

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

Debbie Hardman McMahan
Baylor University Libraries

Why this topic?

- EDUCAUSE/Internet2 eTextbook Pilot Project
- Move to eTextbooks in K-12 already in progress
- Opportunity to significantly add to the body of knowledge

Cultural Lag Theory





Publishers



Publishers

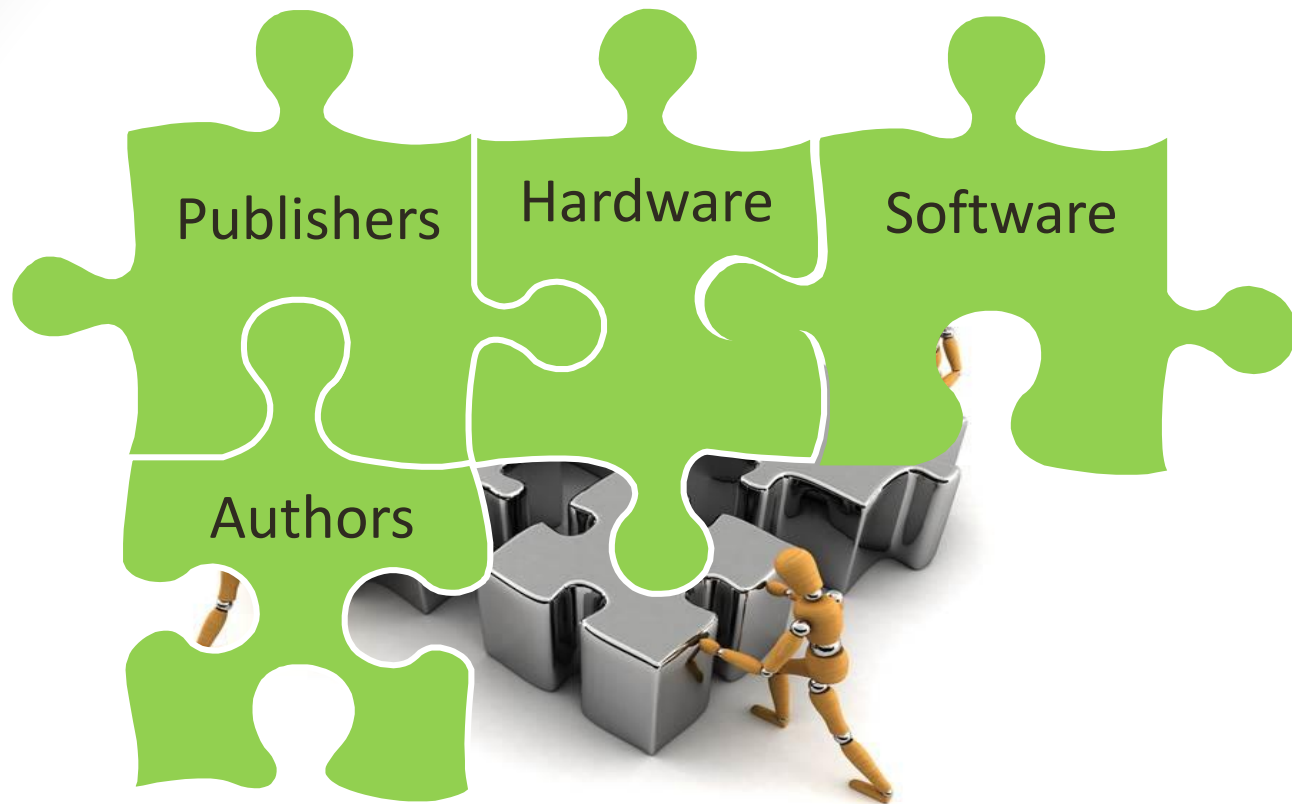
Hardware

