

ABSTRACT

Lost in the Cloud: Cultural Lag in the Transition to eTextbooks

Debbie Hardman McMahon, Ph.D.

Committee Chairperson: Charles M. Tolbert II, Ph.D.

The age of electronic textbook delivery is upon us. On the national level, the Department of Education is advocating eTextbook delivery in K-12. President Obama recommends that eTextbooks be employed in K-12 education by 2017. In economic hard times, these measures may make good sense. The cost of textbooks has undergone a dramatic increase and it is believed that electronic textbook delivery is cost efficient, saving the struggling public schools a great deal of money. In higher education, we have witnessed the proliferation of MOOC's, online classes and eTextbook promotion and delivery. In a few short years, students entering college will have been using eTextbooks throughout their education. For this timely study, I will compare classes using two different models of delivery-traditional print textbooks and eTextbooks.

This study uses a quasi-experimental approach to compare parallel classes taught by a single instructor. Some classes are taught with a traditional print textbook and the comparison group uses an electronic textbook available through the course management system. Comparing eTextbook classes to traditional print classes, I will add to the body of knowledge with regard to students' engagement, with the class and with class material,

on their actual use of the textbook, how students perceive their learning needs are being met and under what conditions would they prefer eTextbook delivery over paper textbooks.

Lost in the Cloud: Cultural Lag in the Transition to eTextbooks

by

Debbie Hardman McMahon, B.A., M.A.

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Charles M. Tolbert II, Ph.D., Chairperson

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Approved by the Dissertation Committee

Charles M. Tolbert II, Ph.D., Chairperson

F. Carson Mencken, Ph.D.

Diana Kendall, Ph.D.

Kyle W. Irwin, Ph.D.

J. Lenore Wright, Ph.D.

Accepted by the Graduate School

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J. Larry Lyon, Ph.D., Dean

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DEDICATION

For Beauregard- I miss you buddy.

I think dogs are the most amazing creatures; they give unconditional love.

For me they are the role model for being alive - Gilda Radner

CHAPTER ONE

Introduction

The Current State of Affairs

The generation of students entering college today is immersed in electronic content delivery. Before today's freshmen graduate, they will likely have listened to their professors' podcasts, taken a class online, and been directed to electronic course content through their course management system (CMS) by a professor. Even though best practices are often not yet defined, faculty members are called on to employ the most effective and efficient delivery of everything from lessons to grades using advancing technology. The use of electronic textbooks (eTextbooks) is just one of those technologies. Due to vast stores of readily available content provided through technology, pedagogy can be creatively shaped to appeal to the learning behaviors of today's student.

The eTextbook wave is coming, driven by the promise of lower textbook costs, the clamor for market share, and improving technology. Publishers are driven by grave implications for their conventional business models. Publishers of eTexts are scrambling to address existential challenges that require restructuring their businesses in the wake of electronic delivery. The need to employ this technology in a way that is beneficial to all involved requires educators to know as much as possible about what it looks like and how it is being used now. Advocates point out the potential advantages, but scant research has been conducted to determine if the advantages are real or simply promotional promises.

Students are knowledgeable consumers of electronic delivery methods and expect technology to meet their needs. Future college applicants will have been educated using eTextbooks in kindergarten through grade 12 (K-12). If research concerning the effectiveness of teaching and learning from an eTextbook lags the delivery, we could find we've done a disservice to our students by not thoroughly investigating the consequences.

Incongruence between the economic forces behind adoption of eTextbooks and the social issues created by accelerated technology can be explained as cultural lag. According to sociologist William F. Ogburn (1957), "A cultural lag occurs when one of two parts of culture which are correlated, changes before or in greater degree than the other part does, thereby causing less adjustment between the two parts than existed previously" (p. 167). Cultural lag causes social problems or discomfort when one aspect of a system outpaces another aspect. Such is the case with eTextbook implementation. The technology, the economic forces on the publishers and the reality of a new way of receiving educational information are causing controversy and discomfort for the recipients. Ogburn explains that cultural lag is possible "to the extent that culture is like a machine with parts that fit" (Ogburn, 1957, p171).

Brinkman (Brinkman & Brinkman, 1997) later calls this theory socio-cultural lag, to fully acknowledge the human dynamic. Interdependence between publishers, authors, distributors, technology providers, educators and students certainly describe such a system. In a sense, the evolution of change is a negotiation between parts of the system. As educators, we are responsible for negotiating a changing system in such a way that our students and faculty benefit and thrive. There is little doubt that eTextbooks are in our

future. All elements of this system are readying themselves for massive eTextbook deployment. The time is now to present scientific analysis of the difference between use of eTextbooks and traditional print textbooks.

The recent participation of students at Baylor University in an eTextbook research study offers the opportunity to gain insight on the advantages as well as disadvantages of eTextbook adoption. Thorough investigation is required to ensure that eTextbook technology, delivery and promotion are being driven as much by the learning needs of the student and teaching needs of faculty as by the market forces behind the movement. The research outlined here concentrates on the student experience, while complementary research at other universities investigates faculty teaching and learning.

The pace of technology leaves in its wake unanswered questions. While we have no desire to resist the benefits that technology brings to higher education, we should be keenly aware of our responsibility to know the effects in the classroom. A slow response, a poor response, or even a failure to respond to eTextbook technology promoted by the publishing industry leaves higher education in a dangerous position. We don't really know whether the tools provided with eContent delivery are adequate to facilitate quality learning, or what other problems might lay ahead. When it comes to the use of eTextbooks in Higher Education, what do we know at this point in time? What do students who purchase textbooks say? Their input is critical to the launch of effective technology. Research is sorely needed and will remain timely.

This study will add to the body of knowledge with regard to students' engagement with e-Textbooks compared to print textbooks. It will reveal advantages and disadvantages in the use of eTextbooks. It will also elicit student responses concerning

what benefits, problems and improvements they would suggest. All of this can lead to adjustments to the technology platforms for eTextbooks to be a viable alternative for our students.

The Literature

President Obama has suggested that eTextbooks should be employed in most K-12 education by 2017 (Toppo, 2012). That effort is underway in many states, primarily driven by the economic concern of funding K-12 in a challenged economy. The Federal Communication Commission and the U.S. Secretary of Education are actively promoting this technology in K-12 (Herther, 2012). Challenging states to go digital with every student within 5 years, the FCC has published the Digital Textbook Playbook (2012), which asserts that digital textbooks ‘can revolutionize teaching’.

EBooks accounted for 2.8% of the estimated \$8 million textbook market in the U.S. in 2010 (Herther, 2012). *Publisher’s Weekly* (Feb. 27, 2012) reports that e-book sales rose 117% in 2011 while print sales fell. Another report states that “e-textbooks and other learning content are growing at a year-over-year rate of more than 100%” (Reynolds, 2012). Given the position of the Department of Education and the FCC, the projected rate may well be a low estimate. The Department of Education (DOE) holds that we are trailing other countries in the transition to digital textbooks. The DOE and others are closely monitoring the progress in digital transition and student outcomes in countries around the world. According to DOE Secretary Arne Duncan, “Textbooks should be obsolete. Other countries are moving very aggressively in this way” (Duncan, 2012). One noteworthy example the DOE provides is South Korea, which consistently

outperforms the U.S. on educational outcomes (Herther, 2012). Their goal is to transition to digital textbooks by 2015.

The transition to digital textbooks and the accompanying technology is being promoted by publishers everywhere in an effort to capture higher education market share. Consequently, it is imperative that higher education employ scientific methods to inform our decisions. Research in higher education should promote the development of content delivery that represents the best technology and delivery methods that will enhance the student experience and maintain or improve student outcomes. Given that, we must study the effects of technology and listen to the feedback of users in order to ensure that the promise fulfills the objective.

As with all technology, the current landscape will not remain the same for long. Research in 2008 (Sheppard, Grace, & Koch, 2008) evaluated eTextbooks and print textbooks offered on DVD or CD. Not surprisingly, the advantage of a less expensive, lighter and environmentally friendly alternative to textbooks was inviting. Stored on the students' computers, the ability to cut and paste, search and watch video from the disc and offer interactive content was a new and exciting development in educational possibilities.

Sheppard et. al. (2008) investigated student's choice of an electronic or print option on the basis of demographic information, their experience with computers, ownership of a computer, and GPA. In addition, students reported how helpful they found the text for preparing for exams and where they typically studied prior to the semester. Few differences emerged between the electronic text and print text groups on those criteria. The primary findings were that students who had used electronic textbooks

in prior classes did not elect to purchase an electronic textbook for this class. Students who did choose electronic delivery were ones with little prior experience. No difference in comprehension was noted. Cultural lag was evident, however, as students reported some difficulty adapting to reading electronically for classwork. One noted disadvantage was the lack of portability, since fewer students at the time carried laptops and mobile communications technology was far from seamless. Mobility with the eText is less problematic today. In any event, innovation in digital technology is measured in months rather than years, rendering any 2008 study quite dated.

In the last 5 years access and mobility have been greatly enhanced, but something has been lost in the bargain. First, innovation in technology continued to outpace corporate capacity. Inevitably, legal issues of access, copyright and content ownership inhibit progress toward an eText revolution. Ultimately, seamless delivery of quality hardware, software and content will have to wait until businesses, publishers and education institutions sort this out. Second, licensed content delivered on CD or DVD for desktop or laptop computers in 2008 will need to be accessed in a very different way today. Just because mobility has improved does not mean providers deliver high quality readability.

The issues of ownership and licensing will have to be sorted out in order to provide real-time delivery of online content to students while protecting the rights of the content owners and publishers providing it. Delivery of electronic content has gone through steady iterations toward a ubiquitous and viable combination of published material. And compatible software and hardware that delivers what educators and students need and want improves with each iteration.

