consider.

Résumé

Parce qu'on croit qu'ils peuvent diminuer les coûts associés à l'éducation, les livres électroniques ont été pris en compte dans les plans technologiques des collèges communautaires et des cégeps au cours de la dernière décennie. L'adoption, cependant, est fonction des perceptions, que la présente étude a explorées : (1) perceptions générales des étudiants et

enseignants du cégep (collège d'enseignement général et professionnel) quant aux livres électroniques et (2) facteurs qui motivent ces perceptions. Des études antérieures avaient conclu que les utilisateurs avaient des impressions neutres et positives sur les livres électroniques, et que les facteurs suivants déterminaient les perceptions globales quant aux livres électroniques : (a) expérience préalable, (b) préférences et tâches de lecture, (c) habitudes de lecture, (d) commodité, (e) coût et (f) questions de propriété. Un sondage de 2260 étudiants et enseignants d'un cégep québécois a été réalisé, et des réponses ont été obtenues de 247 étudiants et 19 membres du corps professoral. Les résultats ont indiqué une vaste conscience de l'existence des livres électroniques et, à tout le moins, une certaine expérience avec eux. Les résultats ont confirmé que l'expérience préalable déterminait les perceptions, que les documents imprimés ont en général une plus grande crédibilité que les documents numériques (cela était plus prononcé pour les livres), que de nombreux étudiants lisent en ligne, mais sans prendre de notes, que les utilisateurs perçoivent les livres électroniques comme étant plus pratiques que les livres imprimés, que les livres électroniques deviennent attrayants quand leur prix est à 50 % du prix de l'imprimé, et que la plupart des usagers croient posséder leurs manuels électroniques, même si la plupart des éditeurs ne font que les louer. Les résultats suggèrent qu'il existe des obstacles à l'adoption autres que la technologie et les perceptions générales, qu'il faudrait régler pour augmenter l'utilisation générale et dont les concepteurs de programmes sans frais devraient tenir compte.

Introduction

Because they are believed to be able to lower the costs of an education, e-books have been factored into the technology plans for community colleges and CEGEPs during the current decade. At the beginning of the decade, optimistic projections of adoption by groups like the New Media Consortium (Johnson, Levine, Smith, & Stone, 2010; Johnson, Smith, Willis, Levine, & Haywood, 2011), were prevalent with wide adoption expected by 2013. That did not happen. Overall in higher education, e-book sales represent less than 20% of all textbook sales and rates are flattening or declining (Milliot, 2016; Shaw, 2015). Undeterred by the disappointing adoption, more recent interest has taken the form of zero-cost degrees (Z-degrees) in community colleges in the United States (Sheridan, 2017). “Zero” refers to textbook costs in the programs, which exclusively rely on open education resources—online materials that are royalty free—for main and supplemental course texts and materials. The province of Alberta in Canada, for example, has such an initiative in the works, where such initiatives go by the name Zed-Cred (Jhangianai, 2017).

For those who have limited familiarity with them, e-books are digital versions of textbooks that students read on a digital device such as a computer, tablet, smartphone or device specifically designed for reading digital books. Proponents note that e-books offer several advantages over their more traditional printed counterparts, including lower costs (Gunter, 2005; Sheridan, 2017), lighter to carry than printed books (called portability) (Pattuelli & Rabina, 2010), easy availability as they are distributed through the Internet (Littman & Connaway, 2004), accessibility as software can assist readers with visual impairments (Angeletaki, 2011; Gunter, 2005), and interactivity by letting readers easily search, go to particular segments, and even practice skills within some e-books (Rickman, Von Holzen, Klute, & Tobin, 2009). In addition, for the publisher, the costs associated with e-books are lower than for printed books because they do not require expensive printing nor warehousing.

Despite these promised benefits and renewed interest on the part of researchers and program planners, lagging rates of adoption for e-books suggests reason for caution on the part of those developing Zed-Cred degrees and open educational resources. Even if the e-books are free, will students and faculty actually use them? Previous research suggests factors other than price affect the adoption of e-books, principal among them being a continuing preference among students and faculty for using print books for academic purposes (Cassidy, Martinez, & Shen, 2012; de Oliveira, 2012; Woody, Daniel, & Baker, 2010). Those students who do adopt e-books primarily perceive them as quick references (Bailey, 2006; Gunter, 2005; Heting, 2003) rather than for serious academic reading (de Oliveira, 2012; Abdullah, & Gibb, 2008; Gunter, 2005).

In other words, perceptions are at the core of adoption decisions.

The study described in this article is intended to explore perceptions of e-books in higher education and the factors that drive them. It specifically explores the issue in a CEGEPs (*a* French acronym for collège d'enseignement général et professionnel, a community college-like institution in Quebec that provides grade 12 and first year of university education for all students as well as diplomas in a variety of vocational specialties). The research questions explored include:

- What are the general perceptions of CEGEP (community college) students and faculty towards e-books?
- What factors drive those perceptions?

After situating this study in the literature, we describe the methodology used to conduct the study and its results. The article closes by presenting conclusions, limitations of the study, and suggestions for future research.

Literature Review

This section situates this study in the literature. Specifically, this section first describes previous studies that investigated general perceptions of e-books; then describes studies that have identified specific issues that drive perceptions of e-books.

Previous Research on General Perceptions

Early studies found that previous experience with e-books affects opinions of them. A lack of experience fuels negative general perceptions. Chu (2003) found that people who have never used e-books had negative attitudes towards them. Research by Woody, Daniel, and Baker (2010) and de Oliveira (2012) corroborates this finding, with Croft and Davis (2010) noting that a lack of awareness of e-books is the most common reason for not using e-books.

When users had previous experience with e-books, however, studies found that more than half were satisfied with them. For example, Croft and Davis (2010) found positive attitudes at a Canadian university (68% of participants were satisfied or very satisfied with e-books). In the U.S., de Oliveira (2012) found that more than half of the participants in the study had positive attitudes towards e-books, would like to use them, and would recommend them to others. In India, Anuradha's and Usha (2006) found that nearly 90% of users were very or somewhat satisfied with e-books. In South Korea, Jeong (2012) found that students were satisfied with e-

books and found them useful. And in Northern Ireland, Mulholland and Bates (2014) found strong satisfaction with e-books, too. Gunter (2005) noted that the most popular categories of e-books included novels, technical manuals, novels, dictionaries, encyclopedia, and academic textbooks.

Some studies, however, did not find universal satisfaction with e-books. Using focus groups rather than the surveys typical of other studies, Carlock and Perry (2008) found that users had generally unsatisfactory experiences using e-books.

Perceptions also varied between students and faculty. For example, Shelburne (2009) found that undergraduates tend to have more positive perceptions of e-books than faculty. Croft and Davis (2010) along with Anuradha and Usha (2006) found that students used e-books more often than faculty.

General perception studies also found differences among disciplines. Bailey (2006) found that computer science majors tend to use e-books more than other majors, while Li, Poe, Potter, Quigley, and Wilson (2011) along with Littman and Connaway (2004) found that students in business, economics, medicine, health and literature are more likely to use e-books than students in other disciplines.