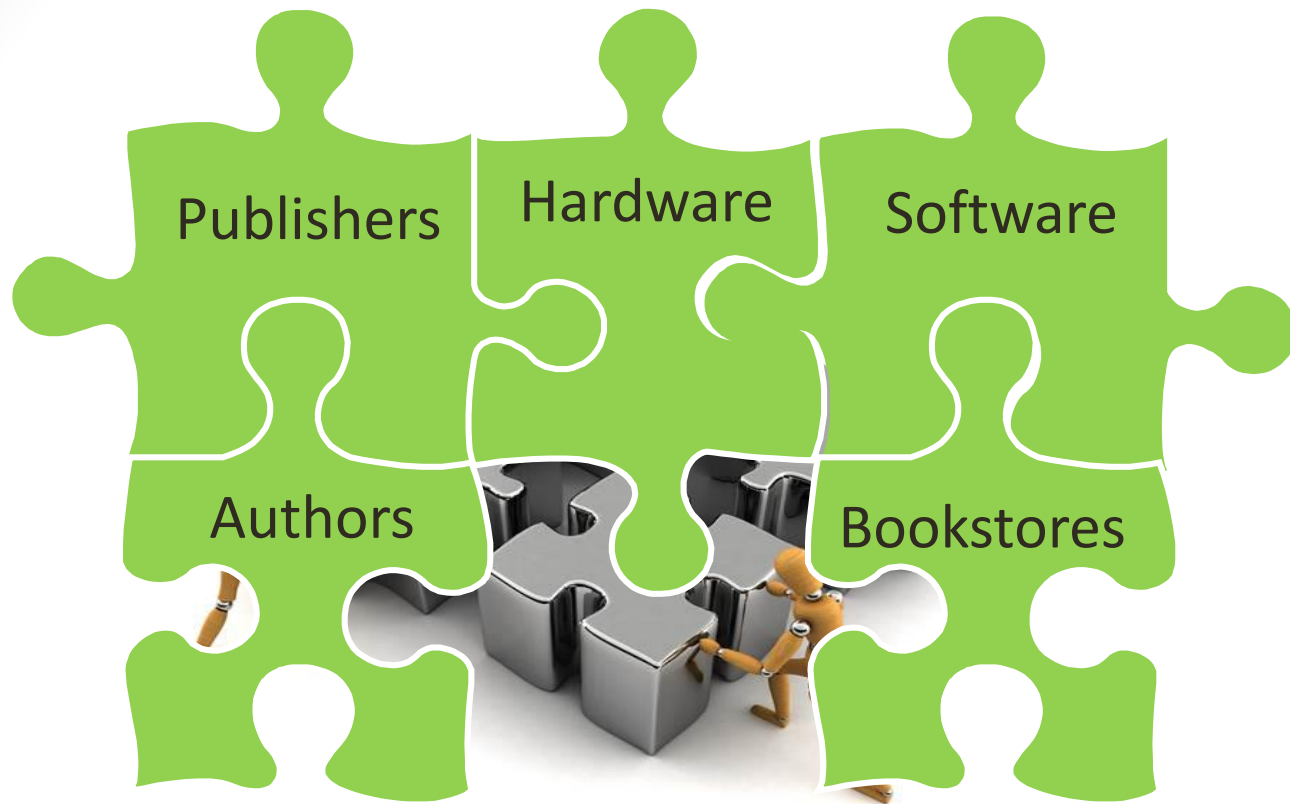


Publishers

Hardware

Authors







Publishers

Hardware

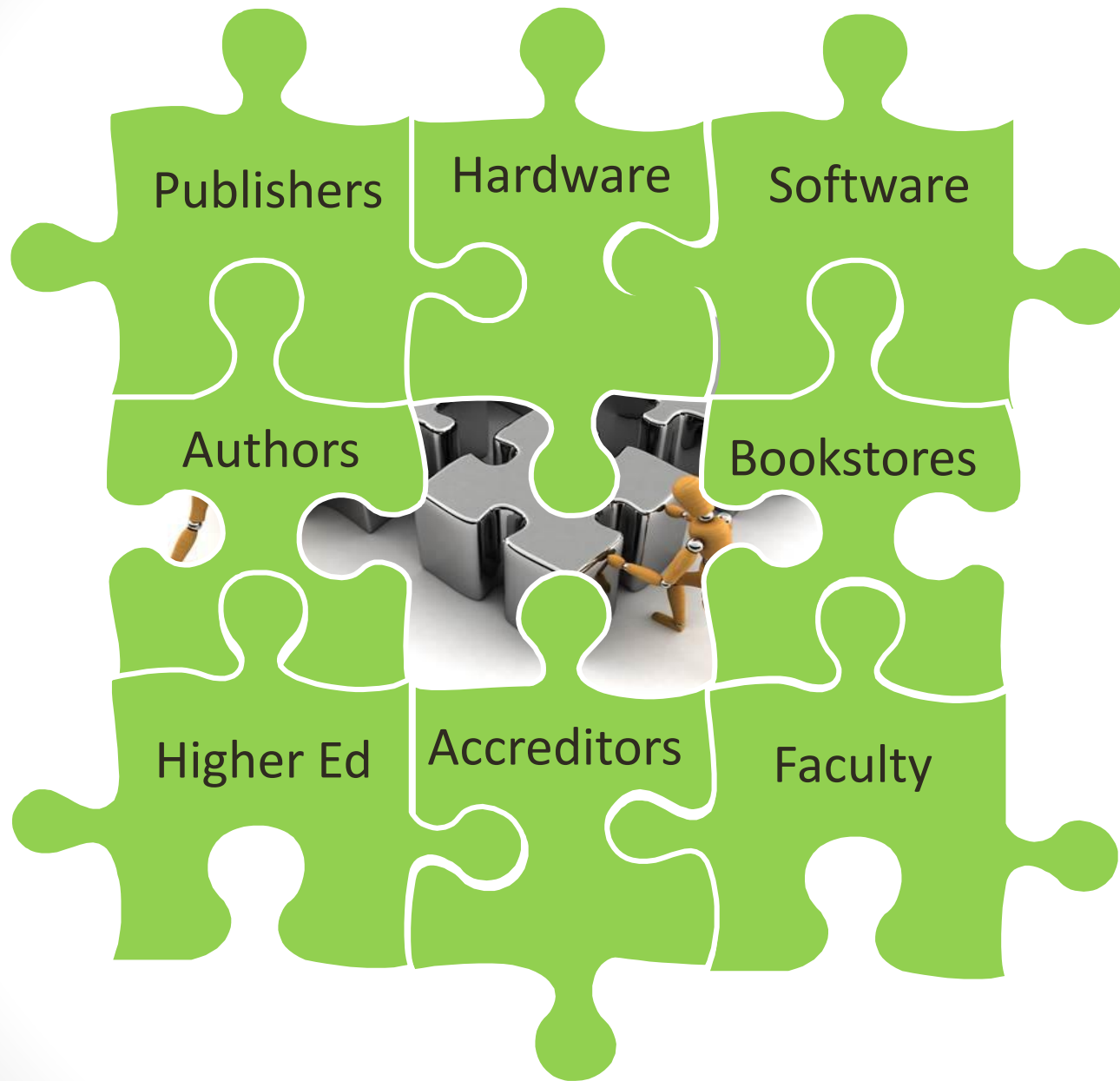
Software

Authors

Bookstores

Faculty





Publishers

Hardware

Software

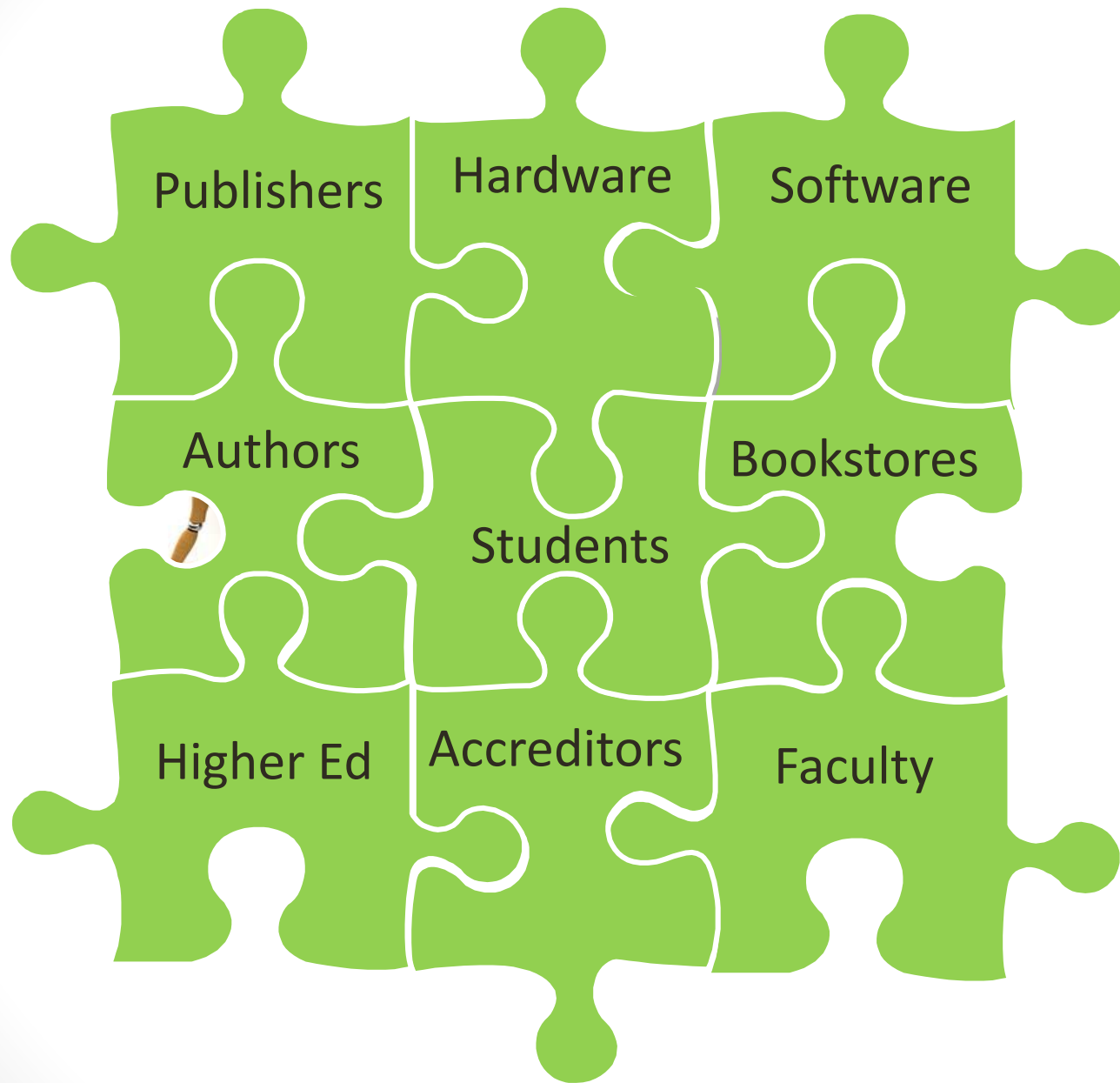
Authors

Bookstores

Higher Ed

Accreditors

Faculty



In the News

1. Arne Duncan – DOE - National Press Club
2. FCC – Digital Textbook Playbook

The Literature

- Sheppard et al (2008)
- Meijer (2009) University of Texas
- Morrone & Dennis (2010)– Indiana University
- Sun. et. al. (2012)
- Daniel & Woody (2012)

Hypotheses

- H_1 Actual use of the eTextbook by students is greater than actual use of the print textbook.
- H_2 Student's will deem their learning needs are better met by print textbooks than by the eText
- H_3 Students using eTextbooks will not report greater engagement than they would have with print textbooks.
- H_4 Usability will be of primary importance in the decision to purchase eTextbooks over the print textbook option.
- H_5 Students using print textbooks will be more inclined to try eTextbooks in the future than students who used eTextbooks.

