Forms, Effects, Function: LIS students’ attitudes towards portable e-book readers

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Abstract
Purpose - This study investigates the use of a popular portable e-reader device, the Kindle 2, among Library and Information Science (LIS) students and its effects on individual reading practices and the potential applications for library services.
Design/methodology - Using journal logs and diary-interviews as methods of data collection, the study analyzes the use of the Kindle over a one-week period by a pool of 20 LIS students at Pratt Institute’s School of Information and Library Science.
Findings - The findings reveal four key areas that provide a framework for data interpretation: usage patterns, user interaction, effect on reading habits, and future applications. One major finding is that the portability of the device and its convenience of use anywhere and anytime is pivotal for enhancing the students’ reading experience and outweighs the limitations of the device’s usability.
Research limitations/implications - Results may not be generalizable due to the small size and homogeneity of the sample.
Originality/value - The social and cultural impacts of e-book readers in everyday life have received little attention so far. In particular, questions about the effects of e-readers on individual reading practices and the potential applications for library delivery systems have yet to be examined. This study is one of the first to investigate the use of portable e-book readers.
Keywords Portable e-book readers, User needs, Usability, Mobile devices, Critical Information Studies
Paper type User study / research paper

1. Introduction
The history of electronic books dates back to 1971 with the advent of Project Gutenberg (Hart, 1992), and the history of portable e-book readers dates back to 1998 with the announcement of two portable devices, the Soft Book reader and the Rocket eBook (Cummings, 2009), but it was not until 2008 that e-book technology began to substantially increase its sales and reach the mass market (IDPF, 2009). After several years of waning interest, a new generation of portable reading platforms has generated an interest in e-books. Reading devices like Amazon’s Kindle have enhanced access by allowing quick downloads of electronic content, and with the capacity to store up to two hundred books, they have made the dream of a portable digital library a closer reality. Libraries, both public and academic, have begun introducing circulating e-book options for their users, albeit with varying platforms and fairly restrictive downloading options (Ferguson, 2008; Oder, 2008).

While a good deal of research has been devoted to e-books, few studies have actually focused on portable e-book readers, and even fewer have placed e-books within a
framework of relevant reading practices. Existing research has typically been devoted to testing the physical objects in terms of system usability. The social and cultural impacts of e-book reader use in everyday life have received little attention so far. In particular, questions about the effects of e-book readers on individual reading practices and the potential impact on library collections and services (e.g., digital content delivery and circulation) have yet to be examined.

This study investigates uses of portable e-book reader among graduate students at the Pratt Institute’s School of Information and Library Science in New York City.

2. Research context
E-books represent a relatively new area of scholarly inquiry, and a variety of methodologies have been used to study e-books and their users. There appears to be little consensus regarding the research methodologies used to investigate the e-book, as well as little agreement as to what constitutes an e-book. What does the term “e-book” mean? The e-book has been described as a digital object with traditional book-like properties that can be provided in an electronic environment, complete with in-use features such as search, links and annotations (Vassiliou and Rowley, 2008). A few large-scale studies have examined the landscape of e-book usage, particularly in an academic setting (Abdullah and Gibb, 2008a; Nicholas et al., 2008; Rowlands et al., 2007). Most of the studies employed small samples (Carlock, 2007; Abdullah and Gibb, 2008b; Landoni and Hanlon, 2007) and primarily focused on users’ attitudes towards e-books (Carlock, 2007; Abdullah and Gibb, 2008a, 2008b; Nicholas et al., 2008; Landoni and Hanlon, 2007; Rowlands et al., 2007). While e-books viewed on computer screens have been studied for quite some time (Egan et al., 1989), portable e-book studies are a relatively recent development. In an investigation on the usage of a personal digital assistant, the Sony Clié, by a reading group at a Glasgow public library, Landoni and Hanlon (2007) reported that users found e-text difficult to read, were unimpressed by the electronic functionalities of the e-book, and expressed preference for print books. The researchers point to the small sample size, nine participants, as the major limitation of the study. The authors also note that the device being examined had a screen size considerably smaller than the size of a traditional print paperback and was not designed to be used as a portable e-book.

A different type of user study is proposed by Soules (2009) who investigates e-books and their impact on libraries. The study focuses on a number of different types of e-books in relation to various user groups. The findings indicate that there are conflicting priorities between students, faculty and librarians regarding e-books. The author notes:

...even as librarians cope with the current state of e-books, they must also plan for future types of e-books; and there is strong need for greater communication in the increasingly complex e-book arena of selection, acquisition, collection integration and instruction (p. 7).