In addition, general perception studies provide conflicting evidence on the differences of perceptions between e-books and print ones. Anuradha and Usha (2006) found that science and engineering students and faculty preferred e-books to printed ones. Walton's (2007) results contradicted that, finding instead that university students and faculty prefer printed books to e-books. So did Abdullah and Gibb (2008), who note that participants in their study (master's and research students in computer and information sciences) preferred the feel of printed books, and disliked reading on the desk-top computer screen, and also preferred the associated costs for e-books, especially e-book readers. Angeletaki (2011) added that e-books are not widely used in universities, anyway.

These studies suggest that perceptions of e-books could be influenced by previous knowledge of, and experience with, e-books, student or faculty status along with their respective discipline, as well as in comparison to printed books. Although not an issue specifically explored in these studies, perceptions could also have been influenced by the type of device on which participants read e-books, such as a desktop computer.

Perceptions of Specific Characteristics of E-Books

This section identifies particular characteristics of e-books that previous research had identified as affecting perceptions. Called *drivers* of perceptions, each contributes to the overall perceptions of e-books and could affect their adoption. The most significant drivers of perceptions of e-books are listed below.

A. Extent of actual use: Although most studies found a generally positive attitude towards e-books, several suggest that does not translate into regular use. De Oliveira (2012) and Croft and Davis (2010) found that most participants rarely use e-books or are unaware they are available, and most users show no preference for e-books compared with print.

B. Reading preferences and tasks: Certain reading preferences can affect the decision to adopt e-books. In addition to preferences in relation to print, these preferences also include the nature of the reading task. Abdullah and Gibb (2008) found that users primarily read e-books to find relevant content and for leisure. Other research provides insights into these tasks:

- To find relevant content. Several researchers (Connaway & Snyder, 2005; King, Tenopir & Clarke, 2006; Levine-Clark, 2006) found that users just use e-books to quickly locate facts online. More recently, Slater (2010) reached similar conclusions, finding that many e-book users just browse rather than engage in serious extended reading. Jung, Chan-Olmsted, Park and Kim (2012) add that users seldom read e-books in a linear fashion. Rowlands, Nicholas, Jamali and Huntington (2007) concluded that faculty and students use e-books as research tools and to help with preparation for class rather than reading entire books.
- To read for leisure. Clark, Goodwin, Samuelson and Coker (2008) concluded that readers using Amazon's Kindle use the devices to read for leisure rather than academic purposes. When they need to read academic texts in-depth, Nelson (2008) found that users tend to print the book and read offline.

C. Reading habits: This characteristic encompasses a number of issues associated with the use of e-books, including ease-of-use characteristics and capabilities offered by e-books that print books do not. These include the ability to:

- Perform traditional reading tasks, including highlighting (Broadhurst & Watson, 2012; Cassidy et al., 2012), bookmarking (Pollock, 2012), and note taking (Pollock, 2012; Rickman et al., 2009). These researchers note that these capabilities are necessary for adoption.
- Multitask (Broadhurst & Watson, 2012), that is, to read, listen to music, chat with a friend and surf the Internet at the same time (Stone & Baker-Eveleth, 2013). However, whether multitasking benefits the reader is questionable (Jeong, 2012; Lam, Lam, & McNaught, 2010).
- Provide a multimedia experience with audio, video (Jeong, 2012; Nelson, 2008; Rockley, 2011), and animation (Heting, 2003) in addition to the text and graphics that characterize printed books.
- Navigate, including the ability to search for topics and keywords inside e-books (Anuradha & Usha, 2006; Cassidy et al., 2012; Rickman et al., 2009). Cassidy et al. (2012) posit that these navigational tools support non-sequential approaches to reading such as jumping back and forth.

D. Convenience: Users perceive that e-books offer a general convenience (Lam, Lam, & McNaught, 2010; Williams & Dittmer, 2009) over printed books. Digging deeper, researchers identified several characteristics that could contribute to positive perceptions of e-books, including:

- Portability, or the ability to easily carry e-books, because e-books easily fit in users' bags (Angeletaki, 2011; Weisberg, 2011) and therefore make them lighter to carry than many printed books (Pattuelli & Rabina, 2010; Richardson & Mahmood, 2012; Rickman et al., 2009).

- Capacity, the ability of a single e-book reader to store several books, which contrasts with printed books, each of which must be carried separately (Richardson & Mahmood, 2012) adding extra carrying weight.
- Quick access to the newest titles at any time with built-in connections to e-book stores (Estelle & Woodward, 2009; Gunter, 2005).

E. Costs: e-books have two primary costs:

- E-book reader that was once required for all e-books, adds costs, and poses a possible barrier to adoption (Pollock, 2012; Behler, 2009). In recent years, however, manufacturers have lowered the price for e-book readers (\$79 Canadian for the lowest priced Amazon Kindle as of the writing of this article) and have made the software available free so users can read e-books on smartphones, tablets, laptops, and computers they already own.
- Content. According to Bunkell and Dyas-Correia (2009), e-books costs 20 to 70% less compared to print ones and some can be downloaded for free (Weisberg, 2011) or rented (Radnor & Shrauger, 2012). In fact, many publishers specifically “rent” e-textbooks to students for the term of use rather than selling them.

F. Ownership issues: Digital Rights Management (DRM) affects the ability of users to have access to all of their books on a single device. DRM refers to software that ensures that the person who is trying to use digital media has authorization to do so and, if not, blocks the user from the media. Most e-book platforms vigorously enforce digital rights. In practical terms, that makes some books—especially textbooks—difficult to access and often requires sign-in credentials and an Internet connection. DRM adds roadblocks to sharing and lending e-books in many of the other formats except PDF (Lim & Hew, 2014; Schiller, 2010; Slater, 2010).

Because e-book ownership is more complex than ownership of printed books (Schiller, 2010) it is technically called licensing. Several licensing models are available for e-book sales (Kumbhar, 2012). In contrast to general purpose e-books, which users purchase through booksellers like Indigo and Amazon, textbook publishers make e-books available through course management systems like Blackboard and Moodle and, when doing so, lease—rather than sell—the books to students. Students lease the textbooks only for the term in which they take the course. When the term ends, so does textbook access. The Student Public Interest Research Group (Allen, 2008) has identified the terminating rights of e-books as a potential concern with them.

The literature also identified technical glitches that could affect e-books, including reliance on battery or electrical power and the Internet for use, hardware problems, screen glare, and incompatibility of file formats. Although these are less likely to affect the decision to adopt e-books, they affect the decision to continue using e-books.

Each of these drivers—(1) previous experience; (2) reading preferences and tasks; (3) reading habits; (4) convenience; (5) costs; and (6) ownership issues contributes to the overall perceptions of e-books and could affect their adoption. A complete study of perceptions of e-books needs to explore these drivers in addition to general perceptions of e-books.

Methodology

This section describes the methodology followed to conduct the study. As noted earlier, these research questions guided the study:

- What are the perceptions of CEGEP (community college) students and faculty towards e-books?
- What drives those perceptions?

Specifically, we explain how we conducted the study: characteristics of the participants sought, instrument, procedure for administering it, the process for analyzing data, and how we assured its reliability and validity.

Participants

This study is part of a larger program of research exploring perceptions of e-books in higher education. For the program of research, we sought perceptions from both of the major types of institutions in higher education in Canada: universities and colleges. This study focused solely on the college population.