DEMOGRAPHICS

Demographic Characteristics of Sample - By Class

	<i>n</i>	PAPER	ETEXT	<i>t</i>	<i>P</i>
Mean Age					
BUS 3345	71	21.92	21.87	0.22	0.8273
MIS 3305	103	21.15	21.31	0.59	0.5591
MIS3305	44	21.38	20.76	2.02	.0500*
HP 2420	51	20.84	21.68	2.39	.0205*
Mean Cum_GPA					
BUS 3345	71	3.25	3.249	0.01	0.9884
MIS 3305	103	3.08	3.12	0.42	0.6754
MIS 3305	44	3.07	3.17	0.77	0.4479
HP 2420	51	3.11	3.44	2.79	.0074**
Standardized SAT/ACT score					
BUS 3345	71	0.0138	0.0764	0.29	0.769
MIS 3305	103	-0.093	-0.109	0.08	0.9374
MIS 3305	44	-0.051	0.2011	0.73	0.4707
HP 2420	51	0.0226	0.1014	0.26	0.798

p < .05* *p* < .01**

Methods

McGraw-Hill textbooks

Courseload platform delivered in Blackboard

269 students

103 eText

166 Print

- Paper survey administered near the end of the semester
- *t*-tests of identical questions by comparison and control group
- Frequencies of non-identical questions
- Linear regression to predict learning needs
- Open-ended questions from both groups

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

Variable	Description	Mean (SD)		t	DF	p
		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 ****

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

- Actual use of the eTextbooks is greater than actual use of the print textbooks. • Supported
- Student's learning needs are better met by print textbooks than by the eText • Supported

STUDENT ENGAGEMENT - ETEXT

- *I highlighted/annotated more than I would have with the print textbook.*

Disagree - 60.7%

Neutral – 20.2%

Agree – 19.1%

- *I read more of the assigned material than I would have with the print textbook.*

Disagree - 61.5%

Neutral – 25.3%

Agree – 13.2%

- *Using eText has become part of my learning routine.*

Disagree - 52.2%

Neutral – 25.6%

Agree – 22.2%

- Students using eTextbooks will not report greater engagement than they would have with print textbooks.
- Supported

Learning Needs Index

H₃ Student's will deem their learning needs are better met by print textbooks than by the eText

Q: To what extent were your learning needs met by using your (e) textbook?

- Helped me to better understand the ideas and concepts taught in the course
- Allowed me to better organize and structure my learning
- Increased engagement with course content
- Made my study time more efficient

Linear Regression Predicting Learning Needs - ETEXTBOOK GROUP

Variable	Model 1			Model 2			Model 3			Model 4		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
TEXT	-0.018	0.015	0.2284	-0.0151	0.0111	0.1804	-0.0135	0.0109	0.2206	-0.015	0.012	0.2002
PGVIEW	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
TEST_Z	-0.756	0.432	0.0841	-0.6769	0.3181	.0368*	-0.6467	0.3122	.0418*	-0.642	0.334	0.0587
HILITEM	1.867	0.306	.0001***	0.6769	0.2685	.0138*	0.3909	0.299	0.1952			
ROUTINE				2.22	0.2774	.0001***	2.007	0.2931	.0001***			
REDMORE							0.7353	0.3648	.0475*			
ENGAGE										1.0384	0.102	.0001***
<i>R</i> ²		0.36			0.65			0.66			0.6	