In 2009, students at the University of Texas conducted a pilot of Amazon's Kindle e-readers packaged with complete electronic texts (Nawotka, 2009)(Meijer, n.d.) while Northwest Missouri State students tried out the Sony e-reader (Young, 2009). By this time the rise in pilot studies, the growing popularity of e-Readers and the threat to college textbook publishers' business model ensured that the immediate needs of the education community would be addressed while still providing ample content. Innovation on at least two fronts emerged: medium and content. As for the medium, better displays improved reading comfort (Butler, 2009), but the technology and price would have a way to go. Improving lithium battery technology solved potential problems. But early mobile e-readers had no search features to find specific content. This was actually a step backward since computer-based content on CD's and DVD's have search capability. An additional shortcoming was that e-reader displays were still in black and white or grayscale.

Studies on the effect of electronic delivery on learning have yet to emerge. A significant reform movement in higher education is assessment of learning outcomes. Assessment has become a major institutional priority at the same time that eTextbooks have appeared, providing another imperative for this research. A comprehensive study of eTextbook use was conducted at Indiana University in 2010 (Morrone & Dennis). That project culminated in an EDUCAUSE/Internet2 coalition issuing a national study (*Internet2 eTextbook Spring 2012 Pilot Final Project Report, 2012*). Indiana University (IU) examined eTextbook use and its relationship with course performance as well as students' attitudes and motivation using eTextbooks. No comparison or control group was studied. Rather, IU posed several hypotheses for eText users and investigated them

thoroughly. Data collected included usage data tracked for each student through the course management system and was available to researchers to determine use of the highlighting and annotation tools and numbers of pages read.

Results showed that students were not using the eText tools extensively, even though students reported that they highlighted, annotated and read slightly more than they would have with a print textbook. Less use of the highlighting and annotation feature correlated with lower course grade. Students who read fewer pages earned lower course grades which, of course, may not be related to the method of delivery at all (Morrone & Dennis, 2010).

In September 2011, *Information Today* published an article “ETextbooks: Coming of Age” (Mulvihill). In 2012, *Science* magazine asked the question “Electronic Textbooks: Why the Rush?” Perhaps the answer to the differing views is answered by another *Information Today* article published less than a year later than “Coming of Age”, entitled “High Stakes in the Etextbook Market.” The promise of eTextbook technology has been that we can deliver interactive content – “richer, interactive resources which include video, animation and audio” (Killingworth, 2011) and a more dynamic learning environment that will engage the student. Despite political pressure toward digitization of textbooks in K-12, pressure on publishers to bring eTextbooks to higher education, and the need to control rising textbook costs, we have precious little data analyzing whether delivery of such content is being used effectively. There is scant data to indicate that these enhancements are being utilized by either faculty or students or whether its use signifies an improvement in learning.

Research conducted in 2012 (Sun, Flores, Javier, & Tanguma, 2012) studied students' perceptions of how well eTextbooks promoted their learning and learning outcomes. Measures of perceived helpfulness, student involvement with the eText, and perceived learning outcomes were examined. They found that successful adoptions required necessary resources and instructors to actively engage students in eTextbook use. Helpfulness of the eTextbook for facilitating learning and learning outcomes were enhanced by the use of the eTextbooks if they were used in class. In other words, the added functionality of eTexts when used in classrooms may enhance learning, providing an improvement over traditional texts. The authors concluded that the additional benefits that eTextbook tools provided were "a platform for initiative and collaborative learning" (p. 74) which could increase student engagement, thus increasing the learning experience. To the extent that students engage themselves in the learning process, their learning is enhanced. The authors suggest that publishers, educational institutions, faculty and students must collaborate to create innovative learning through customization of content to engage students and improve outcomes. To be sure, collaboration within the entire system addresses the problems caused by cultural lag.

The Internet2 eTextbook Spring 2012 Pilot noted that faculty, by and large, did not report using the enhanced eText features, such as in-text annotation and notes, so students saw little benefit from the collaboration tools. The issue is complex, perhaps requiring much more collaborative innovation between publishers, instructional designers, faculty and institutions (Sun et al., 2012). The importance of continuing study includes the necessity for consistent and constructive input to ensure that the process toward digitization produces excellence and promotes higher learning.

Perhaps the most rigorous study examining the effect of digitized textbooks in terms of student learning was done by Daniel and Woody (2012). These researchers conducted an experiment to assess how students retained material using print and electronic versions and how well they believed they had retained the material. Students were assigned one chapter and quizzed on the material across content delivery media. EText users reported that they were more likely to engage in simultaneous computer-based competing activities (e-mail, social media, browsing, etc.) than print users. Importantly, since no grade differences were found between the content delivery methods, this multitasking may explain the additional reading time reported for eTextbook users. In this study, I ask student's using eTextbooks whether distractions are more problematic when studying via eText, but also probe further by asking if their learning needs were met by use of the electronic medium.

In other research, Sheppard et al. (2008), suggests that students' aversion to digital textbooks may be due to eye fatigue, since the students spent more time reading the eText with no corresponding improvement in tests or grades. Qualitative data in my survey will address students' responses on this matter.

Background and Research Questions

Recently, McGraw-Hill and Courseload entered into an agreement to supply eTextbooks for a national pilot conducted by EDUCAUSE and Internet2. Baylor University was among 24 institutions that entered into this pilot study in the fall of 2012. The Baylor study was sponsored by Baylor University Libraries. Baylor's goal within the scope of the national baseline study is to assess how the institutional site license model supports lowering the cost of educational materials. Patti Orr, Vice President for

Information Technology and Dean of Baylor University Libraries explained that "...the pilot offers the opportunity to explore whether eTextbooks would work well as licensed materials for students, and to explore which technologies could deliver those materials in a way that supports teaching and learning most effectively" (Enis, 2012).

From this larger assessment project comes this dissertation, which is a comparison of eTextbook classes with classes using traditional print textbooks. This research uses a quasi-experimental approach to compare parallel classes. Some classes are taught with an electronic textbook using Courseload as the instructional platform. The comparison group uses the same text in a traditional print textbook format. Each of the parallel classes is taught by the same professor. This important study will add to the body of knowledge with regard to students' engagement with e-Textbook material compared to print textbooks. I will compare eTextbook students to print students on their actual reading of the textbook, on how students perceive their learning needs are being met, and under what conditions would they prefer eTextbook delivery over print textbooks. In addition, I will examine student engagement by each type of content delivery. In the next chapter, I will introduce the variables and statistical methods used to answer the following hypotheses. Chapter Three will present the results of the statistical analysis. Finally, I will present conclusions drawn from the analysis, suggestions for additional research needed, and limitations of the study.

Hypotheses

Intuitively we might believe that the portability of eTextbooks, the ability to annotate and take notes within the text, and the ease of having the text with the student at all times would lead an eTextbook user to make greater use of the textbook than a print

textbook user. Yet, prior to this study, we have little empirical evidence to make this claim. For this comparative study I will test this hypothesis statistically, *hypothesizing that actual use of the eTextbook by students is greater than actual use of the print textbook.*

Students in this study were asked several questions about whether their learning needs were met by the textbook they used, either eText or print. Students' unfamiliarity working with eTextbooks can cause the discomfort described by cultural lag. Students in Sheppard's 2008 study expressed difficulty adapting to the new medium. Because students in this study were unfamiliar with eTextbook usage, *I hypothesize that student's will deem their learning needs are better met by print textbooks than by the eText.*

Seven questions explore the conditions under which student's would choose to purchase an eText over a print textbook in the future. I hypothesize that *usability will be of primary importance in the decision to purchase eTextbooks over the print textbook option.* Another question asks if students would enroll in an eTextbook only course under certain conditions. I hypothesize that *students using print textbooks will be more inclined to try eTextbooks in the future than students who used eTextbooks.*

I will examine student engagement in each group. Direct comparison on student engagement is not possible, since the student engagement questions are not identical. However, I will present the findings for each group on their reported engagement with the texts. Student engagement is measured through direct and indirect questions about their engagement in this class. *I hypothesize that students using eTextbooks will not report greater engagement than they would have with print textbooks.*

Finally, each class was asked to offer any other comments about the use of print or eTextbook use. Using grounded theory and qualitative analysis software, I will analyze their comments.

CHAPTER TWO

Data and Methods

In the fall of 2012, Internet2 and EDUCAUSE partnered to conduct a Pilot e-Text Research Program, an extension of research done in the spring of 2012. Baylor University Libraries collaborated on this national project to study the effect of eTextbooks in higher education. Baylor was one of 24 universities participating in the national Pilot eTextbook baseline study. To accompany the pilot study, my project incorporates some of the baseline data and adds an additional control group of non-eText classes in an experimental study of students in parallel classes using printed textbooks.

In the summer of 2012, Baylor University Libraries sent out a call to all faculty members for volunteers to participate in the eTextbook Pilot project, a national collaboration spearheaded by EDUCAUSE and Internet2. Faculty members who used a McGraw-Hill textbook in their classes were eligible. Faculty members from ten departments at Baylor teaching 27 class sections volunteered to participate in the pilot study, designed to gather baseline information on the use and effectiveness of eTextbooks in Universities across the country.

This study provides a timely analysis of the effects of eTextbook use, comparing their use to traditional print textbooks. I am particularly interested in student engagement with the class and with class material, actual use of the textbook, students' perceptions that their learning needs are being met, and the conditions under which they would elect eTextbook delivery over print textbooks. This project covers both the quantitative results of the survey and the qualitative results, consisting of an open ended request for

comments. Quantitative results are analyzed using SAS statistical software package, while qualitative results are imported and coded and analyzed with NVivo software using grounded theory to explore emergent themes.

Participating classes were provided free eTextbooks accessible to students through Blackboard, the online Learning Management System used by Baylor. The medium by which the content was delivered was Courseload, Inc., a digital textbook platform not associated with a particular publisher in cooperation with McGraw-Hill who provided the content for this study. The Courseload eTextbook platform offered professors and students the ability to annotate within the text, share notes with the professor and/or each other and place bookmarks within the text. The eText was not available offline.

Participating professors were briefed and trained on use of the tools available with the eTextbook, which included in-text annotation, highlighting, inserting notes and posing in-text questions to the students. The faculty members were also given access to online tutorials and training material. A website was created to provide additional information and tutorials, if needed, and provide a place to discuss problems or present questions. Monthly meetings were held with faculty members to discuss the experience.