Canadian colleges are similar to American community colleges, with many offering diplomas (similar to the Associate's degree in the U.S.) and some offering bachelor's degrees. As noted earlier, community colleges in Quebec are called CEGEPs, a French acronym for collège d'enseignement général et professionnel.

Unlike colleges in Canada and community colleges in the US, however, CEGEPs provide Quebec students with the last year of high school (called twelfth grade elsewhere in North America) and first year of university. Students in vocational programs remain in CEGEP one or two additional years to complete degree requirements.

We sought a CEGEP that would provide us with access to its entire student and faculty population. Because CEGEP encompasses Grade 12 from high school, some students are 17 years old and minors, and not able to participate in a survey without the permission of their parents or guardians. To ensure that minors did not participate, we would designed the research instrument so students would need to acknowledge they were 18 or older as part of the consent process.

Instrument

Using the drivers identified through the literature as a guide, we developed a survey that would gauge participants' general perceptions about e-books in a variety of learning situations, assess their perceptions of the credibility of e-books in comparison to printed materials, and gauge their expectations regarding prices for e-books and devices.

The first section of the survey solicited demographic information, such as age range, gender, and role in the institution (student or faculty). Role determined which version of the instrument they saw; certain questions were only presented to students, others only to faculty (who choose the textbooks used).

The second section explored general perceptions of e-books and was given to all participants. Using multiple choice questions, these questions specifically assessed:

- Familiarity and previous experience with e-books
- Attitudes about e-books
- Perceptions of the credibility of e-books, magazines, newspapers, and academic journals against their printed counterparts
- Perceptions of the convenience of digital books, magazines, newspapers, and academic journals against their printed counterparts
- Expectations of price differences between e-books and their printed counterparts
- Awareness of users' ownership of the content in digital textbooks, such as owning, or renting the material

The third section explored preferences for online readings, and habits regarding note-taking in print and online materials. Only students received this part of the survey.

The last section assessed faculty's perceptions of different types of publications, and asked them to rank order the most credible sources of academic information, professional information, and news from a list that included printed materials, online materials, and social networking sites. Only faculty received this part of the survey.

To validate the instrument, we conducted usability tests with students and faculty in another higher education institution. We adjusted the wording of instructions and questions to address issues identified in the usability tests.

How We Administered the Instrument

We administered the survey online. Data was collected as follows:

1. After we formally opened the survey, a note was sent from a senior administrator in the CEGEP where we conducted the study to all students on behalf of our research team that invited them to participate in the study. The administrator sent a separate—but similar—invitation to faculty. Both invitations contained a link to the online survey, which used the Open Source LimeSurvey software that was hosted on our university's servers.
2. When participants clicked on the link, the system displayed the informed consent form. Participants who formally gave their approval proceeded with the survey; those who did not give consent were directed out of the survey.
3. Participants proceeded to the first section of the survey.
4. The system presented subsequent sections based on the roles identified with the demographics (student or faculty).
5. As an incentive to participate, we offered participants an opportunity to submit their names to receive a free Kindle e-book device. This information was kept separately from survey results to ensure anonymity.
6. Over a five-week period, the research team sent three pairs of recruiting announcements (one announcement for students, another for faculty) to the CEGEP community.

How Data Was Analyzed

Before receiving the data for analysis, we categorized survey questions into different themes that aligned with the research questions and used that framework to retrieve the answers for each question in each theme.

From this, we created a codebook: a checklist of all the variables we would track in the analysis (Creswell, 2012). We used the Statistical Package for Social Science (SPSS) to calculate basic descriptive statistics, including means, variance, and standard deviation (Creswell, 2012). We also used SPSS to make inferences and identify possible relationships among variables.

When testing relationships among variables, we used the following types of statistical tests:

- T-test, to “compare the means between two groups [students and faculty] to see if there are significant differences from each other” (Urdan, 2010, p.93).
- One-way analysis of variance (ANOVA) to determine whether a significant difference existed between groups (Urdan, 2010), such as genders.

We checked the assumption of normality of the faculty and student groups using the Shapiro-Wilk statistic tests, which calculated z-scores of skewness and kurtosis as well as the histograms. The test results for the faculty showed $W(19) = .20$, $p > .05$ and the student $W(247) = .22$, $p < .05$, both of which initially indicate a non-normal distribution.

However, the calculated skews were $.076/.524$ for the faculty and $.248/.155=1.6$ for the students. The calculated kurtoses were $-1.161/1.014=-1.14$ for the faculty and $-.137/.309=-.44$ for the students.

All of these values are within the threshold of a normal distribution (between -1.96 and 1.96), indicating that the data were roughly normal.

The assumptions of normality were also checked between dependent variables (the perception scores) and the independent variables (such as gender, age, and status) before conducting ANOVA tests. Once again we used the Shapiro-Wilk statistic tests, calculated z-scores of skewness and kurtosis as well as the histograms. All of the calculated skew and kurtosis values fell within the threshold of a normal distribution (between -1.96 and 1.96), thus indicating that the data were normally distributed.

Results

This section presents the results of the study. It first identifies who participated in the study, then presents data intended to answer the two research questions.

Who Participated in the Study?

We received access at a medium-sized (about 2,100 students) academically focused CEGEP through a contact made by the primary investigator with the faculty development

department of the institution. The academic vice-president of the CEGEP approved participation, and the study received ethics approval at both the researchers' institution and the CEGEP.

A total of 266 respondents from the CEGEP participated, 11.8% of the population of the institution (2,100 students and 160 faculty). Of those responding, 247 (92.9%) of participants were students and 19 (7.1%) were faculty members. The majority of participants had full-time affiliations with the CEGEP. Table 1 summarizes the demographic information about the participants.

Table 1

Demographic Information

Demographic factors	Number of students: 247 Number of faculty: 19	
Gender: Students	Female 147 (59.5%)	Male 100 (40.5%)
Faculty	Female 12 (63.1%)	Male 7 (36.9%)
Status: Students	Full-time 240 (97.2%)	Part-time 7 (2.8%)
Faculty	Full-time 13 (68.4%)	Part-time 6 (31.6%)

Figure 1 shows students and faculty's age ranges. More than 97% of students are under age of 19 whereas the majority of faculty members are between 30 and 50.