The author notes that with the emergence and rise in popularity of the most recent generation of portable readers, electronic books are reaching a broader market, so much so that traditional books, personal libraries, and reading habits as we know them, may potentially be replaced.
Of all the electronic readers currently on the market, perhaps the best known is the Amazon Kindle. In a recent study focusing on the Kindle, Clark et al. (2008) collected feedback from a group of 36 academic librarians on the physical aspects of the device and its usability. Participants expressed mixed opinions regarding the Kindle. Half reported having the same immersive reading experience with the Kindle as with traditional books, and the rest were skeptical and believed the Kindle would never replace the printed book. Research has also revealed that reading takes place in conjunction with writing activities that carry implications for e-readers (Adler et al., 1998).

It is almost axiomatic to recognize that changes to the physical form of the book affect readability. A study on how users transition from physical artifacts to digital ones in the library found that the physical library experience is limited in the degree to which it can be extended to the digital environment, since physical cues, such as paper, books, and stacks, which are designed to facilitate interaction with content, are experienced differently from the keyboard, screens, and other mediating technologies necessitated by a digital collection (Stelmaszewska and Blandford, 2004).

In The Order of Books, historian Roger Chartier points to the formal construction of the book as forming particular practices of reading, and argues:

> When the text is carried by a new technique and embodied in a new physical form, it can be offered to manipulation by a reader who is no longer limited, as with a printed book… (1992, p. 90).

Manipulation and reader-independence enabled by electronic format is also a main area of inquiry of Critical Information Studies (CIS) developed by Vaidhyanathen (2006). CIS provides a framework for understanding the complex relationship between users, technology-enabled culture, and commercial applications. The framework is not limited to books or text but to information, and its overarching goal is to “interrogate the structures, functions, habits, norms, and practices that guide global flows of information and cultural elements” (2006, p. 303). CIS also focuses on the relationship between texts and information and how they are used and manipulated through technology.

Based on the assumption that content and container are interdependent, this study aims at gaining an understanding of how portable e-book devices have an impact on everyday reading practices. This research question has been inspired by McKenzie’s (1986) tenet that “forms effect meaning,” whereby changes occur in print tradition when the traditional book form shares the stage with new media (p. 17). In the context of this study, portable e-book readers can be seen as one of the forms that effect reading practices.

3. Problem statement
The availability of portable digital libraries that are by definition accessible anywhere and anytime opens up unexpected opportunities for individual readers, as well as for library services. Research is still lacking on portable e-book readers as new means to deliver and display content. More studies are needed to shed light on the potential of
this technology as an agent of change in reading habits and practices. To begin to address some of these questions, this study focuses on Amazon’s Kindle 2, which has recently emerged as one of the most popular portable e-readers, and its use by Library and Information Science (LIS) students in the context of their everyday life. LIS students were chosen because their graduate education is directly related to the collection and dissemination of information in all its formats and consequently they provide a view of early adopters of technology as well as the perspective of future information professionals. The history, traditions, and culture of the field they embark on, however, are deeply informed and influenced by the book. The specific research questions the study will attempt to answer are:

RQ1: How does the Kindle play in LIS students’ everyday life?
RQ2: How is the Kindle perceived in relation to traditional delivery models including physical books?
RQ3: What role do future LIS professionals envision for the Kindle in their personal and professional life?

The results of this study will increase our understanding of the interaction of LIS students with a new content delivery device. They may also be relevant as libraries and other information centers plan and prepare for future content dissemination and delivery models that would involve the use of e-book readers. Understanding how users interact with and think about portable e-books in their personal and professional lives may offer insight into users’ expectations in areas of content ownership and control.

4. Methodology
Twenty students from the School of Information and Library Science at Pratt Institute (Pratt SILS) were each asked to use the Kindle for one week. From March to May 2009, an Amazon Kindle 2 was handed to two participants at a time. Participants were given an overview of the study and were then asked to complete a demographic questionnaire. Each Kindle came with a daily subscription to The New York Times and with four downloaded readings including fiction and non-fiction works. Participants were offered the opportunity to download additional books and newspapers or any other types of resources available they might want. For the duration of their week with the Kindle, they were asked to keep a journal to record observations on the experience. A diary-interview was later conducted to integrate and extend the journal data.