Among the faculty at Baylor, professors in Business, Accounting, Management Information Systems and Human Performance taught at least two sections of an identical class in each format - electronic and print. The classes included in the study were three sections of BUS 3345-Training and Development in Business and Industry, six sections of MIS 3305-Management Information Systems, and two sections of HP 2420-Exercise Physiology. The MIS 3305 sections were taught by two different instructors, therefore

there are four groups in the comparison, each comparison taught by the same professor and using the same text. The survey and collection of all data as well as later focus groups or interviews as needed were approved by the Baylor Institutional Review Board (see Appendix A).

Data

For this research study, students in a total of 14 classes were administered a survey late in the 2012 fall semester. With the exception of two classes, students were surveyed in their classroom with a PAPI (paper and pencil interview) instrument. The sample included 12 sections consisting of four classes across three disciplines. Informed Consent was obtained prior to the voluntary classroom survey. Students who consented to participate provided their student ID number. In the case of eTextbook classes, we linked survey responses to Courseload, where data was recorded on students' actual reading and use of the eTextbook material and interactive tools.

The final dataset consisted of 269 respondents - 103 students who used eTextbooks, representing a 74 % response rate and 166 students who used print textbooks, also constituting a 74 % response rate. The survey data were subset into the classes taught by the same instructor in each medium: print textbooks or eTextbooks. Independent sample t-tests were conducted on all identical variables as a whole sample and then by comparison group.

The dataset represents a quasi-experimental design. This allows me to compare data from the classes participating in the eTextbook study with a control group taught by the same instructor, using a print textbook version. In the first set of analyses, identical questions on both surveys were tested for significant differences. Table 1 shows the

distribution of the classes surveyed. The Management Information Systems classes comprise two control groups as they were taught by different professors.

Table 1

Respondent by Class and Mode of Delivery

Course/Section	Course Name	eText	Print
MIS 3305-01	Management Information Systems	25	
MIS 3305-02	Management Information Systems		25
MIS 3305-03	Management Information Systems		27
MIS 3305-04	Management Information Systems		26
MIS 3305-07	Management Information Systems	25	
MIS 3305-08	Management Information Systems		19
HP 2420 01	Exercise Physiology	28	
HP 2420-02	Exercise Physiology		23
BUS 3345-01	Training and Development in Business & Industry	25	
BUS 3345-02	Training and Development in Business & Industry		20
BUS 3345-03	Training and Development in Business & Industry		26

Table 2

Comparison of Proportions - Complete Sample

Variable	Type	<i>n</i>	PAPER	ETEXT	<i>t</i>	<i>P</i>
GENDER					0.41	0.685
	Male	163	60%	62%		
	Female	106	40%	38%		
ETHNICITY					0.13	0.8962
	White	182	67.5%	68.0%		
	African American	21	9.0%	5.8%		
	Hispanic	27	8.4%	12.6%		
	Asian	28	10.8%	9.7%		
	Multiracial	11	4.2%	3.9%		
CLASSIFICATION					0.01	0.9944
	Sophomore	15	7%	4%		
	Junior	124	44%	49%		
	Senior	130	49%	47%		

p < .05*

Descriptive Statistics

For both groups, survey data were linked to student demographics by Baylor's Department of Institutional Research and Testing, and returned to me with all personally identifiable information stripped away. Table 2 exhibits the demographic distribution of the eTextbook and the print groups of the combined sample. As a whole, there were no significant gender, race, ethnic or classification differences.

Table 3

Comparison of Proportions - Complete Sample

Variable	Type	<i>n</i>	PAPER	ETEXT	<i>t</i>	<i>P</i>
GENDER					0.41	0.685
	Male	163	60%	62%		
	Female	106	40%	38%		
ETHNICITY					0.13	0.8962
	White	182	67.5%	68.0%		
	African American	21	9.0%	5.8%		
	Hispanic	27	8.4%	12.6%		
	Asian	28	10.8%	9.7%		
	Multiracial	11	4.2%	3.9%		
CLASSIFICATION					0.01	0.9944
	Sophomore	15	7%	4%		
	Junior	124	44%	49%		
	Senior	130	49%	47%		

$p < .05^*$

Table 3 provides the mean age and mean cumulative GPA for each class by mode of delivery. Most students took either an SAT or an ACT examination. To include both types of exam scores in a regression, a new variable was created that represented the standardized z-score for the ACT or SAT test score. If both tests were taken, the highest score was retained for the analysis. For the very few who had neither score, the value was set to the mean. Table 3 gives the mean of the standardized scores.

T-tests determined few significant demographic differences between eTextbook classes and print textbook classes. When the sample was analyzed as a whole, the mean age between all print and all eText classes was insignificant. Further analysis by experimental and control groups indicated some differences as shown in Table 3.

By individual class, the mean ages showed some differences. Small but statistically significant age differences were found in two classes, Business and Human Performance. The MIS-2 print textbook students, whose average was 21.38, were 0.6 years older than eTextbook students. The Human Performance eText class included one outlier, a slightly older student (28) who skewed the mean age. While statistically significant, because these classes are open to Sophomores-Seniors, this age difference is not extraordinary. The cumulative GPA in the Human Performance eText group was slightly but significantly higher. Mean cumulative GPA in the eText class was 3.44 compared to 3.11 in the print textbook class. All other demographic characteristics were statistically insignificant between the parallel groups.

Variables

The bulk of this comparative study is done with identical questions posed to the two groups in the survey. The first five questions in the survey address to what extent students felt their learning needs were met by the use of the textbook (see Table 4). *T*-tests are conducted for each of these variables by group to determine whether the learning needs of each group are considered to be met equally and then by parallel classes to determine difference by class.

Table 4

Identical Questions Across Content Delivery Mediums

Variable	Description
If you used the textbook (eTextbook), <u>to what extent</u> were your learning needs met by using your textbook?	
Q1	Helped me to better understand the ideas and concepts taught in the course
Q2	Allowed me to better organize and structure my learning
Q3	Increased engagement with course content
Q4	Helped me interact and collaborate with classmates
Q5	Made my study time more efficient
Tell us how much the following would influence your decision to purchase an eText over a paper textbook.	
QD7	if it costs less than a used or rented traditional textbook
QD8	if it were readable on a handheld mobile device (e.g. iPhone, Android phone)
QD9	if it were readable on Tablets (e.g. iPad, Galaxy)
QD10	if it were available <i>without</i> an Internet connection
QD11	because it is more portable than traditional textbooks
QD12	if it had the capability to permit me to share notes or questions/collaboration with the professor and other students
QD13	because it is more environmentally friendly than traditional textbooks
TEXT	What percentage of the assigned readings in the textbook did you actually read? (either in eText or paper textbook format)?
NEED	Index combining Q1 + Q2 + Q3 + Q5

From Table 4, four of the first five variables (Q1, Q2, Q3, and Q5) are retained as a measure for learning needs. The four correlated variables are summed in an index, (NEED) with a value from 5-20. Q4 did not correlate highly with Q1, Q2, Q4 and Q5, so was dropped from the index. The variables in the index have an internal consistency,

measure by Cronbach's alpha, of .91 for the eText and .89 for the print text. Variables that will be regressed on the learning NEED index include standardized SAT/ACT scores, pages read, amount of highlighting in the text, note taking and other participation factors.

The next series of identical questions asks students to tell us what factors would influence them to purchase an eTextbook in the future (QD7-QD13, Table 3). I compare these factors between the groups for similarities and differences using *t*-tests and rank the answers. Answers will be compared across the groups and will be ranked in order of relevance to the student.

The final question asked of all students is: "Suppose Baylor could secure a better (less expensive) price for a required course textbook than you could get on your own, but only if all students in a course had to buy the textbook electronically as an eText. Would you be willing to enroll in a section that had a mandatory eText charge (similar to a lab fee that some science courses require)?" Answer choices are yes (1), no (2), or maybe (3).

To measure actual use of the eText, the Courseload delivery system documents pages read in the eText, annotations, and pages printed. Courseload logs a page as read in the eText (PGVIEW) by the student remaining on a page for 10 seconds or more. For comparison in this study, eText as well as print text students were also asked to self-report how much of the assigned readings they actually read (TEXT). Self-reported figures will be compared between the groups using *t*-tests. The actual use of the textbook in both classes also serves as a proxy for student engagement when considered in concert with other variables. Once a *t*-test has determined if differences exist in the amount of

text read, a simple regression will determine if reading more of the textbook in either format predicts whether the students' learning needs are being met.

Differences in the way the questions were asked in the eText survey inhibit the ability to make direct comparison about student engagement between the two modes. However, I will address student engagement in each class separately. In the print survey, students' level of engagement is a direct question. The survey asks "How engaged were you in this class? For instance, did you..."

- 1) Highlight the text? (HILITE)
- 2) Takes notes in class? (NOTES)
- 3) Ask questions? (QUEST)
- 4) Participate in class discussion? (PART)

Table 5

<i>Predictors for Regression on Needs Index-Print</i>	
Variable	Description
HILITE	Highlight the text?
NOTES	Take notes in class?
QUEST	Ask questions?
PART	Participate in class discussion?
TEXT	How much of the assigned reading did you actually do?

The variables in Table 5 will be regressed on the NEED index to determine if these kinds of engagement activities increase the perception that their learning needs are being met.

The engagement variables for this groups' regression do not correlate and will be

introduced individually to the regression, while controlling for age, gender and standardized SAT/ACT score.

The variables for the eTextbook group, in Table 6, are also regressed on the NEED variable. EText student engagement is measured by students' responses to the following statements:

- 1) I read more of the assigned materials than I would have if it were a print textbook.
- 2) I highlighted and/or annotated more than I normally do with print textbooks.
- 3) Using eTexts has become part of my learning routine.

Answers for these questions range from strongly disagree (1) to strongly agree (5).