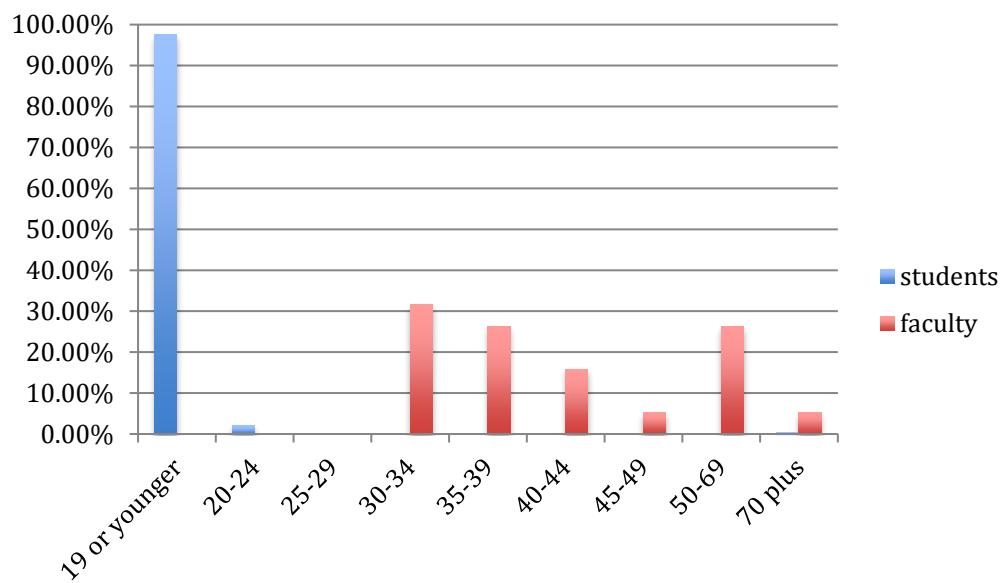


Figure 1. Participants' age ranges.

Answer to Research Question 1

The first research question sought general perceptions of e-books among CEGEP students and faculty. To gauge this, we asked participants to rate their general attitudes towards

e-books on a Likert scale of 1- enthusiastic, 2-positive, 3-indifferent, 4-negative and 5-detest and to provide their definitions of e-books.

The mean of the general attitudes for college participants was 1.46 ($M=1.46$, $SD=.92$, $n=266$), which means an attitude between “positive” and “indifferent”. Around half of the participants (52%) held positive or enthusiastic attitudes towards e-books. Figure 2 describes college students and faculty’s general attitudes towards e-books.

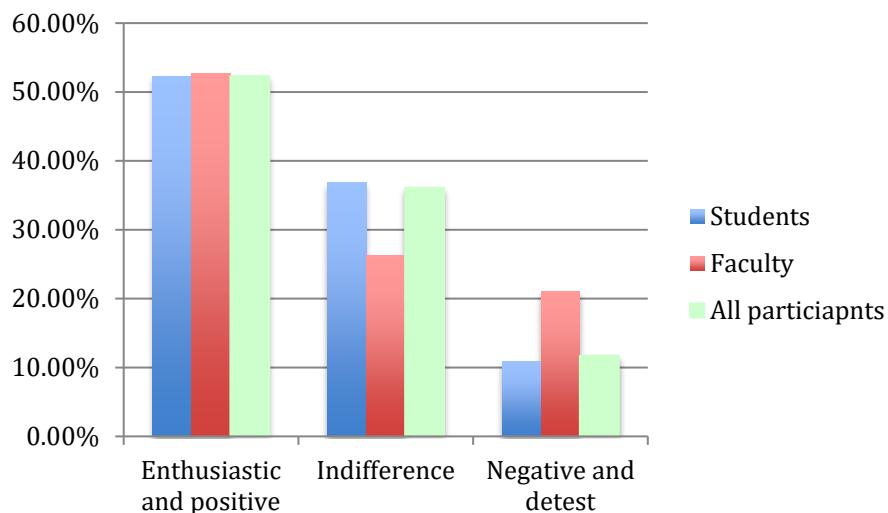


Figure 2. College participants’ general attitudes towards e-books.

As the figure shows, similar percentages of students (52.3%) and faculty (52.6%) held positive attitudes towards e-books. But faculty had a higher proportion of negative attitudes towards e-books (21.1%) than students (10.9%).

T-tests were conducted to explore whether a significant difference in general attitudes existed between students and faculty. Tables 2a and 2b show the t-test results. Levene’s Test for Equality of Variances—used to ensure the equal variance assumption was met — ($p=.180$) indicated that equal variances are assumed. The results show that $t=.056$, $p=.956$, no significant difference in the general attitudes towards e-books between students and faculty.

Table 2a

Independent Sample t-Test Results – Group Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Faculty	19	1.47	1.073	.246
Students	247	1.46	.905	.058

Table 2b

Independent Sample t-Test Results – Independent Samples Test

	Levene's test for equality of Variances			t-test for equality of means					
	F	Sig.	t	df	Sig. (2- tailed)	Mean difference	Std. error difference	95% confidence interval of the difference	
								Lower	Upper
Equal variances assumed	1.806	.180	.056	264	.956	.012	.218	-.418	.442
Equal variances not assumed			.048	20.017	.962	.012	.253	-.515	.540

We also conducted a one-way ANOVA to explore whether participants' general attitudes towards e-books differ by gender, age groups, and status. Although the analysis shows that males tend to have more positive attitudes towards e-books, the tests suggest no significant difference in attitude towards e-books based on gender. These findings support prior studies, which also found that males tend to have more positive attitudes towards e-books (Jung et al., 2012; Letchumanan & Tarmizi, 2011; Rowlands et al., 2007; Zhang & Kudva, 2014). The analysis also suggests that no significant difference in perceptions exists among different age groups. Table 3 shows the results of the one-way ANOVA.

Table 3

One-Way ANOVA Test Results

Factors	Variables	N	Mean	SD	F	Sig.
Gender	Female	159	1.50	.86	.559	.445
	Male	107	1.41	.99		
Age	19 or younger	241	1.45	.90	1.57	.146
	20 to 24	5	2.20	.84		
	25 to 29	0	0	0		
	30 to 34	6	1.00	.89		
	35 to 39	3	1.67	1.16		
	40 to 44	3	1.00	1.00		
	45 to 49	1	3.00	.		
	50 to 69	5	2.00	1.23		
	70 plus	2	1.00	0		
	Full-time	253	1.47	.92		
Status	Part-time	13	1.23	.83	.875	.351

Because even the experts have slightly varying definitions of e-books, we asked participants to provide their own to see the extent to which they match the literature and, if anomalies occurred, how that might affect perceptions. Responses were analyzed using qualitative content analysis, in which researchers collected and categorized all of the responses and then classified the data into themes. Most participants considered e-books either as an alternative to printed books or as a device that displays reading on a screen. Some respondents even identified features of e-books such as interactive, lighter, and less expensive. Examples include “a book in digital format”, “a book that can be read on an electronic device (such as iPad, Kindle, Kobo, etc.),” and “a digital format book that can include features not available in a paper version”. We did not find any anomalies with established definitions, suggesting that participants have a strong general understanding of the term e-book.

Answer to Research Question 2

The second research question explored specific drivers of perceptions of e-books identified by the literature, including previous experience with e-books, extent and types of uses of e-books, convenience of e-books, their costs, and the ability to use books on devices users already own.

Driver A: Previous experience with e-books. We asked whether participants had previously heard the term *e-book* before. Nearly all participants, 257 of the 266 (96.6%) had, including 238 of the 247 students (96.4%) and all 19 (100%) faculty.

More than half of the participants also had previous experience reading e-books: 171 (64.3%) total, with 156 (63.2%) students and 15 (78.9%) faculty. But few (18%) had actually purchased an e-book: just 45 (18.2%) students and 3 (14.8%) faculty. Figure 3 summarizes students' and faculty's previous experience with e-books.