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

Linear Regression Predicting Learning Needs - PRINT GROUP

Variable	Model 1			Model 2			Model 3			Model 4		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
TEXT	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
TEST_Z	-0.1472	0.258	0.569	-0.1427	0.2577	0.5805	-0.1494	0.26	0.5664	-0.143	0.26	0.5829
HILITE	0.901	0.19	.0001***	0.9777	0.1997	.0001***	0.9763	0.2004	.0001***	0.9736	0.201	.0001***
NOTES				-0.253	0.2037	0.2161	-0.2696	0.2158	0.2135	-0.255	0.225	0.259
QUEST							0.0534	0.2239	0.8118	0.1123	0.328	0.7326
PART										0.001	0.228	.0003**
<i>R</i> ²		0.36			0.37			0.37			0.37	

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

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

Variable	Description	Mean (SD)		t	DF	p
		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	0.1
QD8	if it were readable on a handheld mobile device (e.g. iPhone,	2.98 (1.4)	3.16 (1.3)	1.08	260	0.3
QD9	if it were readable on Tablets (e.g. iPad, Galaxy)	2.92 (1.54)	3.17 (1.3)	1.44	260	0.15
QD10	if it were available <u>without</u> 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	0.92

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

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

- Usability will be of primary importance in the decision to purchase eTextbooks over the print textbook option.

- Not Supported

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)?

	ETEXT	PRINT
YES	30%	34%
NO	33%	18%
MAYBE	37%	48%

- Students using print textbooks will be more inclined to try eTextbooks in the future than students who used eTextbooks.

- **Not Supported**

Hypotheses

- Actual use of the eTextbook by students is greater than actual use of the print textbook. SUPPORTED
- Students using eTextbooks will not report greater engagement than they would have with print textbooks. SUPPORTED
- Student's will deem their learning needs are better met by print textbooks than by the eText. SUPPORTED
-
- Usability will be of primary importance in the decision to purchase eTextbooks over the print textbook option. NOT SUPPORTED
- Students using print textbooks will be more inclined to try eTextbooks in the future than students who used eTextbooks. NOT SUPPORTED

Qualitative Data

- 97 students commented
- 6 said they did not use the eText at all
- 33% Students find navigation problematic.
- 37% Students report difficulty reading at length on a display or monitor.
- Other issues cited: high cost, Wi-fi problems, doesn't work well on Smartphone

Results

- eTextbook users report reading more of the text, BUT Learning needs are better met by print textbooks
- Collaboration and interactivity is low in both groups.
- Cost and availability offline is a significant driver for student adoption.
- Eye Strain is still a problem.
- Students for whom the eText is routine are more positive that their learning needs are being met.

Conclusions

- Although eTextbook students report that they read more, they engage less with the textbook.
- Print textbooks are significantly more successful in meeting student learning needs.

Limitations

- Need study of teaching and learning with eTextbooks
- Need more correlation with grades and student learning outcomes with eText classes.
- Not a true random sample.
- Only addresses the Courseload platform.

Further Research

- Eye strain effects
- Focus groups
 - Faculty
 - Students
- Best Practices
 - Teaching with eTexts



BUSINESS 3345

T-test Results for BUS 3305

Variable Name	Description	Mean (SD)		t	DF	p
		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	2.68 (.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 students	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 paper format)	(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: $p < .05$ * $p < .01$ ** $p < .001$ ***

MIS 3305 GROUP ONE

T-test Results for MIS 3354 Group One

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?					
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 students	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 paper format)	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 ****

MIS 3305 GROUP TWO

T-test results for MIS 3345 Group Two

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?					
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 students	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 paper format)	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 ****

HP 2420

T-test Results for HP 2420

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?					
Q1	Helped me to better understand the ideas and concepts taught in the course	2.43 (1.23)	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 students	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 paper format)	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: $p < .05$ * $p < .01$ ** $p < .001$ ***