Table 6

<i>Predictors for Regression on Needs Index - Etextbooks</i>	
Variable	Description
PGVIEW	Courseload logged number of pages read, converted to percentage
HILITEM	I highlighted more of the assigned material than I would have if it were a paper textbook
ROUTINE	Using eTexts has become part of my learning routine
REDMORE	I read more of the assigned material than I would have if it were a paper textbook
ENGAGE	HILITEM+ROUTINE+REDMORE
TEXT	How much of the assigned reading did you actually do?

Table 6 lists those variables that are unique to the eTextbook classes. A correlation was conducted on the three engagement questions. These three response items are highly correlated (Cronbach's alpha .8). I sum these variables to create an index entitled

ENGAGE. In a separate regression analysis of the eText users and the print text users, I will see if and to what degree, student engagement contributes to the perception that learning needs are being met.

CHAPTER THREE

Results

Chapter 2 revealed the results of *t*-tests on the descriptive statistics. Chapter 3 outlines the results of the direct comparisons between the classes on questions asking how the text meets their learning needs; reveals what is important to each group when deciding to choose a textbook in the future; compares the self-reported use of each textbook type to determine which group actually reads more of the text; and present results on both groups' engagement with the course material via the textbook. I will present results of regression analyses on the relationship between learning needs and the actual amount of the text students read, and their engagement behaviors, such as highlighting and taking notes. Finally, I will present qualitative data gleaned from the student's responses to an open-ended question "Are there any additional comments you'd like to share about your experience with the textbook?"

Combined Sample

I analyzed the mean of each variable and conducted *t*-tests on the sample as a whole. In cases where there is equality of variance, pooled variance is reported. Where variance is not equal, Satterthwaite variance is reported. The results from the pooled variance and Satterthwaite variance were tested against the Wilcoxon-Mann-Whitney test for independent samples whose distribution was not normal. There was no significant variation between the two test results, indicating a good model fit.

The combined sample results are shown in Table 7 and Table 8. This analysis resulted in significant differences between the eText and print text classes on all 'learning needs' variables. Students who used print textbooks reported more positively than eText users that their textbooks were instrumental in helping them understand the material, organize and structure their learning, the texts contributed to the efficient use of their study time, contributed to engagement with the material and to collaboration with classmates.

The facility of the textbook in helping the respondent collaborate and interact with classmates (Q4) indicates a mean score of 1.82 for eTextbook users and 2.17 for print textbook users, a response that falls between 'not at all' and 'a little'. There is a statistically significant difference between the two groups-print textbook users were more positive, but neither group considered the text conducive to collaboration. Courseload statistics provided a key statistic that may inform this point. Courseload data in this study confirms earlier findings (Dennis, 2011) that the more annotations in the book by a professor, the more annotations by his or her students. The most annotations by a faculty member occurred in the Human Performance class, where 46% of the students annotated. In contrast, only 18% of the students annotated in the MIS classes. I will add analysis of open-ended comments on eTextbook functionality to draw conclusions about collaborative features in Chapter Four.

Table 7

Mean, Standard Deviation and t-values of Variables by Method of Textbook Delivery-All Classes

Variable	Description	Mean (SD)		<i>t</i>	<i>DF</i>	<i>p</i>
		eText	Paper			
<i>To what extent</i> were your learning needs met by using your (e)textbook?						
Q1	Helped me to better understand the ideas and concepts taught in the course	2.39 (1.2)	3.62 (1.02)	8.76	259	.0001***
Q2	Allowed me to better organize and structure my learning	2.33 (1.24)	3.28 (1.09)	6.42	259	.0001***
Q3	Increased engagement with course content	2.3 (1.17)	3.01 (1.15)	4.77	259	.0001***
Q4	Helped me interact and collaborate with classmates	1.82 (1.10)	2.16 (1.16)	2.33	258	.021*
Q5	Made my study time more efficient	2.24 (1.28)	3.21 (1.19)	6.2	259	.0001***
TEXT	What % of assigned readings would you say you actually read?	62.8 (31.3)	53.9 (29.5)	2.35	263	.019*

Note: $p < .05$ * $p < .01$ ** $p < .001$ ***

Table 8

Mean, Standard Deviation and t-values of Variables by Method of Textbook Delivery-All Classes

Variable	Description	Mean (SD)		<i>t</i>	DF	<i>p</i>
		eText	Paper			
Tell us how much the following statements would influence your purchase of an eTextsbook over a paper textbook.						
QD7	if it costs less than a used or rented traditional textbook	4.03 (1.23)	3.77 (1.25)	1.63	261	0.104
QD8	if it were readable on a handheld mobile device (e.g. iPhone, Android phone)	2.98 (1.4)	3.16 (1.3)	1.08	260	0.304
QD9	if it were readable on Tablets (e.g. iPad, Galaxy)	2.92 (1.54)	3.17 (1.3)	1.44	260	0.152
QD10	if it were available <i>without</i> an Internet connection	3.54 (1.43)	3.97 (1.12)	2.71	259	.007**
QD11	because it is more portable than traditional textbooks	3.21 (1.32)	3.55 (1.18)	2.17	259	.031*
QD12	if it had the capability to permit me to share notes or questions/collaboration with the professor and other students	3.06 (1.18)	3.77 (1.15)	4.73	261	.0001***
QD13	because it is more environmentally friendly than traditional textbooks	2.54 (1.39)	2.56 (1.35)	0.1	260	0.922

*Note: p < .05 * p < .01 ** p < .001 ****

Etextbook users reports that they read a significantly greater percentage of the assigned readings, $t(263) = 2.64, p < .019$. Etext students reported reading 62.8% of the assigned readings, compared to 53.9% in print. Further investigation will confirm if this is supported for each class. Later regressions will report how reading correlates with learning needs for each group of students.

More information on engagement by eTextbook users is found in the responses to the following statements. *I highlighted/annotated more than I would have with the print textbook.* 60.7 % disagreed, 20.2% were neutral and 19.1% agreed that they did highlight more. *I read more of the assigned material than I would have with the paper textbook.* 61.5% of eText students disagreed, 25.3% were neutral, and 13.2% agreed. *Using eText has become part of my learning routine.* 52.2% disagreed, 25.6% were neutral, and 22.2% agreed that the eText had become part of their regular routine.

When asked what conditions would influence them to purchase an eTextbook over a print textbook, the most important condition for eTextbook users was cost (mean 4.03), although some students expressed the opinion that e-books were not as inexpensive as they ought to be. Table 8 presents this series of questions. The most important condition for print textbook users, and second most important for eTextbook users, was the availability of the eTextbook *without* an internet connection. Both groups considered this more than somewhat important, although the difference between the groups was significant, $t(259) = 2.71, p < .01$. The mean score for eTextbook users was 3.54, for print textbook users 3.94. The ability to collaborate and share notes with the professor and classmates was significantly more important to print users than eTextbook users. Portability as an influence on purchase was significantly different between eText users

(3.21) and print users (3.55). Environmental concern was of the least concern to eTextbook and print textbook users alike.

Finally, a *t*-test revealed that there is no significant difference between the groups with regard to choosing an eTextbook only course, $t(269) = .60, p < .55$. 34% of paper users and 31% of eText users answered that they would enroll in an eText only class. The hypothesis that students using print textbooks will be more inclined to try eTextbooks in the future than students who used eTextbooks is disproven.

Group T-Test Results

Based on the results of the *t*-tests on the sample as a whole by mode of delivery, I conducted additional *t*-tests to compare control and comparison group responses for each of the questions. *T*-test results for Business 3305, shown in Table 9, exhibit distinctly unique results among the sample. This group showed very little difference between the eTextbook and the print textbook group on questions regarding learning needs. Although the print textbook group generally rated the degree to which their learning needs were met higher than the eTextbook group, the differences were not statistically significant for this class. Cost and availability without an internet connection were the significant differences in the decision to purchase an eText in this class. Print textbook users were less likely to cite cost as important to their decision to purchase an eTextbook in the future while eText users considered that of high importance. Print textbook users were significantly more likely to cite availability offline as important.

Tables 9-12 illustrate the differences in the remaining three groups. A common thread between the results from these three groups was the significance of the NEED index. The statistics indicate the idea that the respondents' learning needs were being

met less successfully with the eTextbook than with the print textbook. The NEED index ranges in score from 5 (Not at all) to 20 (A great deal).

The combined eTextbook groups indicate a mean score of 9.26 on the NEED index, compared to a combined print textbook score of 13.12, a significant difference of perception, $t(259) = 7.44, p < .0001$. Three of the four eTextbook groups indicated significantly lower scores on this index than those in the print textbook groups.

Finally, in the separate analyses, both Management Information Systems classes indicate a significant difference on QD12 - if the book offered the capability to permit me to share notes or questions/collaboration with the professor and other students. Print textbook users considered this characteristic quite important to the decision to purchase an eTextbook, just below cost and offline availability of an eText.

