Innovative Technology in the Classroom:
A Live, Real-Time Case Study of Technology Disruptions of the Publishing Industry

Mitchell Weisberg
Sawyer Business School, Suffolk University
Managing Director, Lumen, Inc.
16 Arrowhead Road
Weston, MA
Office: +781-894-9202; cell: +1 781-249-3750
miw3@cornell.edu

ABSTRACT

We are now in the second wave of information technology disruption in the media industry, or more specifically, of digital technology fundamentally transforming our information industries: communications, music, media, publishing and the industries that have grown up around those media. In this paper we will be examining one aspect of the nascent electronic readers (eReaders) disruption of the publishing industry. We will focus on the university textbook (eTextbook) segment. We will examine the impact of eReaders on the university classroom and how they create the opportunities for innovative techniques in the classroom which enrich the students learning experience and provide students with a broader experiential learning environment than was previously possible.

In the Sawyer Business School, Suffolk University, Department of Strategy and International Business, Boston, MA, a section of the strategic management class students are exploring the technology disruption and industry response in the book publishing market. They are focusing particularly on the textbook segment of the market which is being significantly disrupted by the advent and influx of electronic readers and digital textbooks. The class, Management Strategy 429 is the capstone course at the Sawyer Business School. Mitchell Weisberg teaches a section of the course with a focus on business and industry responses to disruptive technologies. Weisberg is bringing innovation to the classroom through the use of digital readers and eTextbooks to create a "Live Case Study" in information technology industry disruption. These innovations enhance the teaching to make this an experiential learning environment and practical, hands-on experience for the management students in the class.

General Terms

Management, Measurement, Documentation, Performance, Design, Economics, Experimentation, Human Factors, Standardization, Theory

Keywords

Innovation, classroom, Kindle, pedagogy, Sony, disruptive technology, information supply chain, eReader, digital book, digital textbook, Amazon

==

1. INTRODUCTION

Over the past centuries and even more so in recent decades we have seen technologies transform industries with profound impacts on society and culture. Examples range from the steam engine transforming an agrarian society to an industrial society and the transistor transforming industrial society into information society. Over the past decade we have observed the transformational impacts of information technologies changing industries: consider the music industry and peer-to-peer technology, or how the communications industry is being impacted by text at the low end, and video at the high end. Each of these transformations has significant social, business and economic impact. The cycle of these technology driven disruptions are becoming more frequent. They are almost part of the daily life in business. These disruptions challenge existing strategies and business models of incumbents and create the opportunities for new strategies for emerging businesses. We are now in the second wave of information technology disruption in the media industry, or more specifically, of digital technology fundamentally transforming our information industries: communications, music, media, publishing and the industries that have grown up around those media. In this paper we will be examining one aspect of the nascent electronic readers (eReaders) disruption of the publishing industry. We will focus on the university textbook (eTextbook) segment. We are examining the impact of eReaders on the university classroom and how they open the opportunities for innovative techniques in the classroom can both enrich the students learning experience and can provide students with a broader experiential learning environment.

2. INTEGRATING CONTENT AND CONTEXT IN THE LEARNING ENVIRONMENT

In the Sawyer Business School, Suffolk University, Department of Strategy and International Business, Boston, MA, one section of the strategic management class students are exploring the technology disruption and industry response in the book publishing market. They are focusing particularly on the textbook segment of the market. This book market is being significantly disrupted by the advent and influx of electronic readers and digital textbooks. Management Strategy 429 is the capstone course at the Sawyer Business School. Mitchell Weisberg teaches one section of the course with a focus on business and industry responses to disruptive technologies. This fall, 2009, the class is examining the impact of digital technology on the textbook publishing industry. Weisberg is bringing innovation to the classroom through the use of digital readers and eTextbooks to create "Live Case Study" in information technology industry disruption. The use of these devices in studying this market has integrated the content of the course with the context. These innovations enhance the teaching to make this an experiential learning environment and practical, hands-on experience for the management students in the class. This is an opportunity that we are providing to senior business students that would elsewhere most likely be available only to MBA students. This model is also applicable to MBA and other graduate business students.

