University of Minnesota

Spring 2012 eTextbook Pilot Project Report

September 18, 2012

Executive Sponsors:

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Executive Summary

Background: In November 2011, the University of Minnesota accepted an invitation to participate in a national, quick-turn-around, Internet2-led initiative piloting the use of eTextbooks in eight courses on the Twin Cities campus for spring semester 2012. Other participating institutions included Indiana University, the University of Wisconsin, University of Virginia, Cornell University, and University of California, Berkeley.

Project Leadership: The eTextbook pilot project was authorized by the Provost's Office, with the Office of Distributed Education and Instructional Technology (DEIT) and the Office of Undergraduate Education (OUE) serving as executive co-sponsors. The project depended upon a highly collaborative model which included participation of units across the University. DEIT provided leadership for the project team and served as the main contact.

Why eTextbooks? The increasing cost of textbooks and the greater availability of laptop computers, eReaders and tablets have created a unique opportunity to evaluate the costs and benefits of providing electronic textbooks to students.

How Did Students Access the eTexts? The project leveraged the "Courseload" e-reader application which was integrated with the U of M Moodle course management system to provide a common platform for the delivery of eTextbooks. For the pilot project, one publisher (McGraw-Hill) provided the electronic texts. These materials could be used on a variety of devices, printed out, or purchased at a nominal cost.

Selection of Faculty: Faculty were chosen based on interest, current use of McGraw-Hill texts, diversity of disciplines, types of courses, enrollment sizes, and willingness to participate in a pilot research study.

Research Study: As part of the project, the University of Minnesota and other participating institutions agreed to collaborate on an evaluation of the eTextbook pilot. The U of M's study used multiple methods including student survey, student focus groups, faculty interviews, and usage data. As part of the overall evaluation effort, a separate accessibility study was carried out on the Courseload platform by the University of Minnesota Office of Disability Services.

Research Results

- Students mentioned convenience, ease of use, portability, saving money and paper, and access to professor notes as reasons for preferring eTextbooks.
- Eye strain, difficulty reading on a computer screen, needing an internet connection, browser issues, difficulty of use, and inability to download to a mobile device were mentioned as problems with eTexts.
- Only 14.4% of student survey respondents indicated they would buy an eTextbook over a traditional textbook in the future.
- Faculty indicated saving their students money was their primary motivation for participating in the pilot.
- Although faculty agreed the eText was easy to use on a basic level, most did not use the advanced highlighting, annotation, and stats features. Students enrolled in courses where faculty were more engaged reported that the highlights and annotations were at least somewhat useful when studying.
- Accessibility – The etext platform was determined to be inaccessible for students with disabilities.

Recommendations

- Establish a standing committee charged to determine how and to what extent the University can optimally procure, distribute, fund, and manage digital course materials.
- The impact of eTextbooks on the student experience should be the most important consideration.
- Take a data driven approach using the findings from the eTextbook pilot and maintain alignment with existing U of M policies and practices to establish baseline criteria for metrics for decision making.
- Ensure that eTextbooks are available on a variety of platforms (not limited to sole source hardware, software, LMS or other proprietary components) to best meet the needs of students and faculty.
- Engage faculty to take advantage fully of the capabilities of digital course materials.
- Pursue a multi-faceted approach to make eTextbooks available at the University of Minnesota including open educational resources, volume pricing deals with commercial publishers, additional pilot projects.
- Ensure that the eReader platforms used by the U of M provide full accessibility accommodations to students with disabilities. Just getting a hard copy of a text is not a solution to accessibility issues.
- Solicit faculty and student opinions to determine critical features necessary for eText adoption.
- Use inter-institutional organizations (CIC, AAU) to advocate that publishers improve accessibility and usability and provide standard formats for electronic materials.
- Define the role of the Provost's Office in establishing standards in the arena of digital course materials.
- Determine a method of evaluating eTextbooks independent of the eReader platform (e.g., evaluate multiple eText platforms).

Background

In October 2011, the Provosts of the Committee on Institutional Cooperation (CIC) initiated an eText project based on an earlier effort begun by Indiana University in 2009. The following month, Indiana University invited other higher education institutions to participate in an eText pilot during spring semester 2012, and five institutions agreed: University of Minnesota, University of California - Berkeley, Cornell University, University of Virginia, and the University of Wisconsin.

At the University of Minnesota, Vice Provosts Robert McMaster and Billie Wahlstrom were identified as executive sponsors, and a project management team was formed to address timelines, deliverables, challenges, risks, and metrics. The project depended upon a highly collaborative model which included several Provost's Office units, Disability Services, Office of Information Technology, University of Minnesota Bookstores, University Libraries, Institutional Research, and Office of the General Counsel. The project team also included a representative from the Senate Committee for Educational Policy (SCEP), a faculty member, and a student from one of the classes in the pilot.

The team included:

- Robert McMaster, Vice Provost and Dean of Undergraduate Education (Executive Sponsor)
- Billie Wahlstrom, Vice Provost for Distributed Education (Executive Sponsor)
- Susan Engelmann, Distributed Education and Instructional Technology (Co-Chair)
- Bob Rubinyi, Distributed Education and Instructional Technology (Co-Chair)
- Suzanne Bardouche, Office of Undergraduate Education
- Tom Brothen, Senate Committee on Educational Policy
- Greg Brown, Office of the General Counsel
- Brad Cohen, Office of Information Technology
- Sehoya Cotner, Associate Professor
- Bob Crabb, University of Minnesota Bookstores
- Sandra Ecklein, Distributed Education and Instructional Technology (Faculty Liaison)
- Ole Gram, Faculty and Academic Affairs
- Ron Huesman, Office of Institutional Research
- Brittany Lloyd, Office of Information Technology
- Elizabeth McClurg, Undergraduate Student
- Tonu Mikk, Disability Services
- Peggy Mann Rinehart, Disability Services
- Amelious Whyte, Office of Student Affairs
- Karen Williams, University Libraries

The team had only about eight weeks before the start of the spring semester to finalize the legal and financial aspects, select faculty participants, integrate the technology, and prepare students. They continued to meet periodically throughout the semester for updates on the pilot and came together to prepare the final report.

Rationale/Goals of the Pilot**:** Given the increased availability of portable devices and interest in electronic books, the University of Minnesota Provost's Office viewed the invitation as a timely opportunity to quickly evaluate faculty and student reaction to eTextbooks and to identify the benefits/challenges in this emerging area. The following goals were identified:

- To pilot the use of eTextbooks for a limited number of classes during spring semester 2012 using a multi-unit project team approach. This gave the University an opportunity to explore eTexts from a campus-wide perspective and learn how units would work together to streamline the process.
- To collaborate with other Internet2 members to explore the impact of eTexts in different higher education settings. The University was able to take advantage of the framework Indiana had already set up and to learn from peer institutions who were also participating in the pilot.
- To explore and understand how students with disabilities—including those who use screen readers—can access and navigate material through an eTextbook application (in this case, Courseload).

Logistics and Processes for the Pilot**:** Although many publishers have eTextbooks and Indiana University had worked with several of them in the past, McGraw-Hill was chosen as the sole eText provider for this pilot. Similarly, there are several eReader applications on the market but only one of them, Courseload, was selected for use in the pilot. The Courseload eReader is "device agnostic," providing faculty and students the ability to read, annotate and print eTexts via any browser, tablet, or smartphone that supports HTML5.

Internet2, a non-profit consortium consisting of higher education research institutions, government agencies, and corporations, served the important role of fiscal agent, making the arrangements with the eReader provider, the publisher, and the participating institutions. Through the efforts of Internet2, the low-cost, multi-institutional pilot was initiated with simplified contracting.