Regression Analysis

In response to the survey question “What percentage of the assigned reading would you say you actually read?” some difference is indicated between the mediums. Courseload statistics on the number of pages read by eTextbook users was reported as a page count. In order to compare the reported percentage of the eTextbook actually read from the page count provided through Courseload, I divided the number of pages in the eText (or texts in the case of more than one in a class) minus the appendices, table of contents and introduction by the pages read in Courseload for each student. Overall, eTextbook users report that they read an average of 62.8%, while print textbook users report they read an average of 53.9%, but the differences are not apparent in every class. The mean percentage for eText pages viewed according to Courseload is 33.5%. It was

Table 9¹

BUS 3305

Variable Name	Description	Mean (SD)		<i>t</i>	<i>DF</i>	<i>p</i>
		eText	Paper			
<i>To what extent</i> were your learning needs met by using your (e)textbook? ¹						
Q1	Helped me to better understand the ideas and concepts taught in the course	2.68 (.95)	3.26 (1.12)	1.96	63	0.054
Q2	Allowed me to better organize and structure my learning	2.74 (.93)	2.89 (1.23)	0.49	63	0.626
Q3	Increased engagement with course content	2.53 (1.07)	2.65 (1.16)	0.41	63	0.69
Q4	Helped me interact and collaborate with classmates	1.89 (1.2)	2.39 (1.24)	1.48	63	0.14
Q5	Made my study time more efficient	2.58 (1.02)	2.87 (1.22)	0.91	63	0.365
QD7	if it costs less than a used or rented traditional textbook	4.7 (.57)	3.48 (1.39)	3.77	64	.0004**
QD8	if it were readable on a handheld mobile device (e.g. iPhone, Android phone)	3.1 (1.55)	3.0 (1.23)	0.28	64	0.78
QD9	if it were readable on Tablets (e.g. iPad, Galaxy)	2.75 (1.65)	3.35 (1.32)	1.56	64	0.122
QD10	if it were available <i>without</i> an Internet connection	3.0 (1.26)	3.8 (1.29)	2.34	64	.023*
QD11	because it is more portable than traditional textbooks	3.55 (1.32)	3.48 (1.31)	0.2	64	0.84
QD12	if it had the capability to permit me to share notes or questions/collaboration with the professor and other	3.2 (1.1)	3.63 (1.27)	1.31	64	0.194
QD13	because it is more environmentally friendly than traditional textbooks	2.85 (1.46)	2.35 (1.04)	1.32	64	0.191
TEXT	What percentage of the assigned readings in the (e)textbook did you actually read? (either in etext or	(48 %)(38%)	50% (31%)	0.24	68	0.811
NEED	Needs Index consists of Q1+Q2+Q3+Q5	10.53 (3.42)	11.67 (4.04)	1.09	63	0.281

Note: $p < .05$ * $p < .01$ ** $p < .001$ ***

¹ Response choices are 1=Not at all, 2=A little, 3=Somewhat, 4=Quite a bit, 5=A great deal

Table 10

MIS 3354 Group One

Variable Name	Description	Mean (SD)		<i>t</i>	<i>DF</i>	<i>p</i>
<i>To what extent</i> were your learning needs met by using your (e)textbook?		eText	Paper			
Q1	Helped me to better understand the ideas and concepts taught in the course	2.16 (1.34)	3.77 (.92)	6.74	100	.0001***
Q2	Allowed me to better organize and structure my learning	2.24 (1.36)	3.43 (.97)	4.81	100	.0001***
Q3	Increased engagement with course content	2.12 (1.39)	3.19 (1.08)	4.02	100	.0001***
Q4	Helped me interact and collaborate with classmates	2.04 (1.34)	2.09 (1.15)	0.18	100	0.854
Q5	Made my study time more efficient	2.12 (1.54)	3.34 (1.11)	4.32	100	.0001***
QD7	if it costs less than a used or rented traditional textbook	3.8 (1.35)	3.72 (1.25)	0.28	101	0.78
QD8	if it were readable on a handheld mobile device (e.g. iPhone, Android phone)	2.83 (1.34)	3.28 (1.29)	1.48	100	0.146
QD9	if it were readable on Tablets (e.g. iPad, Galaxy)	2.92 (1.35)	3.17 (1.32)	0.81	101	0.421
QD10	if it were available <i>without</i> an Internet connection	3.46 (1.59)	3.95 (1.09)	1.72	100	0.089
QD11	because it is more portable than traditional textbooks	3.12 (.45)	3.55 (1.12)	1.61	101	0.111
QD12	if it had the capability to permit me to share notes or questions/collaboration with the professor and other	2.88 (1.27)	3.76 (1.13)	3.27	101	.0015**
QD13	because it is more environmentally friendly than traditional textbooks	2.28 (1.43)	2.64 (1.38)	1.13	101	0.26
TEXT	What percentage of the assigned readings in the (e)textbook did you actually read? (either in etext or	69% (21%)	57% (29%)	2.01	99	.047*
NEED	Needs Index consists of Q1+Q2+Q3+Q5	8.64 (5.11)	13.72 (3.44)	5.66	100	.0001***

Note: *p* < .05 * *p* < .01 ** *p* < .001 ***

Table 11

MIS 3345 Group Two

Variable Name	Description	Mean (SD)		<i>t</i>	<i>DF</i>	<i>p</i>
	<i>To what extent</i> were your learning needs met by using your (e)textbook?	eText	Paper			
Q1	Helped me to better understand the ideas and concepts taught in the course	2.36 (1.19)	4.06 (1.06)	4.84	41	.0001***
Q2	Allowed me to better organize and structure my learning	2.36 (1.29)	3.78 (13.06)	3.83	41	.0004**
Q3	Increased engagement with course content	2.04 (1.02)	3.33 (.97)	4.19	41	.0001***
Q4	Helped me interact and collaborate with classmates	1.44 (.82)	2.5 (1.2)	3.44	41	.0013**
Q5	Made my study time more efficient	2.12 (1.27)	3.78 (1.11)	4.44	41	.0001***
QD7	if it costs less than a used or rented traditional textbook	4.04 (1.17)	4.42 (.90)	1.18	42	0.246
QD8	if it were readable on a handheld mobile device (e.g. iPhone, Android phone)	3.24 (1.2)	3.53 (1.35)	0.74	42	0.462
QD9	if it were readable on Tablets (e.g. iPad, Galaxy)	3.32 (1.35)	3.11 (.99)	0.58	42	0.532
QD10	if it were available <i>without</i> an Internet connection	3.84 (1.11)	4.37 (.76)	1.66	42	0.104
QD11	because it is more portable than traditional textbooks	3.36 (1.25)	3.94 (.97)	1.61	40	0.115
QD12	if it had the capability to permit me to share notes or questions/collaboration with the professor and other	2.84 (1.11)	4.05 (1.13)	3.57	42	.0009**
QD13	because it is more environmentally friendly than traditional textbooks	2.52 (1.36)	2.67 (1.28)	0.36	41	0.723
TEXT	What percentage of the assigned readings in the (e)textbook did you actually read? (either in etext or	67% (31%)	59% (29%)	0.85	42	0.398
NEED	Needs Index consists of Q1+Q2+Q3+Q5	8.88 (4.25)	14.94 (2.47)	4.89	41	.0001***

Note: $p < .05$ * $p < .01$ ** $p < .001$ ***

Table 12

HP 2420

Variable Name		Description	Mean (SD)		<i>t</i>	<i>DF</i>	<i>p</i>
<i>To what extent</i> were your learning needs met by using your (e)textbook?			eText	Paper			
Q1	Helped me to better understand the ideas and concepts taught in the course		13	3.48 (.95)	3.35	49	0.0015**
Q2	Allowed me to better organize and structure my learning		2.11 (1.29)	3.17 (1.07)	3.17	49	0.0026**
Q3	Increased engagement with course content		2.54 (1.1)	2.83 (1.37)	0.84	49	0.406
Q4	Helped me interact and collaborate with classmates		1.92 (1.0)	1.70 (.88)	0.86	48	0.394
Q5	Made my study time more efficient		2.21 (1.23)	3.04 (1.33)	2.31	49	0.0251*
QD7	if it costs less than a used or rented traditional textbook		3.74 (1.38)	4.0 (1.04)	0.74	48	0.463
QD8	if it were readable on a handheld mobile device (e.g. iPhone, Android phone)		2.78 (1.55)	2.74 (1.42)	0.09	48	0.927
QD9	if it were readable on Tablets (e.g. iPad, Galaxy)		2.65 (1.81)	2.91 (1.47)	0.55	47	0.588
QD10	if it were available <i>without</i> an Internet connection		3.73 (1.54)	4.04 (1.07)	0.82	47	0.418
QD11	because it is more portable than traditional textbooks		2.89 (1.4)	3.39 (1.23)	1.34	48	0.187
QD12	if it had the capability to permit me to share notes or questions/collaboration with the professor and other		3.33 (1.21)	3.83 (1.03)	1.54	48	0.131
QD13	because it is more environmentally friendly than traditional textbooks		2.59 (1.39)	2.65 (1.27)	0.16	48	0.876
TEXT	What percentage of the assigned readings in the (e)textbook did you actually read? (either in etext or		67% (30%)	48% (29%)	2.24	48	.03*
NEED	Needs Index consists of Q1+Q2+Q3+Q5		9.29 (4.28)	12.52 (4.18)	2.72	49	.0091**

Note: $p < .05$ * $p < .01$ ** $p < .001$ ***

expected that there would be a disparity between Courseload statistics and self-reported eText statistics, so when I analyzed this response, I ran regressions using both figures, PGVIEW and TEXT. For the eTextbook group, controlling for age, gender and standardized ACT/SAT scores of the student, I examined the relationship between reading (more than the student would have with a print text) on meeting learning needs.

Due to the slight differences in the questions we cannot compare the classes directly, but for each group we can look at the relationship between their reading and use of the respective type of textbook and to what degree they believe their needs are being met. Table 5 illustrates the results of a linear regression for the eTextbook users and Table 6 shows the results for print textbook users.

For eTextbook users, a significant factor in meeting learning needs is whether the eText became a part of the students' regular learning routine. Also significant is the amount of highlighting the student does. Ultimately, increased engagement has a significant relationship with meeting learning needs. The unexpected result is the lack of a statistical relationship between the actual reading of the eTextbook and learning needs. The eTextbook student's perceived learning needs are not significantly affected by the number of pages read, whether the number was logged in Courseload (PGVIEW) or self-reported (TEXT). Reading the eText is not statistically significant when predicting whether learning needs are met. In fact, when asked if they read more of the assigned material with the eTextbook than they would have in print, 60% definitely did not, 25% were neutral and only 15% agreed that they did read more. In Chapter Four I will discuss the particular importance of this result when using an eTextbook platform.

Perceived learning needs for the print textbook users shows a significant positive correlation with the percentage of textbook pages read, ($t(160) = 7.08, r^2 = .26, p < .01$). Additional significant correlations are found in highlighting the text and participating in class.

Qualitative Data

Finally, the qualitative comments provided by the students were numerous and rich. We asked both print textbook and eTextbook students for comments. All of the comments reflected students' opinion about eTextbooks. 75 respondents commented negatively about eTextbook use or adoption and 28 commented positively about eTextbook use or adoption. The negative responses centered equally on two themes.