At many business schools, students study business cases of companies from the past that have already resolved a situation; they learn from past successes and failures. At Suffolk University we have jumped the time barrier on studying industry cases. We are diving into the industry disruption and are studying the business impacts and decisions in Real Time. ("Real Time Case Study") There are no answers for the strategy questions we are studying - the companies and the industry (textbook publishing) we are studying are wrestling with them just as we are. And we are sharing our information with them.

The Management Strategy students are studying and experiencing first hand the challenges of developing strategy in an industry that is in the throes of technology disruption and transformation. Senior business students in this capstone class are bringing their experience and collective education to develop competitive strategies for the multiple stakeholders in the textbook publishing industry as class team projects. What is unique about the situation is that when it comes to e-textbooks to students are both the market and the business strategists for that market. As users of textbooks they have the perspective of both the market and the industry. The students have the broader opportunity, much like the anthropologist in the field, to study "themselves". This is a real-life case study; the outcome is yet to be determined. In addition, the value created by this educational experience will be delivered to publishers and electronic reader device makers to possibly influence their strategies and future.

3. INCORPORATING INNOVATION IN THE CLASSROOM

An innovative component to enrich the students' experience is the use of digital readers. To make the situation more of an immersion, these college student teams are using the technology and "being the market" which they are developing strategies to support. One team each has Sony Readers, Amazon Kindles, CourseSmart online textbooks, or paper textbooks. There is an additional team filling the role of "wild card" or entrepreneurs who have the freedom to enter wherever they see the greatest business opportunity in the textbook publishing market. Details of the teams are provided below.

Table 1. Live Case Study Teams and Strategic Positions

Information Dissemination Case Team	Primary Focus and Strategic Issues
Team 1: Publisher	The publisher is facing a lot of uncertainty in this new environment. They must determine what their role will be and how they will adapt their business model and strategy to succeed in this rapidly changing market.
Team 2: Sony – eReader Touch	As a consumer product manufacturer, Sony must wrestle with their vision for the interactive book and textbook market. They must determine how to leverage their technology with partnerships and other types of relationships with providers of information.
Team 3: Amazon – Kindle DX	Amazon is perceived as first to market and has established a leading position with their Kindle reader. Will they try to duplicate Apple's iPod position in this market?
Team 4: CourseSmart – Online Textbook	CourseSmart is a cooperative joint venture between several publishers, all of whom could be perceived as competitors. Will CourseSmart continue as a joint venture or take on a new strategy? What is the future role for CourseSmart in this market?
Team 5: Wild-card or Entrepreneurs	There are many opportunities in this tumultuous market for another player, either entrepreneur or other existing companies (e.g. Apple, Google, Barnes and Noble, etc.) to either carve out a niche or to make a play at becoming a significant participant. What will the entrepreneurs do to capitalize on this disrupted market?

Using the digital devices provides students with the opportunity to engage in understanding the tactical and practical aspects of implementing a strategy that involves technology. They have the opportunity, and many of them fall for the trap, to become enamored with the technology of the devices themselves. At some point during the semester the students temporarily lose sight of the fact that they are trying to create devices (or better still, provide information in a form) that meets or feels and emerging or perceived need in the market population. In resolving this issue, they learn one of the most important lessons for entrepreneurs – it's not just about the technology, it's about how you meet the customer and market needs.

Students are engaged in studying the supply chain of the publishing industry – moving information from the content creation by authors through consolidation, refinement, production, distribution and ultimately to its dissemination in the classroom.   They are challenged to wrestle with the information management and information distribution supply chain. Decomposition of the information supply chain is an additional aspect of the course, bringing further benefits. It helps students understand the various ways in which information is transformed and how the value of information is created or changes with each of those transformations. Translating this into a business model by understanding how that value can be captured and distributed engages students in developing an understanding the business and financial aspects of information management.   Their analysis provides an opportunity to extend learnings from earlier marketing, finance and entrepreneurship classes by structuring formal research and hard data to support and expand the financial aspects of this industry. The classroom setting provides an additional source of data gathering and analysis. Each team of students is harnessing the "wisdom of the crowd" in class discussions to harvest insights, perspectives and analysis that has been shown to be of similar quality as more expansive and expensive market research. This experiential learning provides an additional tool and capability for information management that students will take into their professional careers.