The Provost's Office provided the $20,000 flat fee to participate, which allowed the University to select up to 10 sections and 1,000 students for the pilot. eTextbooks were provided at no charge to students, with the option to pay $28 if they want a printed copy in addition to the electronic version. Students with documented print disabilities who could not use the eTextbook received the print copy at no cost.

Faculty Selection: In late November, an email was sent from Vice Provost Wahlstrom to all faculty on the Twin Cities campus, inviting them to participate in the pilot. The project team identified multiple criteria for the selection of faculty: current use of a McGraw-Hill text in their course, ability of McGraw-Hill to convert the book to electronic format, willingness of faculty to meet rapid timelines, interest in use of eTextbooks, willingness to collaborate on the research study, and willingness to use enhanced features of the eTextbook. In addition, the project team sought an overall diversity of disciplines, types of courses and enrollment size. Faculty were evaluated on a first come, first served basis.

Based on the criteria, nine faculty representing eight courses and 680 students were selected for the pilot.

Faculty	**Department**	**Course**	**Enrollment**
Sehoya Cotner	Biology	BIOL 2012	110
David Fan	Genetics, Cell Biology & Development	BIOL 1101	58
Rhonda Franklin	Electrical & Computer Engineering	EE 5613RF	14
Donald Liu	Applied Economics	APEC 1101	91
Helen Moser	Finance	FINA 4122	125
Nathan Springer/ Peter Tiffin	Plant Biology	PBIO1212	66
Teresa Swartz	Sociology	SOC 3251W	62
Henriette Warren	Child Development	CPSY 4303	154

All of the McGraw-Hill texts were selected and confirmed by December 12, 2011.

Role of the Bookstore: The active cooperation of the University of Minnesota Bookstores was an important component in the success of the project. Bookstore director Bob Crabb played a key role in identifying faculty for the pilot, assisting with print-on-demand services, managing logistics with the publisher, and participating in the U of M and inter-institutional evaluation groups.

Legal Arrangements: Under an extremely tight deadline, the Office of the General Counsel worked with their counterparts at the other participating institutions, Internet2, McGraw-Hill and Courseload to review and edit the legal documents. Although the University of Minnesota was the last institution to be part of the pilot, it was the first to have all documents signed.

Technical Arrangements: Ensuring that students and faculty had easy access to the electronic texts was critical for the pilot. By integrating the Courseload application with the Moodle course management system, the University of Minnesota enabled students to use their U of M login and password to access the texts. The U of M Information Technology group (OIT) completed testing of the Moodle/Courseload integration and moved it to production on January 8. Courseload offered a series of faculty training webinars during December 2011 and January 2012 and all U of M faculty participated. Access to the eText via the Moodle course site was available from the beginning of the semester through mid-August 2012.

Communications Strategy: A public website (http://www.elearning.umn.edu/etext) was created to share information with the public and U of M students, faculty, staff, and administrators. A Moodle site was created to post relevant information for the internal project team and faculty. Project leads worked with University Relations to develop news stories for local press. The pilot received statewide and nationwide publicity (see appendix) with feature articles in the Minnesota Daily, Campus Technology, Chronicle of Higher Education, Converge, New York Times, and MPR News. The eText pilot team also presented a poster, “eTextbooks: A Collaborative Approach to a Pilot,” at the U of M Academic Technology Showcase and conducted a brief session at the May 2012 meeting of the American Distance Education Consortium meeting at the University of Maryland.

Communicating with Students: Participating faculty were asked to send an email to their students shortly before the semester began informing them of the pilot and letting them know that they would be receiving the eTextbook free of charge. Directions for accessing the eTextbook, including information about compatible browsers, were provided along with a link to a help page with detailed instructions for using the Courseload features.

Ongoing Support: Students in the pilot were instructed to contact the University’s 1-HELP student support service if they had technical difficulties. Faculty were encouraged to contact selected members of the project team if they needed further help. In addition, members of the project team were available for in-class demos or for one-on-one consultation with students via phone or email. Most technical difficulties were related to pop-up issues with browsers; after the first couple of weeks, calls for help dropped off dramatically.

Environmental Scan

eTextbook Market Landscape: On the basis of discussions with eTextbook publishers, the University of Minnesota bookstore director, and a review of recent articles in educational publications, the following points emerged:

- *eTextbook sales lag significantly behind general eBook sales*. Amazon.com, for example, sells over 50% of their books as eBooks (New York Times, May 19, 2011). Conversely, the University of Minnesota Twin Cities bookstore, one of the national leaders in eTextbook sales, sees only 1% of their texts sold in eText format.
- *Prices for eTextbooks from most publishers are still relatively high* compared to the cost of used print textbooks or rentals, leading to a disincentive for students to purchase eTextbooks.
- *eTextbook business models, software readers, and licensing models are fairly immature*. It is likely that publishers will significantly alter their methods of offering eTextbooks in the next few years.
- *Availability of eTextbooks is typically on a 180 day "rental" basis*. This short period may work for some books in some classes but for classes in a student's major, the eTextbooks need to be available for the student's entire academic career.
- *Accessibility of eTextbooks for users with disabilities is lacking*. Most eTextbook reading platforms appear to have significant challenges in terms of accessibility.

eTextbook Projects at the University of Minnesota

In addition to the Spring 2012 Courseload/McGraw-Hill Pilot, several additional eTextbook efforts are currently underway at the University of Minnesota:

1. *Open Source Initiative - Twin Cities College of Education and Human Development* - In an effort to reduce costs for students, the College of Education and Human Development, under the leadership of Dean Jean Quam and David Ernst, director of academic technology services, has created a catalog of open textbooks to be reviewed by faculty members. Open textbooks are complete textbooks released under a Creative Commons, or similar, license. Instructors can customize open textbooks to fit their course needs by remixing, editing, and adding their own content. Students can access free digital versions or purchase low-cost print copies of open textbooks.
2. *University of Minnesota Crookston eTextbook/Tablet Initiative* - Bruce Brorson, Associate Professor, University of Minnesota Crookston, is leading a tablet assessment project examining the Apple iPad and Android platforms. A key element of the project involves acquiring a greater understanding of the use of eBooks in support of instruction, including the use of eBooks as textbooks and the checkout and use of eBooks from Library services.
3. *University of Minnesota Twin Cities Bookstore* - The University of Minnesota Bookstore leads the country in sales of eTextbooks. In May 2012, University Bookstore Director Bob Crabb was cited in national media with the announcement of a groundbreaking agreement with McGraw-Hill aimed at accelerating the adoption of eBooks on campus.
4. *University Libraries* - The University Libraries provides access to more than 415,000 books in electronic format, including some eTextbooks, which are available for use by current students, faculty, and staff. They vary in features (downloading, linking) and are sometimes grouped together by subject or publisher. Library eBooks can be read on iPads, other mobile devices, and laptop/desktop computers. Many library eBooks are linked to one reader at a time.

Evaluation/Research Findings

The evaluation of the spring 2012 pilot, at the institutional level and among all the participating schools as a group, was a major part of the project. Representatives from each institution had regular phone conversations, facilitated by Indiana University, to discuss the evaluation process. To enable consistent reporting they developed a common set of evaluation questions for both students and faculty to be used by all institutions in the pilot. Each institution was free to add questions and utilize additional research methods (e.g., student focus groups). Cornell University took the lead in compiling and analyzing results for the group, and the University of Minnesota agreed to prepare the first draft of a joint report aggregating the experiences of the participating institutions. The inter-institutional report can be found in a companion report, "Internet2 eTextbook Spring 2012 Pilot Project Report."

University of Minnesota Methodology

Representatives from the U of M Libraries and the Office of Institutional Research completed the IRB process for the project. An evaluation subcommittee was formed which identified seven key research questions:

1. What are key factors that influence institutional, faculty, and student adoption of eTextbooks?
2. How does the use of eTextbooks shape student interaction with content, classmates, instructors?
3. How does using eTextbooks impact the student learning experience?
4. How do students perceive eTextbooks?
5. How do faculty perceive eTextbooks?
6. Are there compelling correlations between student use of eTextbooks and student demographics, course outcomes?
7. What are students' perceptions of their reading, engagement, and learning from the eTextbook? compared to a paper textbook?