4.1 Journals
Journals are considered a suitable method of data collection when direct observation of ongoing activities in natural settings is hard to conduct. According to Corti (1993), journals provide a good alternative to traditional interviews especially for situations and events that can be difficult to remember accurately. For this reason journal writing was adopted in this study to elicit data on the everyday experience of students using the Kindle. To encourage self-reflection and critical observations, only general guidelines were provided to study participants on how to write the journal. Participants were asked to record logs of daily activities in their own words with the only recommendation to report when and where they used the Kindle and for what type of content. Also, they were encouraged to record entries close to the time of
device use rather than retrospectively, to promote accuracy. The journals were handed in at the time the Kindle was returned. Diary-interviews were conducted a few days later.

4.2 Diary-interviews
As a complementary method that would expand and strengthen journal data, a diary-interview was conducted following the seven-day activity with the Kindle and after some preliminary analysis of the journal logs was conducted by the researchers. Initially developed in the context of ethnographic research, the “diary-interview” consists of an individual interview where questions are asked based on the journal entries. According to Zimmerman and Wieder (1977), who were pioneers in the application of this method to social sciences, “The diary-interview converts the diary […] into a question-generating and, hence, data generating device” (p. 489). The interviews were semi-structured in that they followed an interview guide with a core of common questions and also allowed for open-ended questions intended to probe for more detail on the basis of the journal narrative. The purpose of the debriefing interviews was to elicit more guided comments and thoughts about students’ behaviors, preferences, and attitudes. Questions such as: “You mentioned that you had already made the transition from the print newspaper to the online edition, and then now you had a chance to try The New York Times on the Kindle, how would you describe your experience?” would offer a chance to follow-up on elements of interest to the researchers. The design of this study included diary-interviews as a multi-method approach to triangulate data and thus ensure validity and reliability of results.

4.3 Participants
A pool of 20 students from Pratt SILS participated in the study. The sample was purposive in that LIS students who are preparing for careers as information professionals are expected to be reflective and are likely to provide insight on the use of an emerging technology for supporting reading practices. The size of the sample was based on convenience due to the availability of a limited number of devices. The students were recruited through an invitation sent to the school’s list serv and were selected on a first-come, first-served basis.

5. Discussion of findings
5.1 Questionnaire
A questionnaire was administered with the purpose of collecting demographic data and gaining an understanding of students’ reading habits as well as of their attitude towards adoption of new technology. A sample of 20 graduate students at Pratt SILS participated in the study. The students were predominantly female (16). Slightly over half (11) of them were between the age of 26 and 30 while 5 participants were 25 or younger and 4 were between 31 and 40. They were mostly full-time students at different stages in the program. Participants were asked to rate their level of comfort with technology on a scale from 1 to 5, with 1 being "Novice" and 5 being "Expert". The majority (14) rated themselves at level 4, and the rest were either 5 or 3. As for their attitude towards the adoption of new technology, 12 participants stated they would be early adopters (“First on the block” or “Among the first [ones],” 7 would try new technology “When everyone else does” and only one would be "Last on the block.” All participants indicated that they own at least one electronic gadget, ranging from game consoles to MP3 players. Every participant owned at least a mobile
device: 19 owned an iPod; 3 owned an iPhone, and 2 a Blackberry. According to Rogers (1995), the rate of adoption of new technologies begins with a gradual period of growth, followed by dramatic growth, stabilization and lastly decline. The first groups to adopt new technologies are described as innovators, early adopters, and early majority and they comprise of 50 per cent of the population. In this study 95 per cent of participants self-identified as innovators, early adopters, or early majority.

As for the reading habits, participants reported they are avid readers with 12 participants reading one to three books a month and 8 participants reading more than three books a year. None of the respondents reported reading less than one book a month. The majority (15) read a mix of fiction, non-fiction, and school and work-related books. Most participants (16) read newspapers regularly, whether national or local. Eighteen participants usually read magazines, while 16 regularly read online content. None of the participants regularly reads e-books and only 3 participants had seen a Kindle or another portable e-reader before. None has ever owned a portable e-reader. Almost everybody usually reads while commuting (19) or at home (17). Other popular reading locations include the workplace (6) and such public places as cafés (5).

5.2 Journals
Twenty journals were collected from participants. Journals were emailed to researchers in Word or PDF format. In two instances they were handwritten and handed in on paper. The length of the journals ranged from half a page to five pages, with an average of two pages. Researchers pre-processed the journals logs before conducting diary-interviews. Salient themes were identified and used to inform the interviews and probe respondents. Content analysis was later performed on journal transcript with the use of the qualitative software tool Atlas.ti and results were then combined with the outcome of interview data. The analysis of free format journals is typically more labor intensive than the one required for structured journals and pre-coded systems (Corti, 1993). The size of the sample and the scale of the journals, however, made coding and processing a relatively manageable task.