Teams in the class are competing against each other and against the market on a field where all the rules are changing - profit pools, distribution channels, retail bookstores - there is no "level playing field". What is challenging for the students is that there is no one "winning strategy". Depending on their business goal, there can be more than one "winner"; this could be an eReader/device manufacturer, a publisher, a content provider or a newly defined industry role.

An additional innovative component is the use of Wikis and other technology to remove the "time and space" bounds from the students' learning environment. The students are writing and contributing material on a class Wiki to further the use of interactive digital technologies, extending their ability to collaborate in teams beyond their meeting times. In addition, this Wiki is also open to the publishers, device makers and other industry participants, further extending the student experience into the business environment in real time.

At the end of the semester the students present their strategies along with how their strategy will drive success in their selected segment of the market. The multiple perspectives allow each strategy to be potentially successful with different market segments or approaches within those segments. The publishers and device readers are interested in the results the student are developing. And the students are gaining practical experience working with a real business issue, enhancing their value when they take on these responsibilities after leaving school.

4. ENRICHING THE STUDENT LEARNING ENVIRONMENT

By creating simulated companies, for which the students must create successful strategies, we turned the traditional educational model inside out. We have created an "inverse internship" where the industry takes place in the classroom rather than the students leaving the classroom to go out into companies within the industry. Instead of going out to study these businesses and the market, we have brought the market into the classroom by explicitly taking on the characteristics of the target market for e-textbooks. With only public access to publishers and device makers and the devices themselves, students are challenged to engage in "reverse engineering the existing strategy" of these companies. Formal analysis of the market and the forces at play provides a rich context for understanding the current and emerging business environment which these companies are seeking to address. This formal analysis is tempered by the informal analysis and experience of immersion in that market -- the University classroom.

5. RESEARCH ON PEDAGOGY IN THE CLASS

In addition to a class for the students, this class is also the subject of research on the impacts and value of technology in the classroom. The research was proposed and approved by Suffolk University Institutional Research Board (IRB). Students were randomly assigned to the 5 teams and technologies in this class. Impact on differential learning by the individuals in each team is being assessed by systematic testing on a weekly basis. Weekly quizzes using standard questions of factual material contained in the reading will provide an indication of the reading retention by the students on each team. Quiz questions on analysis of the material provides insight into the students' absorption and ability to use the textbook material to draw conclusions; this data is less likely to be differentiated between groups, but is being tested. A standardized examination given by the school to all students provides a baseline for comparison and/or normalizing the differential quiz scores across the different teams. The data will be evaluated at the end of the semester in order to avoid any bias in teaching or grading. Anecdotal data from classroom discussions will augment the hard data from weekly assessment. Content of team final papers will provide additional insight into the differential learning between teams.

Following the completion of the course, the data will be analyzed comparing learning (i.e. assessment results) between groups. These results will be used to test against a hypothesis of no difference in learning between groups. Additional research questions include:

- Do student learn better with one technology or another
- Do students show greater likelihood to use the devices than to read a textbook
- Which technology do students like better
- What are the benefits shortcomings of the eReader technologies

In addition to the quantitative and qualitative research on pedagogy of informatics, Case Study research is being conducted to produce a case study of the impact of technology disruption on one publisher and their response. This research on the impact and response of industry to technology disruption is not within the scope of this paper. This Case Study will be written up and used in future classes.

6. IMPACT OF E-READERS ON THE UNIVERSITY CLASSROOM

The digital readers have had significant impact on the students and on the classroom experience. For the faculty, the devices create the advantages of ability to make the experience tangible. There is a buzz associated with the use of the devices, creating an energy in the classroom. However, there is also a cost. Formatting between devices, and even within devices is not standard. Graphics and page numbers are different or displaced in the devices, requiring greater navigation descriptions in giving assignments or in referring to material in the texts. There are the additional logistics considerations of managing the devices to ensure their procurement, distribution, recovery. This is complicated by the requirement that the devices must also be available for all students to experience, in addition to those on the designated user teams. For the students, there is a learning curve on the use of the new devices. Many students initially tried to print out the pages rather than use the devices. Over time the devices have gained acceptance and have generated competition within the class.