The subcommittee decided to use the common set of student survey questions and faculty discussion questions without any additions. Paper surveys were distributed in participating classes toward the end of the semester and faculty were interviewed in informal discussions in groups of two or three. Minnesota also elected to conduct two student focus groups facilitated by the Office of Measurement Services to further assess students' perceptions in the areas of: (1) student interaction with eTexts, course content, peers and faculty; (2) faculty interaction with eTexts and students; and (3) future purchase and use. The focus groups consisted of 13 students from six of the eight courses. Courseload usage data was also analyzed. Finally, a separate, in-depth accessibility study was conducted by the Office of Disability Services (see section below).

University of Minnesota Key Findings

Findings related to the seven research questions are summarized below and are based specifically on the use of the Courseload platform. The confounding of the eTextbook with the platform was an issue. See appendix for student survey, student focus group questions, faculty interview protocol, and detailed results.

What are the key factors that influence institutional, faculty, and student adoption of eTextbooks?

- Only 14.4% of the student survey respondents indicated they would buy an eTextbook over a traditional textbook in the future. Regardless of preference, the most important factor indicated by students in deciding to buy an eTextbook over a traditional textbook was if it cost less than a used or rented traditional textbook. The next most important factors in choosing an eTextbook were

that the eTextbook must be accessible without internet connection, its portability; and that it is more environmentally friendly.

- There did appear to be a significant relationship between perceptions of the ease of use of the Courseload application and willingness to buy an eTextbook.
- Students in the focus groups indicated they would purchase eTexts if they were cheaper than renting a textbook or buying a used book.
- In discussions with faculty, most of them indicated saving their students money was their primary motivation for participating in the eText pilot.
- More than one faculty member expressed the opinion that the move to eTextbooks is inevitable. "The question is how fast, how soon it will happen." The widespread use of electronic devices such as iPads in K12 and the popularity of eReaders among the general population were cited as evidence that eTextbooks are the wave of the future and higher education must be prepared.

How does the use of eTextbooks shape student interaction with content, classmates, instructors?

- The vast majority of students indicated that the eTextbook provided little or no additional benefit to their learning needs being met, in terms of increasing their interactions with professors and classmates, though a sizable proportion (40%) did indicate that by using an eTextbook they increased their engagement with course content at least somewhat.
- Students who were in pilot classes with higher faculty engagement were more likely to report that the eTextbook allowed them to interact more with their professors compared to those in classes with lower faculty engagement (42.6% vs. 24%).
- The group was approximately evenly split on whether or not the Courseload features and navigation were easy to use. For the half who agreed that Courseload features were easy to use, the majority thought it at least somewhat helped increase their engagement with course content over traditional textbooks.
- Students who read the majority of their eText via an electronic device (e.g., desktop or laptop computer) reported higher levels of engagement with course content compared to those who read mostly a paper version of their eText (43% vs. 21%).
- No significant differences in terms of collaboration with other students or increased contact with their professor were found between those who read mostly with computer vs. paper.
- Students in the focus groups reported that instructor engagement with the eText was non-existent or minimal and several commented that this had a major impact on the student experience. Students thought they would have engaged more with the eText themselves if the instructors had placed notes or tips within the document.
- Students whose instructors made comments in the eText were very satisfied with their experience, which resulted in greater levels of engagement.
- Although most faculty indicated that the eText did not affect the quality of their interactions with students, one felt that interactions were improved and that highlighting, annotating and linking "gave me a dialogue with them that I wouldn't have had otherwise."

How does using eTextbooks impact the student learning experience?

- The majority of students (57%) reported that eTextbooks at least somewhat helped them better understand the ideas and concepts taught in their course, but slightly less than half reported that eTextbooks helped them better organize and structure their learning or offered them greater flexibility to learn the way they wanted. Even fewer indicated eTextbooks made their study time at least somewhat more efficient (37%).

- Once again, if students found the Courseload features and navigation to be easy to use, the majority reported that eTextbooks did at least somewhat help them meet their learning needs as compared to paper textbooks, in terms of helping them understand the ideas and concepts taught, better organize and structure their learning and offered them greater flexibility to learn the way they wanted to. However, less than half of these students felt it made their study time more efficient.
- When asked if using the eText affected student learning, two faculty felt that their students did not have a positive experience and would have done better with a traditional textbook. Another thought students were frustrated because the eText format was not conducive to the way they typically approach the subject matter. The others were ambivalent: "No complaints….no kudos….no compliments."

How do students perceive eTextbooks?

- The small group of students who indicated they would buy eTextbooks over traditional textbooks in the future (14.5%) appears to have embraced the eTextbook. They were much more likely to report that eTexts had become part of their learning routine (70%) compared to those who did not plan to purchase an eText in the future (20%).
- Of students who were either ambivalent or did not plan to purchase eTextbooks in the future, the majority reported that using the eText was initially difficult, and slightly more than half thought Courseload features and navigation were <u>not</u> easy to use. The confounding of the platform with the eTextbook was an issue.
- Of the open ended comments on the student survey, 30% were related to the Courseload application and its features, and those comments were overwhelmingly negative.
- Students who compared eTexts to traditional texts in their open-ended comments mentioned convenience, ease of use, portability, saving money and paper, and access to professor notes as reasons for preferring eTextbooks.
- Twelve percent of open-ended comments referred to eye strain and difficulty reading on a computer screen. Needing an internet connection, browser issues, difficulty of use, drain on a laptop battery, and inability to download to a mobile device were also mentioned as problems with the eText.
- The focus groups revealed that students who expressed excitement in regards to technology tended to be more satisfied with eText, had fewer negative experiences with usability, and used the features more often.
- Students in the focus groups were unaware of all of the eText features such as sharing or linking to external content. Many experienced technical issues with features such as zooming, sharing, highlighting, printing, and search. When students were unable to figure out how to use a feature, most gave up before ever finding a way to implement the feature.

How do faculty perceive eTextbooks?

- Two of the nine faculty members mentioned eye strain and difficulty reading on a computer screen.
- While most faculty agreed the eText was easy to use on a basic level, most did not use the advanced highlighting and annotating features.
- Several expressed concern that highlighting and annotation would direct the students to focus too much on those areas. "They could always see what I thought but I wanted them to do their own work."

- Faculty did not use the stats feature to track student progress or use of the eText. "I'm here to help students as much as possible but not to see if they're doing work or not."

Are there compelling correlations between student use of eTextbooks and student demographics, course outcomes?

- Although the paper survey requested students' permission to access their grades in the course, the subcommittee eventually decided that a single semester did not provide adequate information to address this question and analysis has been deferred.
- One faculty member indicated that students didn't seem as engaged and didn't read as often or as thoroughly as the previous three times the same book had been used. Another felt that grades may have been slightly lower for this class than in previous years.

What are students' perceptions of their reading, engagement, and learning from the eTextbook?

- The vast majority of students indicated they did not read more of their assigned material using eText compared to paper (84%) or highlight and/or annotate more (76%) or learn more by using eText with highlighting or annotations than with paper textbooks (79%).
- However, some students in the focus groups thought that they read more because they could access the content online and did not have to carry their book with them.
- Students who were in courses with faculty who were more engaged with eText did not report doing any more assigned reading than those enrolled in courses with faculty who were less engaged with eText. But they did report doing more highlighting and/or annotations and indicated learning more from using eText highlighting and/or annotations.
- In general, students in the pilot did not find other students' highlights and/or annotations in the eText useful. This was true regardless of the engagement level of the faculty or if they read the majority of their material on the computer.
- Compared to students enrolled in courses with less eText engaged faculty, students with more eText engaged faculty reported that the instructors' highlights and/or annotations and the material the instructor added to the eText were at least somewhat useful when studying.
- Interestingly, students who read the majority of their time on an electronic device found their own highlights and/or annotations to be more useful when studying compared to those who read the majority of their eText utilizing the paper version and/or paper printouts of eText sections.