5.3 Interviews
A set of one-to-one interviews was conducted following the one-week session with the Kindle. The interviews took place in a private office and ranged from 30 to 45 minutes. They attempted to delve into key areas that had emerged from the preliminary journal analysis that included the use and the usability of the Kindle, and its influence on reading habits. Data from diary-interviews were coded with the support of Atlas.ti and later compiled and triangulated with the data from the journal. Discussion of the results in the section below will address the combined set of findings. From the analysis, four major themes emerged that provide the framework for discussion of results: usage patterns; user interaction; effect on reading habits; and future applications.

5.4 Usage patterns
5.4.1 What
The majority of participants read both books and periodicals (18). Two participants read either one or the other type of material. Twelve participants read non-fiction and thirteen read fiction. Seven read both. Some respondents also read other types of content, including reference documents (5), magazines (3), blogs (3), poetry (1),
movie reviews (1), and comics (1), though the use of these was limited. The use of emails and PDF files was also limited. While reading was by and large the primary activity performed on the Kindle, participants experimented with such features and functions as audio (9), note taking (4), web browsing (3), help service (3), highlighting (2), clipping (1), searching (1), and bookmarking (1).

Newspapers, specifically The New York Times, were the dominant type of reading medium and their use on the Kindle was the most frequently commented on in the journal logs. Reading a newspaper on the Kindle was perceived for the large part as a positive activity that “fits well into student’s routine,” as one participant observed. A number of reasons were reported for the likeability of newspapers on the e-reader. Participant 16, for example, who acknowledged reading The New York Times daily online, but never from cover to cover, reported to have been able to read the newspaper on the Kindle as if it were a physical newspaper, thanks to the display of headline lists that easily lead to desired articles. Negative responses were also recorded, mostly related to navigation issues, as discussed in more detail later, such as the lack of browsability (Participant 12) and the difficulty to “pull exactly, specifically what I wanted that easily” (Participant 10). Participant 13 thought the layout of the newspaper on a Kindle too different and discordant from both traditional and online newspapers:

I grew up with the newspaper; I like to be able to scan the paper, to flip through it, to see what catches my eye. This you're sort of forced to read whatever's on the front of the screen....I did miss the layout a bit because you can even get that online, when you search the paper online there's still the sort of newspapery [sic] layout that you can get a bigger picture of what's going on.

Participants, who disliked reading newspapers on the Kindle, usually expressed their preferences for the physical format. Only two favored the web version of the newspaper over the Kindle format.

5.4.2 Where
The majority of participants (16) used the Kindle during their commute that included the use of subway, bus or train. Other settings or locations included home (7), workplace (4), school (3), and during other types of travel (1). Given the urban environment in which all participants live and their heavy dependence on public transportation, commutes were seen as the most natural setting of usage. As Participant 1 noted, “this is my main reading venue, so the Kindle's Times delivery was the most desirable aspect of the device.”

5.4.3 How
The association of the newspaper to commuting emerged as the most common as well as popular usage pattern and it was generally commented on very positively. Participant 5 observed, “The Kindle and newspapers seem to be a match made in heaven.” One aspect in favor of the Kindle over other reading media was the convenience of portability, as discussed later in more detail, and “the ability to have it all right there and easily tucked away into your purse to read,” as Participant 18 commented. The strength of the combination of Kindle and commute is highlighted by Participant 5 with observations that are shared by many participants:
The ability to navigate each section and browse article titles on a few pages is invaluable in the face of standing on a crowded subway with a massive stack of papers and trying to jump from the Arts section, to Sports, then back to the front page.

5.5 User Interaction

5.5.1 Portability

Several participants commented positively on the general ergonomics of the reader. Participant 2 noted:

It's incredibly easy to read and carry the Kindle around. [...] It's remarkably easy to read on the device even standing and holding the strap on the subway, noticeably easier than with a hardcover book.

One aspect of the Kindle that was often mentioned referred to how easy it was to hold the Kindle while reading. Generally, participants liked its shape, size, and light weight and valued the ease of holding the Kindle even in crowded situations, as mentioned earlier. One participant commented that the possibility to hold the device instead of just looking at a computer screen made the reading experience closer to reading a physical book and, thus, more pleasant than reading from a monitor. There were a few negative comments in relation to the position hands need to assume when holding the reader. For example, one participant noted that the device was too wide to hold comfortably with one hand, but somehow too shallow and thin to hold comfortably with two. Also, Participant 2 was annoyed at needing both hands for navigating between pages and commented on not being able to use the right hand more easily:

Oddly, this is one of the only times in recent memory that I've noticed anything with the opposite of a right-handed bias.