The course is being repeated in oncoming semesters. Many of these challenges will be resolved from the lessons learned in this past course and the acquisition of a larger inventory of devices. In addition, enhancements may create further enrichment in the eTextbooks. For example, future capabilities may enable dynamic links from the eTextbooks to student and faculty created material in real time, to create a single integrated learning environment. However, the dynamic nature of the technology evolution and its disruptive effects on the publishing industry make it unlikely that the course structure will stabilize into a routine that can be easily replicated and repeated.

Weisberg received funding and support from the publisher of a textbook company to make these devices available to the students. He also has engaged other publishers with interest in supporting this effort who were not providing the text. In addition, he approached the manufacturers of various text readers (e.g. Amazon Kindle, Sony Reader) for additional participation in the classroom innovation and research. Sony offered additional support. Student teams are using the digital readers during the course. The readers will be shared in the last weeks of the class so all students will have an opportunity to try them. Feedback on market behavior, strategic insights and eTextbook evaluations will be provided to the textbook publishing companies and digital reader manufacturers.

7. BENEFITS TO THE PEDAGOGY AND KNOWLEDGE OF INFORMATICS

There are significant benefits for the many stakeholders from this classroom innovation. The benefits to the students include exposure to the leading technologies in a rapidly emerging market. Students also have increased engagement in the industry from first hand interaction with the breadth of participants across the information supply chain. This improves their marketability and increases their preparation and likelihood for near-term employment. The faculty role is enriched through the engagement in a "live case study" in which the boundaries of the classroom are extended into the outside business world. New case study information is revealed in the market through advertising, news reports and other company data. This constantly changing provide new opportunities to give examples and put the meat on the skeleton of theory stays relatively constant but provides new examples ensuring that the course material is constantly refreshed and current. Students are encouraged and rewarded for following the class content in outside media. The university benefits through industry and media exposure regarding its deployment of innovative technology and teaching methodologies, potentially leading to attraction of higher caliber students. Additional benefits to students, faculty and university include:

- Practical, real-world company strategy experience
- Opportunity to consolidate academic experience with real business challenge
- Possibility to impact emerging transitional market and industry
- Exposure to company management of new, industry transforming technologies
- Potentially enhanced learning environment through the technology.

There are benefits for the industry participants of the "Live Case Study" as well. Potential benefits for these industry participants (e.g. publisher, device manufacturer, etc.) may include the identification and clarification of strategic and tactical issues in the university market for electronic textbooks, accompanied by real-time feedback on product and services from actual users in their target market. Their participation in the course also offers an opportunity for them to strengthen their relationship with the university, faculty and students.

Understanding of technology impacts on business and, more broadly, on industry will be a significant benefit of the research and student analysis evolving from the foundation built by this course. The analysis of the publishing industry, or dissemination of intellectual content, is building on the knowledge gained from the music industry which experienced a similar disruption and which is moving into stages of resolution. The supply chain redesign, redistribution of profits, and overall transformation of the industry is rich in furthering models for information management models. This research will be further developed in the ongoing Case Study development and analysis.

8. CONCLUSION

Bringing new information technology and devices such as eReaders into the classroom offers significant benefits to enhancing the teaching of informatics and to extending the knowledge base of informatics. The pedagogical benefits include enhancing the learning experience, enriching the classroom environment and engaging students "real time" in addressing business and industry challenges of addressing disruptive technology. The content and contextual benefits of furthering the knowledge of informatics includes a better understanding and modeling of the business and industry impacts and responses to digital technology disruption. These benefits are ongoing, and are derived from the practice and the research described in this paper. There are physical and pedagogical challenges posed by this classroom innovation, but these will challenges decrease with time and stabilization of the course structure.