Accessibility Findings

As part of the overall evaluation effort, a separate accessibility study was carried out on the Courseload platform by the University of Minnesota Office of Disability Services. The complete study is provided in the appendix.

<u>Accessibility Study Methodology</u>

During spring 2012, Disability Services conducted a series of explorations and focus groups to determine how the eTextbook and supplemental course materials delivered through the Courseload platform were accessed and used by students with disabilities, what barriers are inherent in the Courseload applications, what accommodations are necessitated by the use of Courseload, and what issues and risks might result from Courseload implementation. This was not intended as an extensive review of the Courseload application but rather, a preliminary look at some of the issues students with print disabilities or vision impairment may encounter when attempting to access course materials delivered through the application.

Seven participants (four students and three staff) were recruited to evaluate the Courseload application. Only one of the students was enrolled in one of the spring semester pilot courses. Participants were asked to use their own computers and adaptive technologies in order to preserve customized configurations and settings. All were given access to the Moodle site and eTextbook for APEC 1101 Principles of Microeconomics, one of the pilot courses.

Key Findings

Both the skilled professionals and the students encountered similar accessibility issues in their attempts to access the eTextbook and other course materials as delivered through Courseload. Although the types and severity of disabilities vary greatly, even a user with a single mild impairment that requires a technology accommodation would find it difficult, if not impossible, to make use of the current Courseload application.

The Disability Services evaluators were unable to evaluate a native copy of the textbook as provided by the publisher. However, they were able to make some assumptions regarding access to the textbook when delivered using Courseload. Given that uploading an accessible (tagged) PDF document resulted in a graphically rendered document that was inaccessible, they inferred that all eText publications will be displayed in the same inaccessible manner in the Courseload application.

Students with print disabilities who are enrolled in eText courses using Courseload register with Disability Services. They receive a print copy of the book, which is then converted using optical character recognition and imported into an accessible scan and read program, like Kurzweil, or rich text or other formats.

The Disability Services evaluators understand that Courseload has a desire to make their product and delivery of eTexts accessible. Courseload should certainly be applauded and encouraged for their efforts. However, the Disability Services team cannot support the adoption of any application or system that allows instant access to course materials for all but those with disabilities.

Ongoing efforts are needed on three fronts. First, faculty and course developers must be made aware of accessibility and learning style considerations. They must also be given the resources and encouragement for understanding and implementing a universal design for learning approach. Second, universities, colleges, government entities, and other organizations need to collaborate in putting pressure on publishers to produce accessible eTexts. Thirdly, the tools used to deliver eText content must be accessible and not interfere with natively accessible materials.

Lessons Learned

- Cost was a major driver for both faculty and students interested in eTextbooks
- An eReader platform must be fully accessible to students who need visual accommodation
- A core feature set (highlighting, zooming, pagination) with high usability is critical to adoption
- An engaged faculty is critical to a successful student experience with digital course materials
- Students have high expectations for the quality of eTexts

Considerations for Moving Forward with eTextbooks

- Establish a standing committee charged to determine how and to what extent the University can optimally procure, distribute, fund, and manage eTextbooks.
- The impact of eTextbooks on the student experience should be the most important consideration.

- Take a data driven approach using the findings from the eTextbook pilot and maintain alignment with existing U of M policies and practices to establish baseline criteria for metrics for decision making.
- Ensure that eTextbooks are available on a variety of platforms (not limited to sole source hardware, software, LMS or other proprietary components) to best meet the needs of students and faculty.
- Engage faculty to take advantage fully of the capabilities of digital course materials.
- Pursue a multi-faceted approach to make eTextbooks available at the University of Minnesota including open educational resources, volume pricing deals with commercial publishers, additional pilot projects.
- Ensure that the eReader platforms used by the U of M provide full accessibility accommodations to students with disabilities. Just getting a hard copy of a text is not a solution to accessibility issues.
- Solicit faculty and student opinions to determine critical features necessary for eText adoption
- Use inter-institutional organizations (CIC, AAU) to advocate that publishers improve accessibility and usability and provide standard formats for electronic materials.
- Define the role of the Provost's Office in establishing standards in the arena of digital course materials.
- Determine a method of evaluating eTextbooks independent of the eReader platform (e.g., evaluate multiple eText platforms)

Appendices:

A. Accessibility Full Report
B. Student Survey Form and Evaluation Report
C. Student Focus Group Questions and Summary Report
D. Faculty Discussion Questions
E. U of M Technology Showcase Poster
F. News Articles about the Project
G. Environmental Scan Articles

A. Courseload eText Accessibility Review

Peggy Mann Rinehart, Associate Director, Disability Services
Phil Kragnes, Manager, Computer Accommodations Program
Tonu Mikk, Info Tech Professional, Disability Services
Davin Martinson, Access Programs Coordinator, Disability Services

As technology and digital materials become an ever larger component of teaching and learning, how they are used and their impact on diverse learning styles must be considered. This issue is compounded by technologies that are not accessible to students with disabilities using adaptive technology or are implemented in a way as to not be inclusive. As one student put it, "Why can't we just get books in formats we can easily manage: on tablets and smart phones?"

We had the opportunity to explore this intersection of learning styles and accessibility during the piloting and subsequent accessibility review of an E-textbook delivery application.

During Fall 2011, a number of universities participated in a pilot of the CourseLoad E-text platform. The CourseLoad application was used to deliver the course textbook, professors' notes and comments, supplemental and other course-related materials. Disability Services at the University of Minnesota conducted a series of explorations and focus groups to determine how the E-text and supplemental course materials delivered through CourseLoad are accessed and used by students with disabilities, what barriers are inherent in the CourseLoad applications, what accommodations are necessitated by the use of CourseLoad and what issues and risks might result from CourseLoad implementation. This is not intended as an extensive review of the CourseLoad application but rather, a preliminary look at some of the issues students with print disabilities or hearing impairment may encounter when attempting to access course materials delivered through the application.

We were also interested in exploring how students with print disabilities engage in learning: what strategies work, what don't. What materials are useful, what are not. After all, a destination is only the end of a journey. It is the journey, with all its trials and tribulations, that gives us a more complete picture. So, let us tell you about the accessibility of the CourseLoad E-textbook application and the path to reach it, while glimpsing the experiences, thoughts, and emotions of those with whom we traveled.

Participants

A total of seven participants were recruited to evaluate the CourseLoad application: four students and three employees. Only one of the students (HM) was enrolled in a course in which CourseLoad was used to deliver the E-textbook and supplemental materials. Participants were asked to use their own computers and adaptive technologies in order to preserve customized configurations and settings. Only one participant (LM) did not complete the evaluation as a result of work-related responsibilities.

Participant	Disability	Adaptive Technology
LM	Blind	JAWS
MM	Blind	JAWS
PK	Blind	JAWS
TM	Deaf	Captioning

Participant	Disability	Adaptive Technology
MH	Learning Disability	Kurzweil 3000
JB	Learning disability, Hearing Impairment	Kurzweil 3000
NP	Low vision	ZoomText

Method

Professional Assessment

Phil Kragnes, Manager, Computer Accommodations Program, and Tonu Mikk, Information Technology Professional, Disability services, conducted an accessibility review of the CourseLoad application and course materials for APEC 1101 Principles of Microeconomics (section 001) — one of the courses in the University of Minnesota Spring 2012 CourseLoad E-text pilot. The focus of this evaluation was on screen reader access and was conducted using JAWS 12. The following questions guided the review:

- Can the contents of the E-textbook be located and identified?
- Can the content be navigated?
  - Turn pages
  - Jump to a specific page
- Can the instructor's notes and digital materials be accessed?
- Can highlighting, annotations and other additions be made to the E-textbook?
- Can a document be uploaded?
- Is the uploaded document accessible?