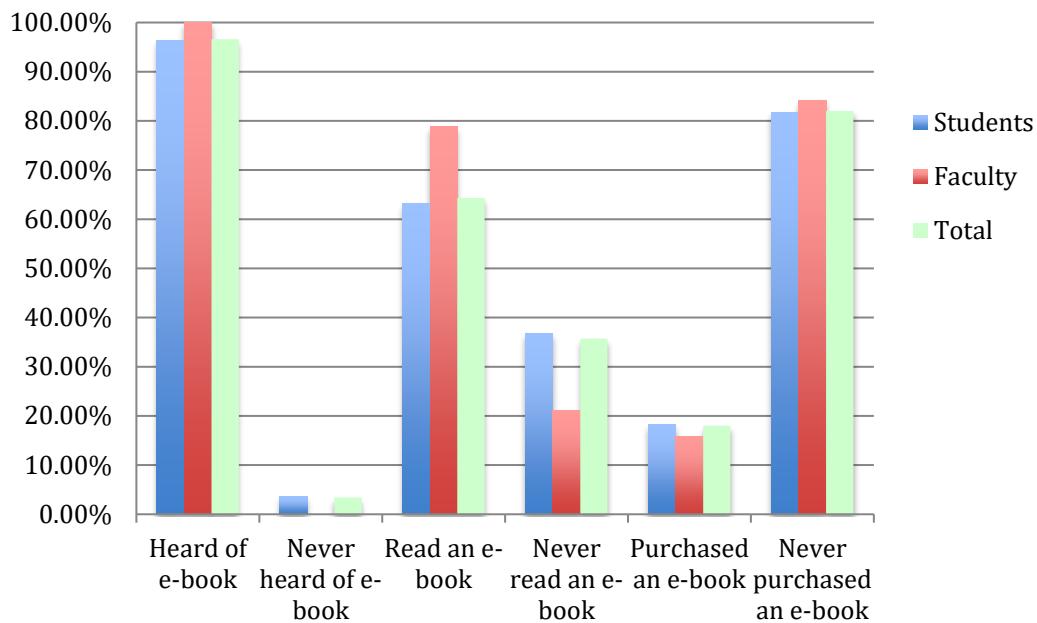


Figure 3. Participants' previous experience with e-books.

We also analyzed whether prior experience with e-books affected participants' attitudes with an ANOVA test. Table 4 shows the results, which suggests that participants who previously read or purchased e-books had more positive attitudes than those who had not. These findings were in line with the results of some previous studies (Levine-Clark, 2006; Nariani, 2009; Shelburne, 2009) and suggest that prior experience, or lack thereof, contributes to overall impressions of e-books.

Table 4

One-Way ANOVA Test Results on Prior Experiences with E-Books

Factors	Variables	N	Mean	SD	F	Sig.
Previous experience	Heard of e-books	238	1.45	.916	.463	.497
	Never heard of e-books	9	1.67	.500		
	Read an e-book	171	1.27	.887	23.152	.000
	Never read an e-book	95	1.81	.867		
	Purchase an e-book	48	.92	.895	22.499	.000
	Never purchase an e-book	218	1.58	.877		

Driver B: Reading preferences and tasks. Previous studies revealed that people still appreciate “the pleasure of reading print books” (de Oliveira, 2012; Shelburne, 2009), which might hold users back from using e-books, including course-related readings. Anecdotal evidence also suggests that people tend to trust print more than digital content. So, in the survey, we asked students to share their preferences.

When asked about their preferences—print, print and online, or just online—45.8% of students (the only ones asked this) indicated they prefer print readings; just 14.6% preferred online readings. See Figure 4 for the results.

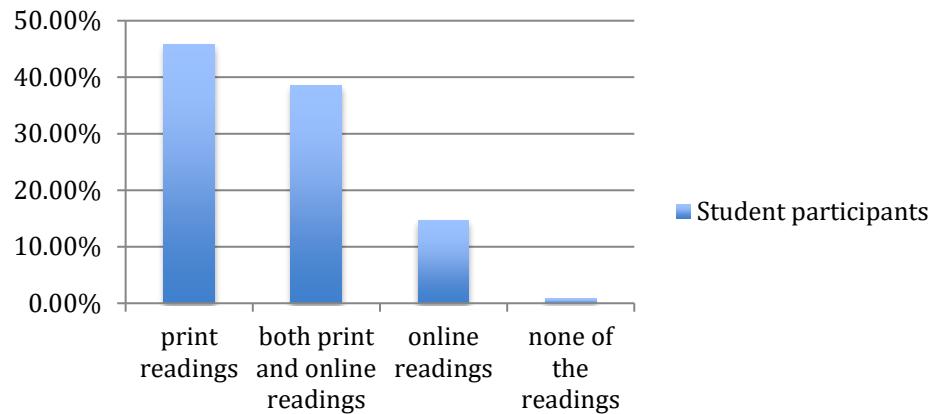


Figure 4. Students' preferences for reading.

In terms of how students read the online materials, they tend to read some or all of the material online. A little over one-third—34.2%—read the materials entirely online most of the time. Only 18.7% of students indicated that they always print 90% or more of online materials. See Figure 5 for results.

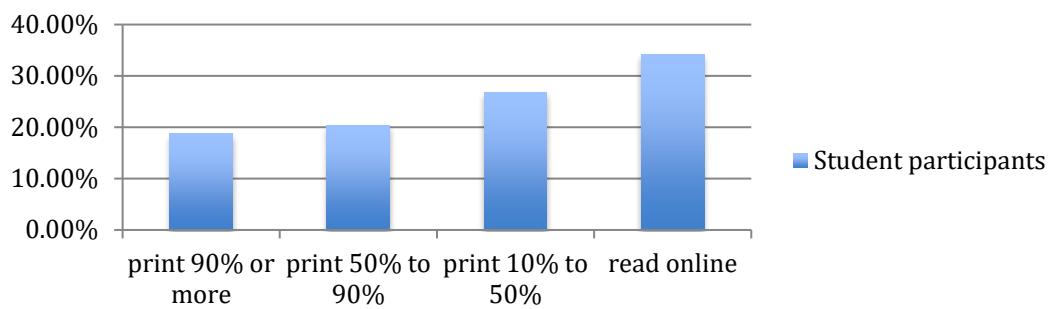


Figure 5. Students' practices with printing online reading materials.

As for the reasons of printing readings, “prefer print” is the most common (45.5%) reason provided by students for choosing materials before over online ones, followed by length of reading and convenience. Figure 6 summarizes students' reasons for printing materials

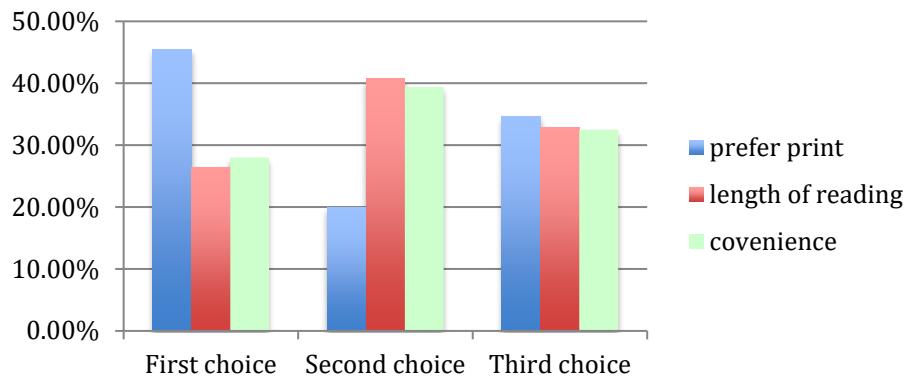


Figure 6. Student participants' ranked reasons of printing reading materials.