The first theme, representing 33% of the total responses is eye strain. From both print and eText users, responses comprised simple dislike of reading on a computer or a device, eye strain and discomfort when reading for an extended amount of time, migraines and headaches reading from a monitor and an inability to see the layout of a page.

The next theme, just as robust with 37% of the responses, is navigation. Navigation is comprised of search features, annotation and bookmarking features, and scrolling. Navigating across platforms is also included in this theme; for example, navigating from laptop delivery to a mobile device presented problems. Students found the navigation slow, difficult and clumsy. Scrolling was described as frustration, highlighting was often difficult and too slow to use during class, the search feature was inadequate and it was described as difficult to flip through pages.

Positive comments concerning the idea of eTextbooks from print textbook students outnumbered those from eTextbook students by 2.5 to 1. These positive responses, however,

Table 13

Linear Regression Predicting Learning Needs - ETEXTBOOK GROUP

Variable	Model 1			Model 2			Model 3			Model 4		
	<i>B</i>	<i>SE B</i>	<i>p</i>	<i>B</i>	<i>SE B</i>	<i>p</i>	<i>B</i>	<i>SE B</i>	<i>p</i>	<i>B</i>	<i>SE B</i>	<i>p</i>
Text read	-0.018	0.015	0.2284	-0.0151	0.0111	0.1804	-0.0135	0.0109	0.2206	-0.015	0.012	0.2002
Pages viewed	0.0024	0.004	0.5682	0.0001	0.0314	0.9882	-0.0009	0.0031	0.7601	-0.003	0.003	0.374
Age	-0.1869	0.43	0.6653	-0.3413	0.3184	0.2871	-0.2501	0.3153	0.4302	-0.183	0.334	0.5847
Gender	0.7903	0.827	0.342	-0.1727	0.6305	0.7848	-0.0404	0.6286	0.5219	0.0637	0.654	0.9226
College Entrance Score	-0.756	0.432	0.0841	-0.6769	0.3181	.0368*	-0.6467	0.3122	.0418*	-0.642	0.334	0.0587
Highlighted more	1.867	0.306	.0001***	0.6769	0.2685	.0138*	0.3909	0.299	0.1952			
Text is part of routine				2.22	0.2774	.0001***	2.007	0.2931	.0001***			
Read more							0.7353	0.3648	.0475*			
Engaged in class										1.0384	0.102	.0001***
<i>R</i> ²		0.36			0.65			0.66			0.6	

Note: $p < .05^*$ $p < .01^{**}$ $p < .001^{***}$

Table 14

Linear Regression Predicting Learning Needs - PRINT GROUP

Variable Name	Model 1			Model 2			Model 3			Model 4		
	<i>B</i>	<i>SE B</i>	<i>p</i>	<i>B</i>	<i>SE B</i>	<i>p</i>	<i>B</i>	<i>SE B</i>	<i>p</i>	<i>B</i>	<i>SE B</i>	<i>p</i>
Text read	0.0498	0.009	.0001***	0.0505	0.0086	.0001***	0.0503	0.0086	.0001***	0.0504	0.009	.0001***
Age	-0.2733	0.212	0.1989	-0.2548	0.2112	0.2312	-0.2603	0.228	0.2255	-0.255	0.214	0.2358
Gender	0.1007	0.497	0.8399	0.0191	0.5008	0.9696	0.0241	0.5028	0.9618	0.0192	0.503	0.9696
College Entrance Score	-0.1472	0.258	0.569	-0.1427	0.2577	0.5805	-0.1494	0.26	0.5664	-0.143	0.26	0.5829
Highlighted text	0.901	0.19	.0001***	0.9777	0.1997	.0001***	0.9763	0.2004	.0001***	0.9736	0.201	.0001***
Took Notes				-0.253	0.2037	0.2161	-0.2696	0.2158	0.2135	-0.255	0.225	0.259
Asked questions							0.0534	0.2239	0.8118	0.1123	0.328	0.7326
Participate in discussions										0.001	0.228	.0003**
<i>R</i> ²		0.36			0.37			0.37			0.37	

Note: *p*<.05* *p*<.01** *p*<.001***

came with caveats: print users want lower textbook costs, good navigation within the eText, interactive content, collaborative capability and readability across several devices.

Given this, 37% of the print textbook comments favor eTextbooks. Among eText users, positive comments were less specific than negative comments. Positive comments comprised 17% of the eText users' open-ended responses. This group likes the portability, ubiquitous access, convenience and ability to see the professor's notes in the text. It was noted, however, that some improvement in navigation is needed. In the next chapter I will sum up the data described in Chapter Three. I will address the hypotheses from Chapter One and provide a comprehensive analysis of the eTextbook/Print textbook project as a whole. Finally, I will speak to the limitations of this study and offer suggestions for future research.

CHAPTER FOUR

Conclusions

Introduction

Arne Duncan, Secretary of the U.S. Department of Education, urges U.S. schools to move “from print to digital absolutely as fast as we can” (Duncan, 2012). Textbooks are nearly obsolete, he says. The example of progress cited by Duncan is South Korea, which outperforms the U.S. on education outcomes *and* leads the U.S. in digital textbook deployment. While these two statements are often placed together, no proven correlation between the two points has been offered. One of the dangers of rushing into digital deployment of textbooks is that student learning could suffer. Cultural lag is the time between the appearance of a new material invention and the making of appropriate adjustments in corresponding areas of non-material culture (Ogburn, 1957). It is at this time of maladjustment that evidence based research must inform educators as to what adjustments are conducive to student learning with a new mode of content delivery.

An example of maladjustment and inconsistency within the system is the consideration of student learning outcomes versus the perceived economic benefit of digital deployment. Both issues are critical - reducing costs of education and increasing competencies. But are we to accomplish one without regard for the other? The period of adjustment inherent in cultural lag is an opportunity to examine the perceived benefit of change by investigating the facts and increasing our knowledge of the phenomenon. After all, technology is grand until it fails to meet our needs. Failing to maintain or improve student learning comes with consequences. There is a need to inform industry

about potential shortcomings and educators about pedagogical practices that encourage students to take best advantage of the technology offered.

On one hand, student outcomes are of premier importance, not only for educators but for accreditation agencies. Government driven expectations have spawned standardized testing in K-12 and accreditation for higher education to ensure accountability. On the other hand, we are called to make changes in educational methods, the outcome of which is not clear. If there are no differences in teaching or learning between traditional print and eTextbooks, then economics and technological progress are the only considerations. "We'd prefer that all of it {to} go digital," says Vineet Madan, senior vice president of new ventures at McGraw Hill Education. "There isn't a secondary market for e-books." (Yu, 2012). The lowered cost of producing and distributing eTextbooks for the publishing market coupled with the elimination of the resale market make clear that the profit motive is strong incentive to push for eTextbooks. If we remain cognizant of the pressure to maintain and improve student outcomes, it would be wise to study this carefully prior to wholesale adoption for higher education. While one might say that we only need time to adjust, another might say that eTextbook promises are illusions. We simply have not had the evidence to bear out either argument. But there are indeed differences, as this research shows.

Appropriate adjustments in the classroom cannot be made without facts in evidence. The responsibility of stakeholders in higher education is to respond as quickly with quality research to ensure academic excellence. Industry is addressing copyright issues, technology platforms, and business models. Government entities are pressing for lowered costs ostensibly associated with digitization. Accrediting bodies are working to

ensure academic quality. By gathering national baseline data, EDUCAUSE and Internet2 are beginning to answer questions about eTextbook efficacy. While that pilot tracks the progress of eTextbooks, my research compares actual application of eTextbooks versus print textbooks in the classroom.

The Hypotheses

Both quantitative and qualitative data from this study affirm that there are distinct and significant differences between eTextbook and print textbook experiences in the classroom. Just as Sheppard reported in 2008, my data indicate that students are having difficulty adapting to eTextbooks. It is also evident that seamless delivery of eTextbook content has not met the standard set by students. Of course this does not signal a death knell for eTextbook deployment. Still, it does represent a cautionary tale.

Reading and Student Engagement

Actual use of the textbook has been a theme of this research. I hypothesized that actual use of the eTextbook would be greater than print use. The first criteria tested for actual use is the amount of assigned reading the student actually read. The statistical evidence shows that students using eTextbooks read significantly more than those using print textbooks, $t(263)=2.64, p<.05$.

In addition to the amount of reading done by students, the ability to highlight and annotate within the text might increase use of the text. I considered these actions as a measure of student engagement. The survey queries students on whether their textbook facilitates increased engagement in course material and collaboration with classmates. The mean response from eTextbook students was ‘a little’ (2.3) on course engagement

and between ‘not at all’ and ‘a little’ (1.82) on collaboration with classmates. Indeed, much of the survey instrument questioned students on their use of the textbook and its features. The assumption is that the eTextbooks are most beneficial for enhanced features such as in-text collaboration and interactivity. The reality, however, is that students rarely collaborated or interacted using either print or eText. Collaboration with classmates was low in both groups. Only in one class was there a significant difference between print and eTextbook with regard to collaboration, $t(41) = 3.44, p < .01$. Even so, the mean for both groups in that class indicated very little collaboration. It appears that collaboration with classmates is relatively unimportant to students and, perhaps, not generally a function of the textbook.

If collaboration with classmates is not a function of the textbook, increased engagement with the course material certainly is. Print users were significantly more likely to feel that the using the textbook helped increase their engagement with the course material. Let me underscore this point, print textbooks are engaging students significantly more than eTextbooks.

The qualitative data enrich the picture with regard to engagement using eTexts. Use of the eTextbook presented challenges. Navigation was slow and clumsy. Highlighting was often difficult and slow. There are two possible reasons for this: software and bandwidth. Since the eTextbooks were available only with internet connectivity, inadequate bandwidth and poor Wifi coverage hindered navigation—even if the software were adequate. Student and faculty comments indicate that both of these problems existed, creating barriers to interaction and engagement with the platform. Slow navigation also likely explains efficiency of study time as discussed below.