Interview data largely confirmed respondents’ appreciation for the portability of the Kindle. For Participant 10, this was the most appealing aspect, because, “It's hard to read a broad sheet newspaper on the train.”

5.5.2 Navigability

Participants frequently commented on the interface navigation. For example, progress and location bars were the focus of several generally negative entries. Participants didn’t particularly like or understand how they worked. Specifically, the progress bar, while recognized as useful for knowing how much of a text had been read, remained confusing due to the common expectation for page numbers. One participant recorded frustration when a narrative shift occurred in the middle of a chapter leading that participant to think that the book might be missing pages, with no way to actually check if this was the case. Five participants found the lack of page numbers unsettling. They wanted to know where they were in the book, especially when they needed to switch from the Kindle to a print version of a book. As Participant 5 explained:

I really don’t like thinking of myself as telling people that I am “18% finished” with a certain book. I recall reading a translation of Heidegger’s *Sein und Zeit* and finding it quite convenient that the editors mark in the margins the end of each page from the German version. Can’t the Kindle do something like this, in case, in some far off time, the reader wants to refer from the Kindle to the actual book?
Most participants seemed to prefer knowing the number of pages they had read and how long a book was. This information is not clearly and directly provided by the progress indicator:

I didn't figure out until much later that there was also a relative length indicator on the home menu. (Participant 2)

These indicators were at times considered distracting. As Participant 18 commented:

With my personality, I spend too much time looking at the bar to see if I've moved forward 1%, and I wish I had the option to hide the progress bar.

Another type of indicator that allows navigating within text, the location bar, seemed also to be rather confusing for everyone. Participant 14 observed:

The location status is not helpful or intuitive. ‘Locations 363-72’ is not at all meaningful to me, and at first I didn’t even understand that it meant Locations 363 through 372, not that knowing that would make any difference.

Navigation within text was considered problematic by a few. As Participant 12 pointed out:

Having gotten a little more than halfway through, there were a few pages that I wanted to revisit in the beginning of the book, but had a really hard time finding them.

A number of participants commented on the navigation buttons, mainly about their size, location, and their level of intuitiveness. Opinions were mixed. As Participant 6 said:

There was something quite soothing about pressing those page buttons, requiring less effort than actually turning the page but not as proactive either.

Another appreciated the ability to use the 5-way controller to move between the chapters, although it was not easy to discover its function. Nevertheless, the majority found the design of the buttons puzzling. The navigation with the joystick was a major point of contention. Participants reported that it was easy to hit-or-miss because of its small size and they did not like to have to use the toggle to move around the screen. While cumbersome, however, navigation with the joystick was considered effective if you had a specific task, as one participant noted. Participants complained also about the keyboard for not being ergonomic, especially because the keys are too distant from each other. Also, the need to click often was considered particularly annoying both for the pressure on the fingers and for the noise produced by clicking:

I'm getting really sick of the feeling of my thumb hitting Next Page. I don't like that it takes so much pressure for the button to function. The clicking sound is kind of annoying too. (Participant 8)

The functionality of the user interface came up during the interviews. For example, the tradeoff of navigating a list of items, such as the entry page of books and newspapers on the Kindle, versus turning physical pages was a recurring matter of discussion. Several participants were concerned with the sense of disorientation
caused by not recognizing the familiar logical structure of the book. One commented that the Kindle would not enable “the serendipity of opening a book to random pages and seeing pictures or flipping through it quickly” and this was the reason why they decided to only read fiction on it. Participant 8 and Participant 2 pointed out the difficulty “to skip around” or “skip ahead” that made it harder to finish a book for readers “who generally jump around a lot and like to go back and forth throughout text.” Another found it difficult to go back to a specific page to reread a desired passage. In general, the browsability of physical books and periodicals was perceived as superior to the one offered by the Kindle interface.

5.5.3 Other usability issues
Different kinds of usability issues were recorded on the journal logs and later discussed during the diary-interviews. The browser, in particular, was seen as slow and several participants complained about how long it took to turn pages. Six respondents lamented that the device was not responsive when scrolling the menu up and down.