To assess broader reading preferences, we also asked participants to rank the credibility of materials in different media. More than half (56.8%) believe that being in print affords credibility to books over other media, and around 35% thought printing gives more credibility to magazines, newspapers and academic journals. But about a third of participants (33.4%) also felt that online or digital publications are equally credible to print. See Figure 7 for results.

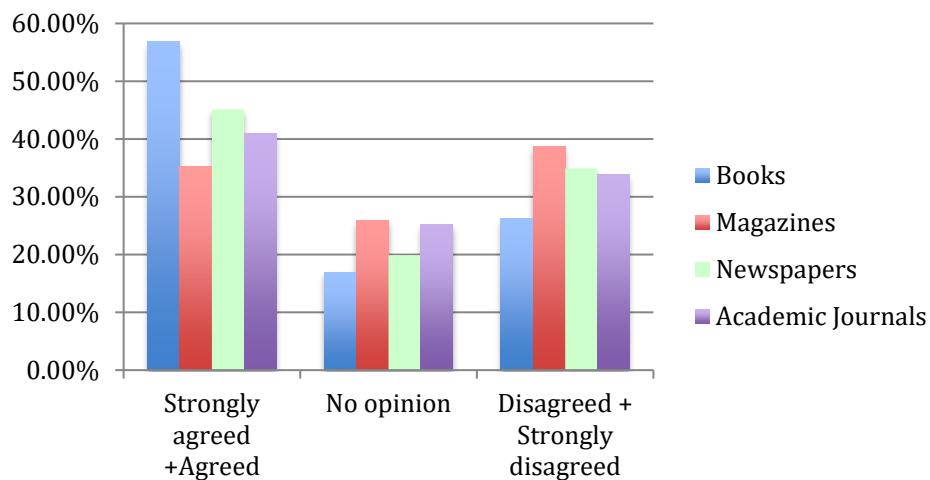


Figure 7. Overall response to the question, "Printing gives credibility to Books / Magazines / Newspapers / Academic journals".

This data also suggests that faculty find online publications more credible than students do. Figure 8 summarizes the results for faculty.

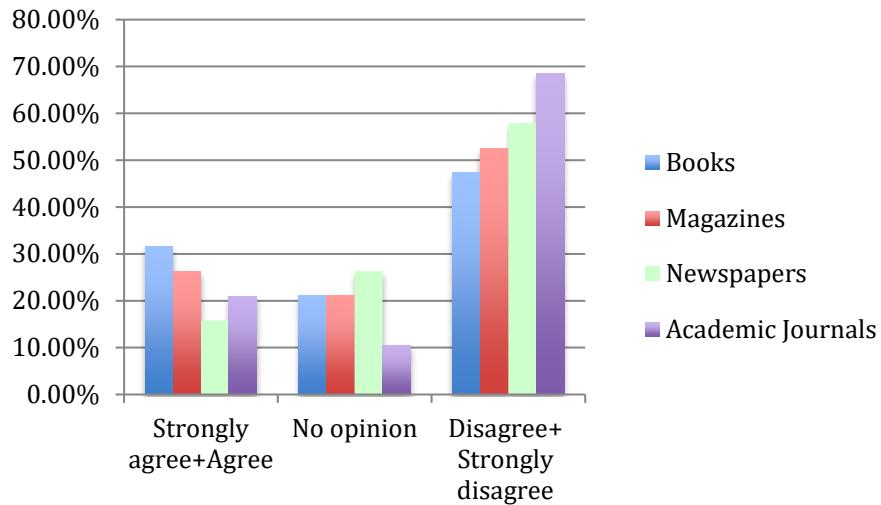


Figure 8. Faculty responses to the question, “Printing gives credibility to Books / Magazines / Newspapers / Academic journals”.

All of the results regarding credibility are consistent with previous research, which indicated that credibility is a main factor that affects users’ acceptance of e-books (Shelburne, 2009). These results also suggest the importance of reading preferences to acceptance of e-books.

Driver C: Reading habits. The first reading habit explored was whether the availability of online readings affects the amount of reading participants completed. The results indicate that only around 20% of participants did more reading online than they used to do with print alone while more than half (51.1%) said that the availability of online readings has not really affected the amount that they read. See Figure 9 for results.

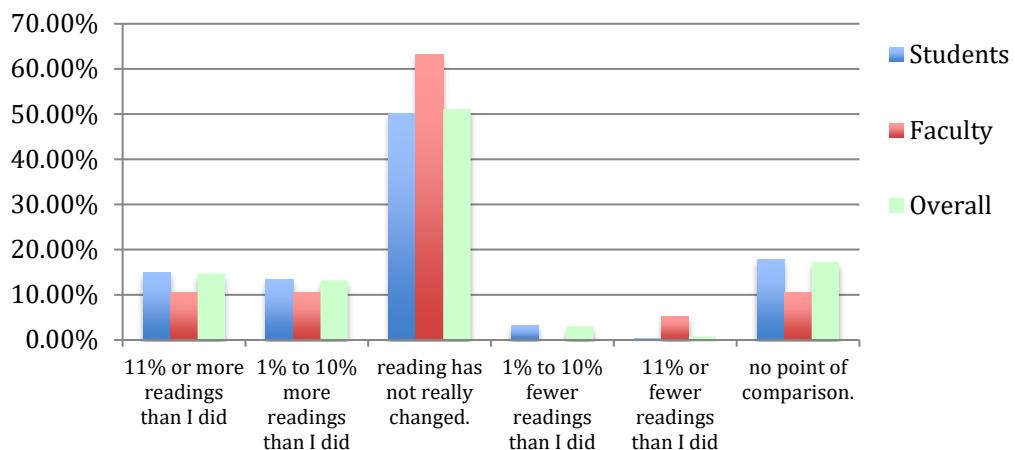


Figure 9. Impact of e-books on amount of reading.

We also inquired how participants’ note-taking habits differed between printed and e-books. The results indicated that more than 60% of students take notes directly on print

materials, while 29.3% of take notes in a separate file; 8.9% of students do not take notes. When reading online, more than half of student participants (50.2%) claimed that they don't take any notes. Another 38.1% take notes in a separate file, and only 11.8% take notes in the same document as the reading. See Figure 10 for a summary of results.