Three of the four classes indicated differences with the efficiency of study time. Print users were significantly more likely to feel their texts made their study time efficient. Again I turn to qualitative data to enrich this information. If the negative feedback were not enough, 40% of the *positive* comments came with caveats. For example, common concerns included “If the search feature was better...,” or “If it switched seamlessly from laptop to mobile device...”. Responses from students tell us that the software platform left something to be desired, another barrier to efficiency.

ETextbook students were significantly less positive than print users that the textbook was instrumental in helping them understand material and to organize and structure learning. Print textbooks met the students’ needs better than eTextbooks. This result was consistent when the sample was analyzed by class as well, with one exception I will discuss later in the chapter. If the eTextbook was less useful in the ways described, it is unlikely students who use them will engage more. Students will engage when there is a benefit to do so. The eTextbook does not provide the same benefit as print textbooks.

Annotation and note sharing features are emphasized frequently in the literature as well as in the promotion of eTextbooks as an important feature of the medium. Proponents tout the potential of eTextbooks, citing the benefits of interactive links, the ability to annotate and revise annotations, sharing notes, increasing engagement and interaction between students and with professors. Sun et al (2012) concluded that more engaged students enhance their learning experience. It is believed that the ability to innovate with interactive and collaborative content creates opportunity to reach the student in a new way. Dennis (2010) reported that professors who annotate more tend to have students who annotate more. Dennis & Morrone, in 2010, reported that while

learning was enhanced by annotation, student annotation was not widespread. The Courseload annotation data for the sample in this study confirms this. Courseload statistics confirm that professors who annotated more had students who annotated more, but 51% of eTextbook students didn't annotate at all. If we can't engage the students, the promise of a new paradigm in classroom instruction with eTextbook delivery falls short.

Although direct comparison on reading the text is possible, some of the engagement variables used in the linear regression for the learning needs items are just different enough between eText and print that a direct comparison cannot be made. Separate regression results outlined below are still notable and consistent with other conclusions.

Student Learning Needs-Paper Textbook

It is reasonable to assume that amount of assigned material a student reads from the textbook should predict whether their learning needs are being met. It is not surprising, then, that reading is positively correlated to learning needs for traditional print textbook classes. Participation in class discussions, highlighting the text and reading assigned materials were each significant predictors for meeting the learning needs of print textbook users.

Student Learning Needs-eTextbook

The most significant engagement factor predicting learning needs for eTextbook users is whether the eTextbook has become a part of the students' learning routine. The implication is that the more comfortable the student is with the medium, the more satisfied they are that their learning needs are met. This is good news. Those students

who can incorporate eTextbooks into their learning routine, perhaps, moved through the period of maladjustment. The readjustment inherent in cultural lag may show progress as students who have K-12 experience with eTextbook begin to enter college, since they will be more accustomed to reading in this way. Yet, my data show that few in this study have, in fact, engaged and adapted. The challenge of educators everywhere is how to engage students. Presented with a new paradigm, a set of best practices for teaching and learning with eTextbooks in the traditional classroom and allowing educators the time to adapt as well must become part of the recipe for successful deployment of eTextbooks.

A rather unexpected result of the eTextbook regression on learning needs is that reading more of the assigned readings has no correlation with meeting learning needs for students who used eTextbooks. However, greater engagement such as highlighting and annotation significantly predicts whether students feel their learning needs are met in both groups.

Past research implies that the enhanced tools offered through eText can facilitate and enhance learning. In 2010, Abram wrote that a well-constructed interactive course can “become the framework for the entire pedagogy” (Abram, 2010). He goes on to say that failure to capitalize would be to miss a “remarkable opportunity”. When these tools and features are utilized in an interactive classroom environment the possibilities are quite exciting. The fact today is that they are not widely used. It is further clear that educators will have to evaluate and create ways to explore interactivity within the classroom in order to fulfill the promise of “advanced capabilities that can accelerate learning” (“A collection that enhances learning,” n.d.) Interactivity and collaboration comprise much of the rationale for adoption of eTextbooks, leaving us with sparse

support for eTextbooks on these grounds at the current time. During this period of “appropriate adjustment” (Ogburn, 1957), ways to fully capitalize on the technology in higher education is in pedagogical hands.

Among the qualitative data derived from the open-ended comments on the survey, students who were in favor of eTextbook adoption frequently cited portability as highly desirable. Among the benefits cited by eTextbook students are portability, the ability to highlight and the search capability. Unreserved praise was limited to portability. The qualitative data reveals the student’s reservations concerning eText adoption, but also their willingness.

There is an interesting dichotomy in the analysis. Despite the benefits offered, the technology does not deliver in a seamless enough way to convince or impel most students to use the features. Students show difficulty adapting. Analysis confirms that, by and large, student engagement with eTexts is not on par with print textbooks. Ultimately, the primary interest for students in moving from text to eText is cost. Cost and usability (navigation) remain the most important features student’s value. Navigation in this study falls short of expectations. Yet even with these findings, no significant difference is evident between eTextbook users and print users’ interest in making the move to eTextbooks. Statistically, choosing an eTextbook only course is equally agreeable to both groups. Students are either willing or resigned to the deployment of eTextbooks in class. Likely, they see the potential.

Even as the qualitative data from eText students’ comments uphold the idea that portability is a positive attribute, the student’s state frequently that they find the navigation clumsy and slow. While portability and convenience enable student’s to

easily carry an eText to class, the difficulty of taking notes and highlighting at the pace required in a lecture negates the convenience. Also noted were ‘glitches’ which presented problems on mobile devices. Taken together, this explains why both quantitative and qualitative evidence suggests that usability of the eText trails use of the print text. Nevertheless, students are willing. Can we provide the same education and show the same learning outcomes with electronic delivery?

The ability to collaborate and share notes with the professor and classmates was significantly more important to print users than eTextbook users. This illustrates the reality that the actual technology used by eTextbook users was not well received or utilized. Environmental responsibility was of the least concern to eTextbook and print textbook users alike.

Conclusions

ETextbook use by students has progressed. At University of Texas in 2009 only 4% of the students elected to purchase eTextbooks (Nawotka, 2009). In 2008, only 10% of the students in the Sheppard et al study elected eTextbooks. 12% elected eTextbooks at Andrews University in 2011 (De Oliveira, 2102). ETextbook deployment for the EDUCAUSE/Internet2 Pilot study offered the incentive of free textbooks to student participants, while the institutions paid an all-inclusive fee to absorb the cost. The purchasing power of the Pilot group assisting in negotiating cost. As we proceed it will be necessary to ensure that costs, cited as an important consideration to students and administrations, remain reasonable.

Technology has improved. Mobility has improved, ubiquitous access continues to improve as campuses improve wireless access and increase bandwidth to accommodate

students' needs, and functionality continues to improve. Even so, the eTextbook has not fulfilled its promise of flexibility, ease of use, and increased functionality for the student.

Combined with the qualitative data, it is clear that a significant drawback for those eTextbook users is eye strain. Improvement in display technology notwithstanding, students are not pleased. Extended reading on a screen causes eye fatigue. More research is necessary to examine the physical effects of reading electronically to the extent our students must in higher education and to improve technology with regard to readability without discomfort. Industry should be held accountable for widely employing a reader whose display is conducive to extended reading.

Finally, the comparison of four classes led to the following interesting result. One class showed distinct difference from the others. The only significant differences in this class were the importance to their purchasing decision of availability offline and the importance of cost. What is evident from the difference of this class from the others is that there are circumstances under which eTextbooks can provide the same learning experience as print. Further research is needed for comprehensive analysis of this class to determine what may come to be a basis for best practices. In any case, we know the wave is coming. Current textbook delivery via E-content does not yet live up to its potential.

Limitations

While the overall analysis showed marked differences between eTextbook and print classes, one class in this study showed few and rare differences between eTextbook users and print textbook users while all others were widely divergent. Clearly, it will require additional research beyond the scope of this study to determine an explanation.

Focus Groups with the participating faculty and personal interviews should be conducted to understand this phenomenon. It is possible that best practices might be revealed with further study.

The research design is a quasi-experimental post-test only design. As such, it does not reflect a true random sample, but the threat to internal validity is minimized in a number of ways. First, the group demographics showed no significant difference between samples. Second, the linear regression controlled for age, gender and standardized test scores. Third, the professors, textbooks and class were matched for each comparison, controlling for potential variation.

While I can conclusively say that differences in engagement, collaboration, and reading exist between the classes, this study can only speak to the specific eText platform used in the fall 2012 semester. It will be necessary to continually monitor and research the changes made in technology that provides the content. Likewise, only the content provided in this semester can be evaluated. Content and technology will continue to change, requiring further inquiry.

Eye strain on laptops, mobile devices or desktop computers may differ. There was no method to glean additional details whether particular devices were more difficult to adjust to, although open-ended comments did give some information. Other disciplines will need to take up the important task of finding causal factors and solutions to eye strain.

Like new publishing models that offer content assembled by the professor and according to the needs of the professor, eText has the potential to alter pedagogy. The difference is that professors designing their own content design to meet their own

pedagogical needs. In the eTextbook market, the content is provided and professors must adapt. This customized content is changing the way educators present content, as do eTextbooks. The study of this type of individualized content is not necessarily delivered via eText. This study and those related in this paper are limited, then, to the delivery of traditional paper textbooks through eText rather than a dynamic change in teaching material or content. We, as researchers, are still studying traditional textbook content delivered electronically, with tools (annotation, highlighting) added in. The potential for student learning with enhanced interactivity inherent in the pedagogy remains unexamined, and is beyond the scope of this analysis.

Finally, student learning outcomes are not included in this study. Exclusively student input is not the best criteria for measuring the efficacy of eTextbooks in the classroom. For students, the goal is efficiency, not the learning impact. Therefore we fall short on the comprehensive picture. This study, or any single study, cannot ensure learning outcomes. More comprehensive research is needed in this specific area.

Additional study should produce a set of 'best practices' for faculty who teach with eTextbooks and a broader understanding of teaching and learning with eTextbooks. I have not incorporated faculty input into this study. Future trials should be conducted using carefully prescribed methods to illustrate use of specific tools uniquely available through eTextbooks and their effect on learning outcomes.