In general, participants tended to find it easy to read on the Kindle, including those who found computer screens glaring and difficult to read for long periods. There were numerous complaints, however, about the lack of a backlight and the fact that the Kindle requires external light to be read properly, as well as the lack of color and color choices. Two respondents also wondered if the screen display would eventually blur, with old pages showing up, making new ones harder to read. One participant referred to this as the Etch A Sketch effect. Another found the possibility to lose power and not to be able to continue to read as a source of anxiety. As for the display of the content, Participant 12 was frustrated when trying without success to enlarge figures to improve their readability. Also, the text-to-voice function was evaluated negatively by Participant 13, who noted:

It follows the punctuation but at the same time it doesn't have the speech cadence like a normal human so it was more distracting than anything. I'm sure if there was no other way to read it, that's fine, but that's by no means going to take the place of an audio book.

5.5.4 Kindle and physical books
From both data journal and diary-interviews data, a particular emphasis was placed on discussing the usability of electronic books on the Kindle versus traditional books. The experience of reading a physical book was still preferred by the majority of participants for a number of reasons. The difficulty of taking notes and book-marking, due to what was considered cumbersome annotation functionality, and the lack of a hypertext structure were some of the reasons given. Also, the learning curve the Kindle entails or some technical glitches such as the occurrence of “page freezing,” generated comments that emphasized the advantage of using physical books. Long-term availability was brought up by Participant 8 as another downside of the Kindle:

When you buy a book you can essentially have it forever. What if the technology that holds the Kindle goes out, like the 8 track, then what would you do with the books that you've acquired there so I would be hesitant to buy something on the Kindle that I would want to keep forever.
In general, traditional books emerged as a technology that participants would not abandon in favor of the Kindle, although most participants recognized its convenience. For example, content delivery was particularly liked. The possibility to receive “fresh content downloaded silently even when the Kindle is inactive “due to the wireless connection was seen as a positive element: “it’s ready when you are ready” (Participant 17). The speed of delivery was remarked upon, especially as it pertains to bypassing processing and shipping for new releases. Also, the convenience of low cost of books and the possibility to select what they want to buy through free samples easily downloadable were other pluses for the Kindle. The acquisition and delivery system was also appreciated for periodicals:

It works well for subscription services, no late delivery or wet papers. (Participant 20)

It was also mentioned the environmental implications of using an e-reader and the benefits of going green.

Usability was primarily brought up in relation to books and journals as they were the materials primarily accessed on the Kindle. Other types of media, including emails and blogs, received limited attention, but nonetheless offered insight and comments that were mostly critical. As for the use of emails, Participant 9 was frustrated while trying to retrieve emails, reporting that the experience was “almost as bad as trying to use my lame Samsung 429, [that is] possible, but not practical.” The same participant also played MP3 flies, one of the features from the “Experimental” section and was listening to music while reading on the subway. The experience was positive and the participant particularly appreciated the convergence of different media into one device. This tenet was not shared by another participant who did not see the Kindle as a fully integrated device, but one in which music exists merely as background. Only one participant read blogs on the Kindle and commented that she wouldn’t use the Kindle to read blogs in the future because of the cost of something that would be free online. The short time available and the burden of setting up access on a borrowed device did not encourage a broader use of features such as documents in PDF or Word format. Had they owned the Kindle, some stated they would use it to read long documents, those that would be “burdensome to print out but that are much less than novel-length” (Participant 12).

5.5.5 Kindle and other mobile devices

Comments on the usability of the Kindle led to comparisons to other electronic devices including smart phones and MPS players. As revealed by the questionnaire data, the entire pool of participants makes regular use of mobile devices, especially iPods and iPhones, and thus they have a certain expectation of interaction with a device’s interface. Participant 2 reported:

I repeatedly tried to touch the menus on the screen. I was simply way too familiar with the iPhone interface at that point to be able to revert back to the Kindle style of interface. Even a week later, I was still fighting the urge to tap a menu closed.

Six participants shared this sense of frustration when they instinctively reached the display for a touchscreen type of interaction. Participant 16 commented that the screen reminded them of an early PDA. As Participant 3 pointed out:
The benchmark has been set with such well designed portable devices (AKA the IPOD) that once one is accustomed to the smoothness and speed of such objects; another lackluster one stands no chance.

Participant 8 noted:

The iPod welcomes touch, exploration, and interaction. I was afraid to move while reading the Kindle.

One participant showed the Kindle to co-workers and reported that four out of five people approached the screen assuming it was touch sensitive. The participant summed up that what the Kindle needed to be completely satisfactory was a touch screen, a scroll wheel and improvements on the speed. A general feeling towards the Kindle in relation to other devices for content delivery was expressed by Participant 20:

I don't think that the Kindle is to books what the iPod (and especially the iTunes store) is to music, not yet. But I do think that there is a correlation in that an iPod, or the single MP3 of a song, is similar to what I see being a good use for the Kindle.