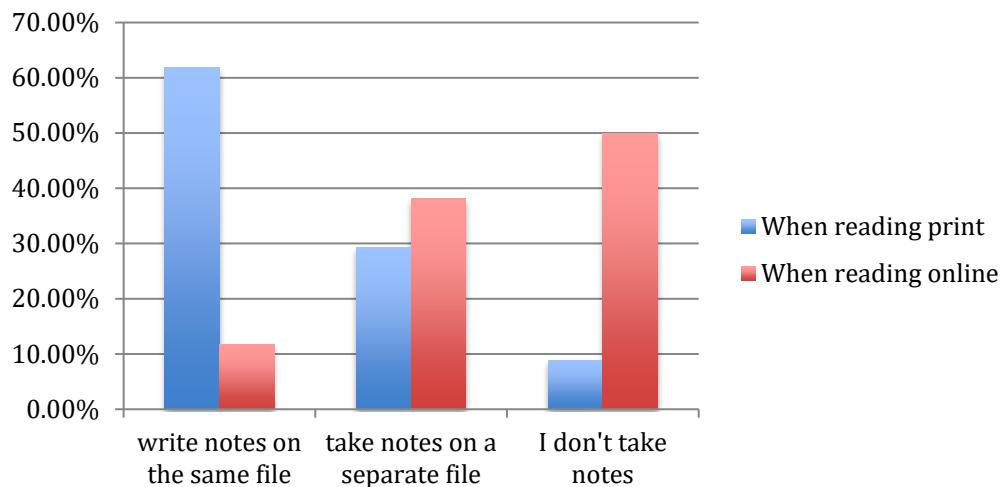


Figure 10. Note-taking while reading in print vs. reading online.

These results suggest that issues exist with the note-taking functions of e-books. Perhaps students are not aware of them or they find them cumbersome to use. This a serious concern because note-taking strengthens learning (Kiewra, 1989).

Driver D: Convenience of e-books. We asked participants to compare the convenience of e-books to their print counterparts. The majority of participants (78.9%) indicated that the convenience of e-books compared favourably to printed ones.

We found similar results when comparing the convenience of online and printed magazines and newspapers, and journals, with 42.1%, 36.8%, and 47.4% respectively reporting that online versions are more convenient than their print counterparts most of the time. Furthermore, more than 20% of the participants indicated e-journals are always more convenient than paper-based ones. Only 5% of participants thought e-journals are never as convenient as paper-based journals. Students and faculty responded similarly when comparing convenience of online and print materials. See Figure 11 for the general results.

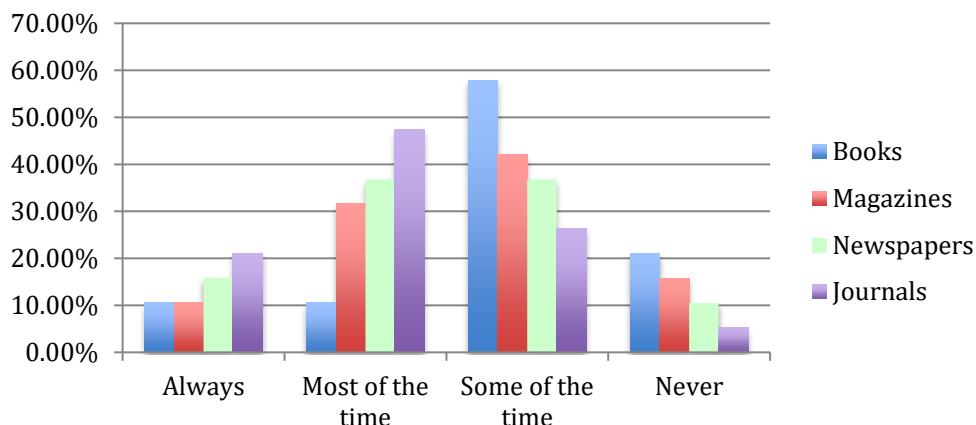


Figure 11. Reading books, magazines, newspapers, and journals online.

These results support prior research, which indicated that perceptions of convenience affect users' adoption of e-books (Angeletaki, 2011; Williams & Dittmer, 2009) and increases the likelihood of adoption (Lam et al., 2010; Levine-Clark, 2006;).

In addition to these convenience factors, we also asked about a risk raised by some digital materials: plagiarism resulting from the easy copying of content from some digital formats, including PDFs and HTML (web) documents into student assignments. (In other formats, such as EPUB, Kindle, and Nook, content can be protected, making copying more challenging.)

We only asked faculty about this. Specifically, we asked whether faculty felt that the use of e-books would increase the risk of plagiarism. Of them, 47.4% did not believe that e-books would increase the risk of plagiarism and another 36.8% feel that the plagiarism between print and e-books is similar.

Driver E: Cost of e-Books. We asked participants to share their expectations of cost savings of e-books over print books. Specifically, participants were presented with a series of savings percentages and asked at which percent was the e-book more attractive than its printed version: the same? 10% less? 25% less? 33%? 50%? 60%?

The results show that the larger the discount, the greater the likelihood that participants would purchase e-books. When the prices are the same, only a small percentage (15.8%) are willing to purchase e-books over printed ones. But when offered a 60% discount over printed books, most (85%) would choose the e-books first. The results suggest that the price point at which at least 50% of participants are willing to purchase e-books over printed ones seems to be at a 50% discount. The results were in line with previous articles that mentioned lower price is an essential factor that affects users' acceptance of e-books (Gunter, 2005; Johnson et al., 2010; Schoch, Teoh, & Kropman, 2006; Sprague & Hunter, 2008). Figure 12 shows the results, distinguishing between students and faculty responses.

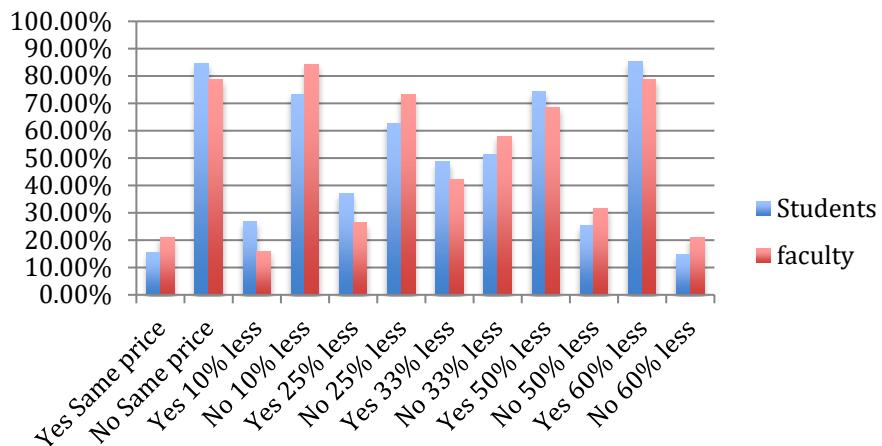


Figure 12. Student's and faculty's responses to price differences between printed and e-books.

Driver F: Ownership issues. To address the issue identified by the literature that most e-textbooks are leased rather than owned, one question on the survey investigated participants' awareness of the ownership conditions. It specifically asked whether participants believed that they own their e-textbooks, have access to the e-textbook for a certain period of time, or were renting the e-textbook.

Nearly three-quarters of participants (74.1%) erroneously believed that they owned the e-books and have access to the e-books at any time. Of the rest, 12.4% thought they could access the e-textbooks for one or two years. Only 13.5% believed that they rented the e-textbooks. T-tests did not find any statistical difference between student and faculty responses to this question, $t= .575$, $p= .565$. Figure 13 summarizes the findings.