APPENDICES

APPENDIX A



BAYLOR
UNIVERSITY

INSTITUTIONAL REVIEW BOARD

DATE: November 2, 2012

TO: Debbie McMahon, M.A.
FROM: Baylor University Institutional Review Board

STUDY TITLE: [388446-1] eTextbook Fall 2012 Pilot Survey
IRB REFERENCE #:
SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: November 2, 2012
EXPIRATION DATE: November 2, 2013
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category 7

Thank you for your submission of New Project materials for this research study. Baylor University Institutional Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.


Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

If you have any questions, please contact David Schlueter at (254) 710-6920 or david_schlueter@baylor.edu. Please include your study title and reference number in all correspondence with this office.

Sincerely,

A handwritten signature in black ink that reads "David W. Schlueter". The signature is written in a cursive style with a long, sweeping underline.

David W. Schlueter, Ph.D.
Chair, Baylor IRB
cc:

APPENDIX B

BAYLOR UNIVERSITY INFORMED CONSENT STATEMENT

E-TEXTBOOK PILOT PROJECT

You are invited to participate in a research study of electronic textbooks and materials. You were selected because you are in a course that delivers its content using an electronic textbook this semester. Please read this form and ask any questions you may have before agreeing to participate in the study.

STUDY PURPOSE

The purpose of this study is to learn about your experiences with the e-textbooks and how they impacted your learning this semester.

PARTICIPANTS

Over 600 students were provided E-text material this semester at Baylor. All are eligible, upon their consent, to participate in this research. There is no obligation to consent.

PROCEDURES FOR THIS STUDY

If you agree to participate, we will ask you to complete a survey in class. The survey will take 10-15 minutes. The survey will be administered, collected and securely maintained only by a member of the research team. You will be asked to provide your student ID number so that your actual use of the e-text can be linked to your survey responses and to your course grade. Once your responses are linked with grades, personally identifiable information will be stripped from the data permanently, so that no individual can be connected to their results.

RISKS OF TAKING PART IN THE STUDY

The loss of anonymity is a possible risk, but strict measures will be in place to keep this information secure. Survey results will be transferred to a secure database by the research team and paper copies will be destroyed.

BENEFITS OF TAKING PART IN THE STUDY

Reasonable benefits to participating in this study are increased knowledge about how this technology affects students, how students feel about this technology and the potential to influence improvements with regard to E-content delivery.

ALTERNATIVES TO TAKING PART IN THE STUDY

This survey is strictly voluntary. You may refuse to participate with no penalty. You may discontinue participation at any time with no penalty.

CONFIDENTIALITY

The research team *will not* share personal information. Surveys will be stored in a locked location accessed only by the research team. Once your survey responses are linked with your grades and your CourseLoad activity, personal information will be stripped from the data before analysis. No personal identifiable information will be shared in connection with this research study. Your confidentiality is important to us and to the integrity of our research.

YOUR RIGHTS

You have a right to a copy of the signed consent form for your records. You have a right to see the results of this research study. Study results will be available upon request in May, 2013. Results may be obtained from:

Principle Investigator:
Debbie McMahon, M.A.
Coordinator of Assessment
One Bear Place #97148
Waco, TX 76798-7148
254-710-4539
Debbie_mcmahon@baylor.edu

If you have any questions about participation in this study or any other aspect of this research, they may be directed to:
Baylor University Committee for Protection of Human Subjects in Research.

Dr. David W. Schlueter, Chair
IRB, Baylor University
One Bear Place #97368
Waco, TX 76798-7368
254-710-6920

Your signature below indicates your willingness to participate in this study.

NAME **DATE**

APPENDIX C

BAYLOR UNIVERSITY INFORMED CONSENT STATEMENT TEXTBOOK EFFICIENCY PROJECT

You are invited to participate in a research study about your use of textbooks. You were selected because an alternative eTextbook is available. We would like to ask about your thoughts on your paper textbook and an eTextbook alternative. Please read this form and ask any questions you may have before agreeing to participate in the study.

STUDY PURPOSE

The purpose of this study is to compare your use of the textbook in this class with classes that use an eTextbook. We'd like to know how the method of textbook delivery affects your learning.

PARTICIPANTS

Over 200 students in classes who use a paper textbook which has an eText equivalent have an opportunity to participate in this study. There is no obligation to consent. Participation is strictly voluntary.

PROCEDURES FOR THIS STUDY

If you agree to participate, we will ask you to complete a survey in class. The survey will take 10 minutes. The survey will be administered, collected and securely maintained only by a member of the research team. You will be asked to provide your student ID number so that the researcher can link your textbook use to course grades and demographic information for comparison with eTextbook users. Once this data is linked, all personally identifiable information will be stripped from the data permanently, so that no individual can be connected to their results. Researchers will compile survey results into an anonymous database and the paper surveys will be destroyed.

RISKS OF TAKING PART IN THE STUDY

The loss of anonymity is a possible risk, but strict measures will be in place to keep this information secure. Survey results will be transferred to a secure database by the research team and paper copies will be destroyed.

BENEFITS OF TAKING PART IN THE STUDY

Reasonable benefits to participating in this study are increased knowledge about how this technology affects students, how students feel about this technology and the potential to influence a growing movement toward E-content delivery.

ALTERNATIVES TO TAKING PART IN THE STUDY

This survey is strictly voluntary. You may refuse to participate with no penalty. You may discontinue participation at any time with no penalty.

CONFIDENTIALITY

The research team *will not* share personal information. Surveys will be stored in a locked location accessed only by the research team. Once your survey responses are linked with grades and demographic information, personally identifiable information will be stripped from the data. Your confidentiality is important to us and to the integrity of our research.

YOUR RIGHTS

You have a right to a copy of the signed consent form for your records. You have a right to see the results of this research study. Study results will be available upon request in June, 2013. Results may be obtained from **Principle Investigator:**

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One Bear Place #97148
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Dr. David W. Schlueter, Chair
IRB, Baylor University
One Bear Place #97368
Waco, TX 76798-7368
254-710-6920

Your signature below indicates your willingness to participate in this study.

NAME **DATE**

APPENDIX D

Abridged Paper Textbook Questionnaire



Student ID _____

If you used the textbook, what percentage of the assigned readings would you say you actually read?

_____ %

If you used the textbook, to what extent were your learning needs met by using your textbook?

	Not at all	A little	Somewhat	Quite a bit	A great deal
Helped me to better understand the ideas and concepts taught in this course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Allowed me to better organize and structure my learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased engagement with course content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helped me interact and collaborate with classmates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Made my study time more efficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How engaged were you in this class? For instance, did you...					
	Not at all	A little	Somewhat	Quite a bit	A great deal
Highlight the text?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take notes in class?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask questions?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Participate in class discussion?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Think about the difference in this class if your textbook were delivered to you electronically on your Tablet, Laptop, Desktop or Smartphone. Tell us how much the following statements would influence your decision to purchase an eText over a paper Textbook?

	Not at all	A little	Somewhat	Quite a bit	A great deal
if it cost less than a used or rented traditional textbook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it were readable on a handheld mobile device (e.g. iPhone, Android phone)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it were readable on Tablets (e.g., iPad, Galaxy)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it were accessible <i>without</i> an Internet connection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it were available only for the academic year in which you used it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because it is more portable than traditional textbooks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it had the capability to permit me to share notes or questions/collaboration with the professor and other students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because it is more environmentally friendly than traditional textbooks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Suppose [your institution] could secure a better (less expensive) price for a required course textbook than you could get on your own, but only if all students in a course had to buy the textbook electronically as an eText. Would you be willing to enroll in a section that had a mandatory eText charge (similar to a lab fee that some science courses require)?

<input type="radio"/>	Yes
<input type="radio"/>	No
<input type="radio"/>	Maybe

Are there any additional comments that you would like to share about your experience with the textbook?

APPENDIX E

Abridged eTextbook Survey Questionnaire

eTextbook Survey

Student ID# _____

Compared to paper textbooks, to what extent were your learning needs met by using an eTextbook?

	Not at all	A little	Somewhat	Quite a bit	A great deal
Helped me to better understand the ideas and concepts taught in this course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Allowed me to better organize and structure my learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased engagement with course content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Offered greater flexibility to learn the way I want	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helped me interact and collaborate more with classmates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Made my study time more efficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Allowed me to interact with my professor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What percent of the assigned readings in the textbook did you actually read (either in eText or paper textbook format)?

_____ %

The following questions are ranked on a 5-point scale: Strongly disagree, Disagree, Neutral, Agree, Strongly Agree and Not Applicable

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
Using the eText the first few times was difficult for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The features and navigation with the Courseload application were easy to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using eTexts has become part of my learning routine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The instructor encouraged the use of the annotation, highlighting, and note sharing features of the eText throughout the course	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I read more of the assigned material than I would have if it were a paper textbook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I highlighted and/or annotated more than I normally do with paper textbooks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Suppose [your institution] could secure a better (less expensive) price for a required course textbook than you could get on your own, but only if all students in a course had to buy the textbook electronically as an eText. Would you be willing to enroll in a section that had a mandatory eText charge (similar to a lab fee that some science courses require)?

Think about the difference in this class if your textbook were delivered to you electronically on your Tablet, Laptop, Desktop or Smartphone. Tell us how much the following statements would influence your decision to purchase an eText over a paper Textbook?

	Not at all	A little	Somewhat	Quite a bit	A great deal
if it cost less than a used or rented traditional textbook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it were readable on a handheld mobile device (e.g. iPhone, Android phone)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it were readable on Tablets (e.g., iPad, Galaxy)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it were accessible <i>without</i> an Internet connection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it were available only for the academic year in which you used it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because it is more portable than traditional textbooks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
if it had the capability to permit me to share notes or questions/collaboration with the professor and other students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
because it is more environmentally friendly than traditional textbooks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Any additional comments that you would like to share about your experience with eTexts? (Use the back of this sheet if you like).

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