Focus Group

A total of four individuals participated in a focus group accessibility assessment of the CourseLoad application interface, the E-text and supplemental materials delivered through CourseLoad. All focus group participants were provided with lunch (see Appendix C) and student participants received a $25.00 gift certificate for the University of Minnesota bookstore.

Student evaluators were experienced users of their adaptive technology, which included the following applications:

- JAWS For Windows — a Windows screen reader primarily used by individuals with little or no usable vision.
- Kurzweil 3000 — a text-to-speech literacy system primarily used by individuals with learning disabilities.
- ZoomText — a screen magnification and contrast adjustment application primarily used by individuals with low vision.

Students used their personal laptop computers in order to preserve any custom settings. All student participants use Microsoft Internet Explorer as their preferred browser.

Although the focus group participants were not given initial instructions as to which browser to use, they quickly discovered that task completion was not possible with Internet Explorer and were subsequently informed that Mozilla Firefox or another ARIA compliant browser would be required.

Participants were instructed in accessing the CourseLoad application through the University of Minnesota "my" portal and the APEC 1101 Principles of Microeconomics (section 001) Moodle course site (see Appendix A). Upon launching the CourseLoad application, the students were directed in a series of tasks that mirrored those used in the professional assessment.

Student Debriefing

HM, a student with a print disability who was enrolled in APEC 1101 Principles of Microeconomics (section 001) for the Spring 2012 semester was interviewed regarding his experience with the course, instructor, CourseLoad/E-text and other course materials (see Appendix D). He received a $25.00 University of Minnesota bookstore gift certificate for participating.

Methods and Procedures

The professional assessment was conducted in two phases. Phil Kragnes and Tonu Mikk began with an unguided exploration of the CourseLoad E-textbook application. Mr. Kragnes focused on screen reader and speech recognition accessibility, while Mr. Mikk focused on low vision and deaf/hard-of-hearing access. The experience and findings provided the basis for the protocol used in this study.
Student focus group participants were gathered in a single location and received identical instructions. Four staff members were present to observe and provide assistance when a task could not be completed using a specific adaptive technology. A collaborative atmosphere quickly developed with students encouraging and assisting each other.

Results

The initial professional assessment revealed that much of the CourseLoad application interface is accessible to users of adaptive technologies such as JAWS, ZoomText, and NaturallySpeaking. However, there are some controls that do not appear in the tab order or do not provide text labels. Without text labels, these controls are not identified and cannot be targeted by applications such as JAWS and NaturallySpeaking.

The contents of the textbook are presented as an image, presenting a barrier to most of the adaptive technologies represented in this evaluation. The only textual information available to the JAWS screen reader in the general location of the textbook content was the current page number. This inability to access the text precludes any attempts to add notes or other text-location specific information. Similarly, users of speech recognition applications, such as NaturallySpeaking, will not be able to target locations within the text.

Although it is possible to move forward and backward by page, there is no keyboard-operable means of jumping to a specific page. When on a page that contains notes or adjunct material provided by the professor, screen reader and screen magnification users may not be aware of its existence. This may hold true for some individuals with learning disabilities.

The rendering of the textbook content as an image raises the question as to how accessible local materials are rendered when uploaded to CourseLoad. An accessible PDF was uploaded. Although an accessible Table of Contents was generated, the formerly accessible PDF was displayed as an inaccessible image.

Focus group participants, with assistance from staff, spent approximately one hour traversing the Moodle course site (see Appendix A) to arrive at the and APEC 1101 Principles of Microeconomics (sec 001) Spring 2012 textbook being delivered by CourseLoad. The students, particularly those with visual impairments, reported they generally avoid the use of Moodle, as they find it confusing, frustrating, and fatiguing. The CourseLoad task completion results were very similar to those discovered in the professional assessment.

Task	**JAWS**	**Kurzweil**	**ZoomText**
Can the contents of the E-textbook be located and identified?	The textbook content is displayed as a graphic and cannot be accessed by JAWS.	The image representing the textbook content cannot be directly accessed by Kurzweil 3000 or imported for Optical Character Recognition (OCR).	The textbook content can be viewed with ZoomText. However, increasing magnification in ZoomText results in highly pixilated text and images. There is a native magnification feature in CourseLoad but it only offers three discreet magnification settings.
Can the content be navigated?	Although many of the controls can be identified and activated, there is a lack of headings to aid navigation. Some widgets are not directly exposed and the triggers are often not identifiable or keyboard operable.	N/A	A lack of headings and the modular layout of the interface made navigation confusing when using low to moderate magnification.
Turn pages	"Next" and "Previous" controls were identifiable and keyboard operable.	N/A	"Next" and "Previous" were not adjacent controls and required a brief search.
Jump to a specific page	The control was embedded as an AJAX widget and was neither identifiable nor keyboard operable. NOTE: once the "jump to page" feature was exposed with a	N/A	The feature could be identified and activated, but only with a mouse.

Task	JAWS	Kurzweil	ZoomText
	mouse-click by a staff assistant, the control was still not exposed to the screen reader.		
Can the instructor's notes and digital materials be accessed?	Neither instructor notes, student notes, nor other adjunct materials were accessible. NOTE: once exposed with a mouse-click by a staff assistant, note contents and embedded links could be read by JAWS and activated using the keyboard.	Notes were not clearly labeled and required the clicking of a yellow button to display the feature.	The unlabeled yellow control was difficult to locate and may result in additional barriers if alternative color schemes are employed.
Can highlighting, annotations and other additions be made to the E-textbook?	Given that the textbook content is rendered as an image, it is impossible to add notes or annotations to the document. NOTE: the inability to target a location in the text prevented an evaluation of study skill features.	Given that Kurzweil offers its own set of study skills tools, it was not clear as to how to add highlighting, notes, and annotations to the document.	The delineation between textbook content and note content was not clear.
Can a document be uploaded?	Uploading a document was straight forward.	Uploading a document was straight forward.	Uploading a document was straight forward.
Is the uploaded document accessible?	The uploading of an accessible (tagged) PDF resulted in an accessible Table of Contents but the document was rendered as an inaccessible image.	Once in CourseLoad, the document could not be imported into Kurzweil.	The uploaded document presents the same issues as described with the textbook.

Although NaturallySpeaking was not used in this evaluation, many of the issues encountered by screen reader users apply. Speech recognition systems require textual elements for targeting. Therefore, targeting and activation of the unlabeled yellow notes control would not be possible without using NaturallySpeaking's built-in "mouse grid" function. Targeting a location within graphically represented text would likewise be impossible.

Summary and Conclusions

Both the skilled professionals and the students encountered similar accessibility issues in their attempts to access the APEC 1101 Principles of Microeconomics (section 001) textbook and other course materials as delivered through the CourseLoad application. Although the types and severity of disabilities vary greatly, even a user with a single mild impairment that requires a technology accommodation would find it difficult, if not impossible, to make use of the current CourseLoad application.

We were unable to evaluate a native copy of the textbook as provided by the publisher. However, we can make some assumptions regarding access to the textbook when delivered using CourseLoad. Given that the uploading of an accessible (tagged) PDF document resulted in a graphically rendered inaccessible document, we infer that all E-text publications will be displayed in the same inaccessible manner.

Students enrolled in E-text courses using CourseLoad have a print copy of the textbook converted using Optical character recognition and imported to accessible scan and read, rtf for other formats.