5.6 Effects on reading habits
As found in both journal logs and interview data, twelve participants recognized that during their seven days of Kindle use they had increased their reading. In general, the convenience of the device in terms of portability was a major factor:

…reading more and more because of the convenience of it. (Participant 5)

Increase in reading was reported especially in relation to newspapers. Eighteen participants preferred reading the newspaper on the Kindle. Respondents observed that they read parts of the newspaper they would not normally ready. Participant 1 reported:

[the Kindle] changed my typical habits because the Times was so accessible on it that I found myself reading the newspaper every morning when usually I hate having the newspaper on the subway because I always feel like I'm going to fall or bump into somebody.

This sentiment was shared by most. Participant 7 stated:

I don't always get the opportunity to read the newspaper because by the time I get home sometimes the last thing I want to do is look at the computer, and I don't buy the newspaper.

Having the newspaper available anywhere, anytime enabled Participant 8 to read entire articles that they would not usually have a chance to do:

I usually skim the headlines, read the first couple paragraphs... I definitely got more out of the paper than I usually do reading it that way.

During the interviews seven participants confirmed they read more articles than they would otherwise and then later, in their life after the Kindle, they did not read the
newspaper as extensively and one participant had not read it at all since (Participant 16).

Increase in reading was also reported in relation to books. For example, one participant observed that, while the time frame and the study task might have played an incentive, she turned to the Kindle anytime she had a free moment. The convenience to be able to access the e-reader ubiquitously was noted by Participant 5:

> Sometimes when I am on a lunch break I realize that I would like to have pulled out the book I am currently reading but it's stuck at home.

The ease of the Kindle for heavy books was often remarked upon:

> Since giving back the Kindle the 1000 page book I was reading on the Kindle has been demoted because [the book] is such a big thing that I don't take it on my commute which is when I do a lot of my reading. (Participant 5)

According to most participants, the Kindle is not going to replace the physical book anytime soon; several respondents pointed out some of the limitations that would prevent such transition. They argued that the Kindle is not appealing for reading non-fiction works, but more suitable for short works, “fast fiction,” and newspapers. Participant 20 commented:

> Things you don't want to keep around but do want to access to such as periodicals, blogs, and borrowed books are the ideal content for the Kindle.

Another respondent wished that the Kindle would offer short stories (about 30-45 minutes to read) you could buy one at a time or in collections at a small fee. Most participants shared the idea that Kindle and traditional books are to be seen as complementary. One indicated that she would like to have a Kindle and build a collection of books in conjunction with her physical library. Some commented on the interchangeability between physical and electronic content. One participant would read a book on the Kindle and finish it on the paper copy as a seamless experience.

The ability to read seamlessly by switching from different media and different formats emerged as a key element in augmenting reading as a practice. Participant 11 commented on the unobtrusiveness of the device:

> I would say that the Kindle, once I started reading, became more transparent. In other words, it didn't get in the way of the content, which I think was a big plus. So I would say that it didn’t change the experience between that and reading a book in terms of making it more or less engrossing, it got out of the way of the content.

One respondent pointed out that, while using the Kindle, she felt completely immersed into the reading and even seemed to be reading faster than with the print book. The participant also emphasized that she constantly experiences switching between media all the time, including books, magazines, newspapers or the cellphone, from which she can access emails. She hoped for a convergence of those media.

5.6.1 Access policies
Participants disliked the constraints to content access and sharing due to Amazon’s proprietary policy. As Participant 20 commented:

The Kindle won’t let you resell or share your books. Anything you buy through the reader is fixed to your Amazon account, readable only on the Kindle or other devices that Amazon may one day deem appropriate.

Many participants commented negatively on the dependency from the company for content. One participant tried to read school-related journal articles previously downloaded from library subscription databases and incurred a roadblock of legal retractions that prevented sending documents from “automated distributed services” as the product instructions read. Also, the cost of reading blogs was criticized, as mentioned earlier. Finally, the price of the device, certainly on the high end, especially for a student, was considered a strong deterrent for adopting the Kindle.

5.7 Scenarios of use
Diary interviews prompted some discussion on potential application and future uses of the Kindle with regard to libraries other settings.