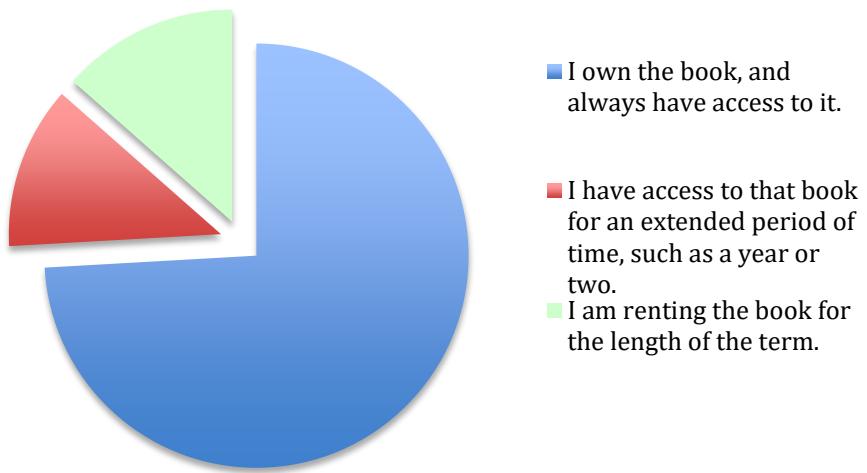


Figure 13. Perceptions of e-textbook ownership rights.

Conclusions

The results suggest that the challenges to adoption of e-books are not technical but pertain more to usability and the user experience; many issues that the research has not previously considered. That supports the notion that issues other than the capabilities of the technology play a central role in shaping perceptions of educational technologies expressed by earlier educational technology theorists (Selwyn, 2013). Those perceptions, in turn, are linked with intention to adopt. This small study also suggests that perceptions go beyond general perceptions of a technology, but also particular drivers of those perceptions.

Arising from this conclusion, this part of the article discusses the implications of this study, then describes the limitations, and closes with suggestions for future research.

Implications

As noted at the beginning of this article, e-book adoption has not yet reached the anticipated levels but, despite this, some community colleges are pursuing programs centred around electronic texts (called Zed-Cred programs in Canada, or Zero-Cost or Z-programs in Canada). This study suggests some of the issues that have hindered e-book adoption and that planners of these programs, and others interested in promoting e-textbooks, might consider when trying to increase adoption rates of e-books. Although these efforts focus on using digital, open educational resources, many of the issues identified in this study pertain to usability and utility, rather than cost, and could still challenge instructors in encouraging students to use the texts.

Some specific issues to consider:

- Help students and faculty gain experience with e-books. The results of this study provide further evidence that previous experience with e-books contributes to positive perceptions of them and likelihood to adopt. Immediate opportunities to build familiarity with online reading include journal, magazine, and news articles, which the data suggests benefit from perceptions of higher credibility than e-books themselves. In fact, many university libraries are reducing their on-site collections of printed journals because of high use of digital journals and magazines. Most university libraries also have collections of digital books; instructors might be encouraged to integrate them into their readings, even if they just include one or two chapters in a given term. Such hands-on experiences with e-books might strengthen their credibility.
- Address online reading habits. The results suggest that, for the majority of users, e-books have little impact on the amount of class-related reading that they do despite the amount of time that people spend online. The literature suggests that the problem might be a factor of the experience of reading online, the possibility of distraction from other tasks on many devices, and even fatigue with digital devices (Corkery, 2018).
- Promote note-taking while reading online. Many devices feature screens on which users can write and save notes. The Digital Rights Management regimen for the e-book must also permit note-taking. Open educational resources allow note taking; some commercial books do not.
- Address costs of e-books. The results suggest that only when e-book prices are half of those of printed ones does the price become attractive.

On the one hand, Zed-Cred courses, which use open source materials, avoid textbook charges. On the other hand, many textbook publishers price e-books more closely to their printed counterparts and, in a few instances, charge more for the e-book than the printed one.

Furthermore, this pricing strategy is at odds with the strategies used by Amazon and Apple when they launched their e-book stores. They priced general titles (fiction, general interest, nonfiction) aggressively, well below the cost of printed versions.

In addition, some for-profit textbook publishers like Cengage hope to offer services packaging open educational resources. But at \$120 U.S. per student per term (Hill, 2017), the price might exceed student willingness to pay. In addition to the price, perceptions of the value of the subscription depends on the number of instructors choosing Cengage resources in a given term. That, in turn, varies widely among students because each has a customized schedule.

- Address ownership rights. That subscription model raises the last issue associated with adoption of e-books: ownership rights. The results suggest that the majority of students and faculty believe that, when they acquire e-books, they own them when, in fact, they are just renting them. Furthermore, many students expect access to those e-books after completing courses only to discover they no longer have access.

At the least, instructors need to become aware of the digital rights associated with e-books used in their courses and have a responsibility to inform students about those digital rights. Doing so, however, might raise further concerns among students because, for the prices they are paying, students might expect better access to books.

More broadly, the results of this study also suggest one additional implication. Perhaps predictions of adoption of technology should consider issues of usability and user experience, as these affect adoption decisions.

Limitations

Several limitations affect this study. First, certain issues affect the generalizability of the results. One is that the study was only conducted at one college in Canada. Furthermore, the college was a CEGEP in Quebec, whose structure differs from community colleges elsewhere in Canada, much less North America.

The response rate also affects generalizability of the results. With an 11.8% response rate, the results have limited generalizability. The ideal response rate would have been more than 14.5%, which would have provided results that could be generalized at the conventional confidence level of 95% (Cohen, 1988).

Because of its length, the survey did not explore certain aspects of participants' backgrounds, such as their academic disciplines and cultural backgrounds, which could have affected perceptions of e-books, nor did it explore in depth perceptions of the unique capabilities of e-books and how those impact perceptions.

Last, this study assumed that participants acquire and use e-books legally. But as is an issue with all other digital content, pirating of e-books poses a challenge. Websites such as the

PirateBay and LibGen let users illegally download copies of books. This study did not explore illegal downloads, however.

Suggestions for Future Research

Partly as a result of the technical limitations of this study, partly as a result of questions raised by the responses, several future studies seem to emerge from this one. First is a study validating the results of this one to be conducted in different colleges.

Second, although participation by faculty was at the same percentage rate as students in the college, the much smaller population size of faculty suggests that a broader study of faculty—perhaps involving several institutions—might be beneficial.

Future research should capture the disciplines of both students and instructors, to see whether perceptions of e-books vary among disciplines. Early research on e-books found that students from disciplines such as business and computer science have different perceptions of e-books (Bailey, 2006; Littman & Connaway, 2004). New studies would confirm whether those differences remain.

Similarly, future studies on e-books should explore the unique capabilities of e-books. For example, a future study might compare whether perceptions of e-books change depending on the ways they do (or do not) integrate media other than text, such as video and audio recordings as some authors believe these are crucial to successful e-books. Such studies might look at the effect of the presence and absence of multimedia on broader perceptions of e-books.

Moving beyond this particular technology, future research might also explore how the results of this study align with findings about perceptions and adoption of other technologies for teaching and learning. Similarly, future research might also explore related issues of use, such as legal and pirated sharing of content.

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