There appears to be a need for efforts on three fronts. First, faculty and course developers must be made aware of accessibility and learning style considerations. They must also be given the resources and encouragement for understanding and implementing a universal design for learning approach. Second, universities, colleges, government entities, and other organizations need to collaborate in putting pressure on publishers to produce accessible E-texts. Thirdly, the tools used to deliver E-text content must be accessible and not interfere with natively accessible materials.

We understand that CourseLoad has a desire to make their product and delivery of E-texts accessible. They should certainly be applauded and encouraged. However, we cannot recommend the use of the CourseLoad application at this time. As a University of Minnesota compliance partner, the accessibility issues outlined in this document would put the University of Minnesota at risk for litigation. We cannot support the adoption of an application or system that allows instant access to course materials for all but those with disabilities.

Appendices

Appendix A

Accessing course content and materials in Moodle 2.0

All courses involved in the CourseLoad E-textbook pilot at the University of Minnesota are hybrid courses, incorporating both online and in-class instruction. Each participant was asked to complete specific tasks within the Moodle LMS course environment, report his/her success or failure, and provide feed back.

Summary of participant experience in the Moodle 2.0 course environment

Moodle utilizes AJAX widgets, requiring the use of an ARIA (Accessible Rich Internet Application) compliant browser. Microsoft Internet Explorer 8 and earlier — the most commonly used browsers by users of adaptive technology — are not ARIA compliant and will not render some content. All of the Focus Group participants began with Microsoft Internet Explorer and quickly discovered numerous issues, including missing content and inoperable controls.

Participants were asked to locate, identify, and interact with various areas of the Moodle course interface. Users who are able to use a standard pointing device (mouse or trackball) had little difficulty in navigating the Moodle course site. However, screen reader users had a difficult time understanding, navigating, and interacting with elements on the site. The following table illustrates some of the issues encountered by screen reader users.

Section	**Ind.**	**Comments**
Settings	Y	Identified as a level 2 heading.
Calendar	Y	Identified as a level 2 heading.
Events	Y	Identified as a level 3 heading.
Syllabus/Mock Trial Info/CPS Clicker Registration	Y	Located using the screen reader "find" feature.
Homework Assignments	N	Label not identified as a "clickable" element and it does not appear in the tab order. Assistance was required to expose the homework assignments, which could then be acted upon independently.
Navigation	Y	Identified as a level 2 heading.
Navigation/Lecture Notes	?	The "Lecture Notes" heading and the individual notes are identifiable and operable. However, the notes are PowerPoint slides presented as PDF documents (24 items). By default, most browsers are configured to open PDF documents in the browser, making the contents and related controls inaccessible to screen readers. The Mozilla Firefox browser should be configure to open PDF documents in the external Adobe Acrobat Reader application (See Appendix B)

It took student participants an average of one hour and frequent assistance from staff to complete the following tasks:

1. Access and navigate the Moodle course site
2. Locate and launch the CourseLoad E-textbook application for **APEC 1101 Principles of Microeconomics (sec 001) Spring 2012.**

Appendix B

Configuring Firefox to open PDF documents in the Adobe Reader application

By default, most browsers are configured to open PDF documents in the browser window. This prevents screen readers from accessing the PDF content and document controls, as there is no trigger to cause the screen reader to switch from browser to Adobe Reader/PDF interaction mode. The solution is to configure the browser to open PDF documents in the external Adobe Reader application.

Steps for configuring Firefox to open PDF documents in the external Adobe Reader application

1. Launch Mozilla Firefox®.
2. Open the "Tools" menu.
3. Select "Options".

4. Select “Applications”.
5. Select “Adobe Acrobat Document” as the Content Type.
6. Select “Use Adobe Reader” as the Action.
7. Click the “OK” button.

Appendix C

Informal Discussion with Students Regarding Course Materials and Accessibility

As part of an informal lunchtime discussion, student participants were asked the following questions regarding their experiences with access to course materials and online learning:

1. What was your best learning experience?
2. Do you like to read?
3. What is your most enjoyable reading experience?

It is no surprise that these students, despite maintaining a B average or better, report that they struggle with reading. The notion of reading for pleasure is alien.

- With so few words on the screen at any given time, screen magnification users struggle with context, clarity and identification of enlarged text and images, and continuity from screen-to-screen.
- Screen reader users face myriad challenges including difficulty determining the structure and layout of Web content because heading tags are often used incorrectly or not at all, images lack alternative text or the alternative text is inappropriate, textual information is presented as an image, and many other design, layout, and technology related issues.
- Users of scan-and-read systems generally do not have difficulties with application and document navigation, but the document content is unavailable to the adaptive technology; thus, eliminating text highlighting, dictionary and thesaurus features, read aloud capabilities and other helpful or necessary utilities.
- Students express the need to “self-select” out of courses needed to pursue a preferred major. One student expressed a deep desire to become a genetic counselor. As a high achieving student living with genetically inherited vision loss, she could clearly be an asset to the field. But, she assumed that mastering organic chemistry, given her visual impairment, would exceed her abilities.
- Students complained that they, unlike their peers, are tethered to laptop and desktop computers.
- Many use Apple’s built-in VoiceOver screen reader on their iDevices to access the Web and their email.
- When reading for pleasure, some use iDevices, others use a Victor Reader Stream or other digital talking book player, and some use Braille.

Like their peers, these students are eager to access learning materials simply, conveniently through technology that is intuitive and streamlined — “Why can’t we just get books in formats we can easily manage: on tablets and smart phones?”

Appendix D

Student Debriefing

This student is a seasoned learner who maintains a B+ average. He chooses his classes carefully, weighing the classroom environment, course content and delivery, and how students are evaluated. And of course, how it fits into his course of study and major. The following are his thoughts on **APEC 1101 Principles of Microeconomics.**

"I don't need the textbook to succeed in the course. I didn't do the required readings." Dr. Lu makes it easy:

- His lesson plans are clear
- The power point presentations are on line in an accessible format
- His notes are on-line."

The student focuses on listening in class and is able to take his own notes. "Dr. Lu's presentations made listening easy."

Most of the comments and videos Dr. Lu embedded in CourseLoad, he showed during class as well. Dr. Lu presented most of the material in several different ways; he didn't rely on the textbook alone.

Because the student had agreed to meet with the accessibility team, he did try to access the version of the textbook provided by Document Conversion in the Kurzweil format. The student has been developing his own workarounds for many semesters, and thinks Kurzweil might be helpful but really hasn't used it much. He uses everything he can, visual, auditory, overall impressions, reading glasses, zoom text, anything he can to master the material.

For this student and others with print disabilities, "learning is a roller coaster ride."

B. Student Survey Results

REPORTING RESULTS

OMS

Office of Measurement Services

eTextbook Pilot Evaluation Overall Summary Report

10 May 2012

UNIVERSITY OF MINNESOTA

Phone: 612.626.0006
Fax: 612.624.1336

879 29th Ave. S.E. Room 103
Minneapolis, MN 55414

http://oms.umn.edu

eText Pilot Evaluation

Course: (e.g., Math 1001) _____

MARKING INSTRUCTIONS

- Use a No. 2 pencil or a blue or black ink pen only.
- Do not use pens with ink that soaks through the paper.
- Make solid marks that fill the response completely.
- Make no stray marks on this form.