5.7.1 Use in libraries
When asked if they could see a use for the Kindle in libraries the opinions were mixed. Some participants knew of libraries that did loan Kindles while others envisioned ways libraries could use Kindles. A number of potential uses were suggested including using the Kindle for lending books, for digital archives, for sharing information in more specialized information centers, such as corporate or law libraries. Concerns were raised about access restrictions to content. One suggested accessing Google Books through Amazon as a way to broaden the availability of content. A few respondents brought up the use of the Kindle as an aid in roving reference and to support collection development. Participant 14 saw the Kindle as a “really cool library machine once loaded with all your resources.” The participant thought of the Kindle as a potential “pocket library” from which to access libraries' catalogs and databases to select, check out and download books that would be immediately ready to read on the device. Several participants commented on the cost barriers and content restrictions posed by Amazon as hampering the use of the Kindle in libraries. They objected to the model whereby content can be obtained only from a single provider who controls price and has the ability to retract access.

5.7.2 Educational use
Other potential uses were identified in educational scenarios. For example, one participant suggested using the Kindle to teach technology use to children and young adults. Also, the use of the device for people with learning or visual disabilities was mentioned. Participant 3 commented:

I could see doing a workshop using it with elderly people needing super large print because then it allows them to use more books than just the large print ones that are available on site.

As for personal uses, Participant 11 commented that the e-reader would be helpful to organize and use school-related materials:
In each of my classes we have readings that are predominantly PDF or HTML files. If the Kindle could be loaded with my weekly readings, it would be incredibly convenient, as well as saving countless amounts of paper printing.

Other respondents highlighted the usefulness of the Kindle to load homework that could be read during commutes.

6. Study limitations
The results of the study cannot be generalized due to the size of the sample. More importantly, the pool of participants share similar traits and habits and do not reflect the diversity of a larger population. For instance, they all live in a large metropolitan area, are regular adopters of new technologies, and use public transportation daily. For the purpose of a study that intends to be descriptive and explorative, this sample was deemed appropriate to provide relevant insight on the use of a new generation e-reader like the Kindle. Another limitation arises from the short time allowed for device use. While a week is regarded as adequate for journal keeping, it was probably too short for testing reading practices of books of substantive length. Despite the relatively brief timeframe, however, most participants reported downloading books with the intention of continuing reading in print later, if needed. Finally, the methods of data collection present limitations due to the self-reporting component of journaling and the observer element in the individual interviews. Although the triangulation of data helped to strengthen the findings, more research needs to be conducted to expand our understanding of e-reader use and their adoption beyond this study’s population.

7. Conclusions
This study investigates how library and information science students interact and use a popular portable e-book reader, the Kindle 2. Data were collected through journals and follow-up interviews. From the analysis of the findings a few key themes emerged including usage patterns, interaction and usability, effects on reading habits, and future scenarios of use. Results indicate that e-readers were easily and seamlessly integrated into the day-to-day activities of participants. While the experience may differ in terms of the physical interaction and depth of the reading experience, the e-readers were generally accepted as normal vehicles of content delivery that at times enhanced the reading experience. Although participants reported some dissatisfaction with specific features of the e-reader, they generally valued the portability and ubiquity that the Kindle offers. Users recognized and were aware that dealing with chargers, downloads, files, joysticks, and keyboards is different from dealing with paper, pages, or pens, but they are not deterred by the change.

While participants pointed out some of the technical limitations of the Kindle, they also anticipated that future models would likely carry improvements in usability. Participants could not envision immediate solutions to restriction regarding the freedom to own, manipulate, and perform transformative actions with electronic content in the same way the print content allows. In other words, participants did not express concern over the erosion of the print metaphor associated with traditional navigation of print books and newspapers, but did express concern over their ability to control content in terms of saving, distributing, and maintaining sustained ownership of book content.
The study highlighted how the e-reader adapted to the rhythm of students’ everyday life, which was characterized by frequent transitions between personal and professional activities, often involving long commutes on public transportation. The Kindle was well-suited as a library to-go. The use of portable e-book readers such as the Kindle raises questions about how libraries can maintain their historic role as providers of free access to information in the digital environment and what room there is for proprietary devices in a library environment that increasingly favors open source software and open access content.

Just as the Apple iPod transformed the music industry, portable e-readers like the Kindle and the recently introduced Apple iPad, have the potential to significantly alter the way readers consume books and other written material. Nevertheless, the iPod’s success was largely due to users’ acceptance of the iTunes approach to the sale of music content. If the Kindle is to have the same transformative impact, a comparable model of access is needed. Likewise, the future role of libraries in the delivery of digital content to users of e-readers will depend on the publishers’ willingness to allow their content to be shared. While the study sample was small and results cannot be generalized, a common thread across users was general dissatisfaction with Amazon’s economic model for the purchase of e-books. Until a suitable economic model is established, the future of the portable e-reader and the library’s role remains unknown.

References

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