CORRECT: ● INCORRECT: ⊘ ⊠ ◒ ◔

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	○	○	○	○	○
Allowed me to better organize and structure my learning	○	○	○	○	○
Increased engagement with course content	○	○	○	○	○
Offered greater flexibility to learn the way I want	○	○	○	○	○
Helped me interact and collaborate more with classmates	○	○	○	○	○
Made my study time more efficient	○	○	○	○	○
Allowed me to interact more with my professor	○	○	○	○	○

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.	○	○	○	○	○	○
The features and navigation within the Courseload application were easy to use.	○	○	○	○	○	○
Using eTexts has become part of my learning routine.	○	○	○	○	○	○
The instructor encouraged the use of the annotation, highlighting, and note sharing features of the eText throughout the course.	○	○	○	○	○	○
I read more of the assigned material than I would have if it were a paper textbook.	○	○	○	○	○	○
I highlighted and/or annotated more than I normally do with paper textbooks.	○	○	○	○	○	○
I learned more from using the eText with highlighting and/or annotations (mine and others) compared to what I normally learn from paper textbooks.	○	○	○	○	○	○
The annotation/collaborative features in the eText were distracting	○	○	○	○	○	○
I plan to purchase eTextbooks over traditional textbooks in the future.	○	○	○	○	○	○

How useful were the following eText tools and features when studying?

	Not at all	A little	Somewhat	Quite a bit	Extremely
My own highlights and/or annotations	○	○	○	○	○
The instructor's highlights and/or annotations	○	○	○	○	○
The material the instructor added to the eText	○	○	○	○	○
Other students' highlights and/or annotations in the eText	○	○	○	○	○

For each method below, write the percent of time you used it to read the eText. If you did not use a category, write zero in front of it. Please make sure your percentages total 100%.

% Paper version of the eText (purchased from McGraw-Hill)	% Paper printouts of eText sections	% Tablet (e.g., iPad, GalaxyTab, Xoom)	% Desktop Computer	% Mobile Device (e.g., iPhone, Android/DROID, Windows Mobile)	% Laptop Computer	
___ %	___ %	___ %	___ %	___ %	___ %	= 100%

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

Did you purchase a paper copy of the eTextbook?
○ Yes ○ No

Did you have any web accessibility problems with the eText and associated materials? (i.e., difficulty accessing web content due to disabilities including visual, auditory, cognitive, speech, etc.)
○ Yes ○ No ○ I don't have a disability that affects access

When considering the purchase of a course eTextbook, rate the importance of each factor or feature below in making a purchase decision.

The eTextbook:	Not at all	A little	Somewhat	Quite a bit	Extremely
costs less than a used or rented traditional textbook.	○	○	○	○	○
is readable on a handheld mobile devices (e.g., iPhone, Android phone).	○	○	○	○	○
is readable on tablets (e.g., iPad, Galaxy).	○	○	○	○	○
is accessible without an Internet connection.	○	○	○	○	○
is available for my entire academic career, not only for one semester.	○	○	○	○	○
includes bonus material (e.g., links to videos, self-assessments).	○	○	○	○	○
is more portable than traditional textbooks.	○	○	○	○	○
has the capability to permit me to share notes or questions with the professor and other students.	○	○	○	○	○
is more environmentally friendly than traditional textbooks.	○	○	○	○	○

Any additional comments that you would like to share about your experience with eTexts?

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	Total Count	Mean
Helped me to better understand the ideas and concepts taught in this course	22.7%	20.3%	29.7%	20.6%	6.8%	428	2.68
Allow me to better organize and structure my learning	31.1%	23.8%	24.3%	14.0%	6.8%	428	2.42
Increased engagement with course content	33.2%	27.3%	18.9%	13.8%	6.8%	428	2.34
Offered greater flexibility to learn the way I want	29.3%	24.4%	18.8%	16.9%	10.6%	426	2.55
Helped me interact and collaborate more with classmates	61.7%	16.5%	11.6%	6.4%	3.8%	423	1.74
Made my study time more efficient	41.6%	20.9%	17.9%	13.2%	6.4%	425	2.22
Allowed me to interact more with my professor	50.2%	19.6%	15.9%	9.6%	4.7%	428	1.99

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

Please select the choice that best matches your experience with eTextbooks:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total Count	Mean	N.A. Count
Using the eText the first few times was difficult for me	10.6%	19.5%	16.9%	34.5%	18.5%	426	3.31	2
The features and navigation within the Courseload application were easy to use	6.9%	17.3%	24.2%	37.0%	14.7%	422	3.35	3
Using eTexts has become part of my learning routine	18.3%	29.0%	25.4%	20.2%	7.1%	410	2.69	3
The instructor encouraged the use of the annotation highlighting and notes	10.2%	18.3%	20.7%	33.3%	17.4%	420	3.29	4
I read more of the assigned material than I would have if it were a paper textbook	35.9%	27.1%	21.4%	10.0%	5.7%	421	2.23	5
I highlighted and/or annotaed more than I normally do with paper textbooks	32.5%	25.8%	17.9%	14.1%	9.8%	419	2.43	9
I learned more from using the eText with highlighting and or annotations...	29.3%	24.2%	25.2%	14.8%	6.5%	413	2.45	14
The annotations collaborative features in the eText were distracting	12.3%	30.6%	34.6%	15.8%	6.7%	405	2.74	19
I plan to purchase eTextbooks over traditional textbooks in the future	30.6%	25.1%	29.9%	9.7%	4.7%	422	2.33	7

Scale: 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree, 6=N.A., Not applicable (not included in summary statistics)

How useful were the following eText tools and features when studying?

	Not at all	A little	Somewhat	Quite a bit	Extremely	Total Count	Mean
My own highlights and/or annotations	34.0%	20.7%	20.4%	18.1%	6.8%	426	2.43
The instructors highlights and/or annotations	40.8%	16.5%	18.2%	15.8%	8.7%	424	2.35
The material the instructor added to the eText	39.3%	20.0%	20.0%	12.9%	7.8%	425	2.30
Other students highlights and/or annotations in the eText	68.2%	15.1%	10.8%	4.2%	1.7%	424	1.56

Scale: 1=Not at all, 2=A little, 3=Somewhat, 4=Quite a bit, 5=Extremely

For each method below, write the percent of time you used it to read the eText.

	Paper version of the eText purchased from McGrawHill	Paper printouts of eText sections	Tablet e.g. iPad, Galaxy, Tab,Xoom	Desktop Computer	Mobile Device e.g. iPhone, Android/DROID, WindowsMobile	Laptop Computer	All paper sources combined	All electronic sources combined
20% or less	86.9%	95.0%	96.6%	86.4%	99.0%	20.2%	81.6%	12.3%
21-40%	.8%	2.4%	.5%	3.7%	.8%	4.2%	3.4%	1.8%
41-60%	.3%	.8%	1.6%	4.7%	.3%	5.8%	1.0%	2.1%
61-80%	3.4%	.5%	.3%	.5%	0.0%	6.3%	3.4%	2.6%
81-100%	8.7%	1.3%	1.0%	4.7%	0.0%	63.5%	10.5%	81.1%

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

	Count	Column N %	Mean
20% or less	88	21.6%	
21-40%	45	11.1%	
41-60%	66	16.2%	
61-80%	86	21.1%	
81-100%	122	30.0%	
	407		58.61

Did you purchase a paper copy of the eTextbook?

	Count	Column N %
Yes	58	13.8%
No	363	86.2%
	421	100.0%

When considering the purchase of a course eTextbook, rate the importance of each factor or feature below in making a purchase decision. The eTextbook:

	A little	Somewhat	Quite a bit	Extremely	Total Count	Mean
Costs less than a used or rented traditional textbook	10.5%	11.2%	31.2%	41.4%	420	3.92
Is readable on a hand held mobile device e.g.iPhoneAndroidphone	18.1%	20.3%	19.8%	9.5%	419	2.56
Is readable on tablets e.g.iPadGalaxy	17.3%	19.0%	21.0%	10.8%	415	2.62
Is accessible without an Internet connection	10.4%	19.5%	23.9%	24.3%	415	3.18
Is available for my entire academic career not only for one semester	16.1%	24.1%	19.8%	15.4%	415	2.85
includes bonus material e.g.links to videos self assessments	21.5%	23.0%	16.6%	9.5%	409	2.56
Is more portable than traditional textbooks	16.9%	24.1%	24.6%	19.0%	415	3.15
has the capacity to permit me to share notes or questions with the professor...	23.5%	24.9%	18.9%	10.3%	417	2.71
Is more environmentally friendly than traditional textbooks	17.1%	22.6%	26.4%	18.3%	416	3.15

Scale: 1=Not at all, 2=A little, 3=Somewhat, 4=Quite a bit, 5=Extremely

Did you have any web accessibility problems with the eText and associated materials (i.e. difficulty accessing web content due to disabilities including visual, auditory, cognitive, speech, etc.)?

	Count	Column N %
Yes	42	10.0%
No	196	46.6%
I don't have a disability that affects access	183	43.5%
	421	100.0%

D. Student Focus Group Questions and Summary from Office of Measurement Services

Student Focus Group Questions

1. What was the most interesting or surprising thing about using an eTextbook (good or bad)?

2. How would you compare the experience of using eTextbooks with using traditional printed text books?
    a. What is better about a print textbook?
    b. What is better about an eTextbook?

3. Describe how you interacted with the course content, your instructor, and other students in the class.
    a. How did using the eTextbook affect these interactions?:

4. Would you recommend to your friends that they purchase an eTextbook for a class? Why or why not?

5. What would you need in an eTextbook to make it more attractive than a print textbook?

6. The state legislature is actively considering legislation to reduce textbook cost. The University is also exploring how best to provide content to support your learning. Do you have any message you want to pass on to the University on this topic?

OMS reported the following common themes within the focus groups:

- Students who expressed excitement in regards to technology tended to be more satisfied with eText, had less negative experiences with usability, and used the features more often.
- Students who originally preferred printed text still preferred printed text after the pilot.
- Students who felt more positively about eTexts would only purchase eTexts if they were cheaper than renting a textbook or buying a used book.
- Students who did not prefer eTexts would purchase eTexts if they were cheaper than renting a textbook or buying a used book. Others would not purchase eTexts regardless of the cost.
- Students were unaware of all of the eText features such as sharing or linking to external content.
- When students were unable to figure out how to use a feature, most gave up before ever finding a way to implement the feature.
- Many students experienced technical issues with eText features such as, zooming, sharing, highlighting, printing and searching.
- Students who did engage with the eText used it for taking notes, highlighting and searching
- Some students thought that they read more because they could access the content online and did not have to carry their book with them.
- Instructor engagement with the eText was non-existent or minimal. Several students commented that this had a major impact on the student experience
    - Students who were aware of the eText features were disappointed when not utilized.
    - Students thought they would have engaged more with the eText themselves if the instructors had placed notes or tips within the document.
    - Students whose instructors made comments in the eText were very satisfied with their experience which resulted in greater levels of engagement.

D. Faculty Discussion Questions

Faculty Discussion Questions
U of M Final Set
February 21, 2012

1. What was your initial motivation or interest for participating in the eText pilot?

2. How easy was it for you to learn how to use the eText functionality? What additional training and support from the University would have been helpful?

3. To what extent did you use features of the reader (e.g., marking up the text, highlighting) If so, how? If not, why not?

4. To what extent did you encourage students to use the features of the reader?

5. To what extent did you use the statistics feature to track how students are utilizing the eText? Example: open the eText, annotate, highlight, etc.

6. How would you compare the experience of using eTextbooks with using traditional printed text books?

7. To your knowledge, did anyone in the class have web accessibility problems with the eText and associated materials? (i.e., difficulty accessing web content due to disabilities including visual, auditory, cognitive, speech, etc.)

8. Do you think using the eText affected student learning? If so, how?

9. Did using the eText affect the quality of your interactions with students? If so, how?

10. Was the eText useful in evaluating your students' progress? If so, how?

11. If you had the option to order an eText for your course in the future, would you do so? Why or why not?

12. What criteria should be used in determining the future use of eText at the University? [Use the student "factors" question as prompt] (e.g. costs less, readable on mobile devices, accessible without an internet connection, etc).

E. U of M Technology Showcase Poster

F. Articles Published about the Project

Internet2, McGraw-Hill, Courseload, and Five Universities Implement eText Pilot in Spring 2012 – University of Minnesota Office of Information Technology News

Namahoe, Kanoe. "5 Institutions Pilot E-textbooks." *Campus Technology*. 1105 Media Inc., 20 Jan. 2012. Web. 20 June 2012.

Roscola, Tanya. "Why University Leaders Are Collaborating on ETexts." *Converge*. Center for Digital Education, E. Republic, Inc., 2 Feb. 20122. Web. 20 June 2012.

Slotnik, Daniel E. "Pilot E-Textbook Program at Five Universities Focuses on Bulk Savings, Not IBooks." *New York Times*. The New York Times Company, 20 Jan. 2012. Web. 20 June 2012.

University News Service. *U Creates Open Academics Textbook Catalog to Reduce Student Costs*. *UMNews*. University of Minnesota, 23 Apr. 2012. Web. 20 June 2012.

U of M opens up to open source textbooks – MPR News

Wilcox, Jenna. "Some Courses Pilot ETexts in Effort to Cut Book Costs." *Minnesota Daily* [Minneapolis, MN] 01 Feb. 2012.

Young, Jeffrey R. "5 Universities to Test Bulk-Purchasing of E-Textbooks." *Chronicle of Higher Education* (2012): n. pag. *5 Universities to Test Bulk-Purchasing of E-Textbooks*. Web. 20 June 2012. <http://chronicle.com/article/5-Colleges-to-Test/130373/>.

G. Environmental Scan

Over the last year, a number of research studies have been published examining student use of eTextbooks.

http://jis.sagepub.com/content/36/2/263.short A study of eBook usage among business and management students in the UK. The main finding was that students use eTextbooks for quick information and fact finding. Ease of access and convenience were the top reasons for choosing to use eTextbooks.

http://www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolum/ACampusWideETextbookInitiative/174581 Describes the process that Northwest Missouri State University followed in studying the feasibility of transitioning from the rental of traditional textbooks to the rental of eTextbooks. Although the initial plan was for a three or four year transition period, the process proved too complex for that schedule. Many factors drive the timing, a major one being the availability of eTextbooks for certain disciplines and content areas.

http://books.google.com/books?hl=en&lr=&id=cwR3W7mGR1MC&oi=fnd&pg=PA49&dq=etextbook+use&ots=pgTP44gyRk&sig=D4zJw29A9XA1BGRcEiwFJebXP8w#v=onepage&q=etextbook%20use&f=false (Starts on page 49) Results of a study at Kennesaw State University comparing performance of students in two sections of a online course, one using an eTextbook, the other using a paper-based text. No significant difference in student performance was found.

http://author.ilr.cornell.edu/cheri/workingPapers/upload/cheri_wp147.pdf Data from an undergraduate student survey at the University of Idaho was used to estimate determinants of eTextbook use. Students who are younger, lower-income, and from larger high schools are more likely to use eTextooks. Students in technically-oriented colleges, where electronic materials are often required, are more likely to use eTexts.

http://www.emeraldinsight.com/journals.htm?articleid=17030600&show=abstract A study involving Taiwanese university students to investigate what factors drive university students to use dedicated eTextbook applications for learning. Results suggest that perceived usefulness, convenience, compatibility, and perceived enjoyment all significantly contribute eTextbook acceptance.

http://campustechnology.com/articles/2011/06/22/get-ready-for-etext.aspx Advice from the leader of Daytona State College's eTextbook project.

http://www.insidehighered.com/news/2012/07/05/survey-ipad-adoption-sluggish-e-textbooks-booming. As reported by *Inside Higher Ed*, a market research study in spring 2012 shows increasing student acceptance of eTexts over the past two years.