

**Online Reading: The Perceptions and Practices of Cadets in an Advanced  
History Class**

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## Introduction

While the 21<sup>st</sup> century has only just begun, in the United States nearly all of the country's citizens have been impacted by the digital age in a variety of ways. Perhaps the two most recognizable digital devices are the computer and the cell phone. Personal computer ownership has grown from about 8% of households in 1984 to 62% in 2003.<sup>1</sup> The number of cell phone subscribers has also grown from 34 million in 1995 to approximately 159 million in 2003.<sup>2</sup> This growth has spurred the U.S. Census Bureau to update the types of questions it asks in its reports, while independent agencies and news media have conducted their own surveys of digital accessory use by the population.<sup>3</sup>

Many of the studies have focused on the use of digital devices by the newest generations of Americans. In July 2005, the Pew Internet & American Life Project noted that 87% of those aged 12 to 17 used the internet, up from 73% in 2000. PEW also reported 51% of teen internet users said they go online daily, up from 42% in 2000. At the time, the survey noted more teens used email than instant messaging (IM), although when communicating with friends, teens consistently chose IM over email.<sup>4</sup> In December 2006, the Associated Press and AOL released a survey covering IM and email use in teens and adults. The survey noted nearly three quarters of teens who used IM sent more IMs than emails on average per day.<sup>5</sup>

With such a high rate of digital device use among teenagers, it is not surprising that education institutions have also been examining the digital ownership and practices of their students. The University of Texas conducted a survey of computer ownership and use in 2002 which indicated 91% of students owned a personal computer.<sup>6</sup> The School of Arts and Sciences at Harvard has published the results of its last two annual undergraduate computer and technology surveys on the web. In the 2006-2007 survey, 99% of all students in classes 2007 through 2010 owned at least one computer. Of those students, 65% used their computers in class.<sup>7</sup> The University of Virginia has conducted computer ownership surveys of first year students since 1997. In that year,

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<sup>1</sup> Jennifer Cheeseman Day, Alex Janus, and Jessica Davis, "Computer and Internet Use in the United States: 2003," *Special Studies* U.S. Census Bureau (October 2005), 1, found @ <http://www.census.gov/prod/2005pubs/p23-208.pdf>.

<sup>2</sup> "U.S. Cell Phone Use Up More than 300 Percent, Statistical Abstract Reports," U.S. Census Bureau News Release 9 December 2004, found @ <http://www.census.gov/Press-Release/www/releases/archives/miscellaneous/003136.html>.

<sup>3</sup> "Computer Use and Ownership," U.S. Census Bureau, 14 October 1999, webpage found @ <http://www.census.gov/population/www/socdemo/computer.html>.

<sup>4</sup> Amanda Lenhart, Mary Madden and Paul Hitlin, "Teens and Technology: Youth are leading the transition to a fully wired and mobile nation," Pew Internet & American Life Project (27 July 2005), i-ii. The PDF file can be found @ <http://www.ibtimes.com/articles/20061208/im-teens-email.htm>.

<sup>5</sup> Thomas Fredrickson, "Teens Using Instant Messaging use Email Less," *International Business Times* 8 December 2006; <http://www.ibtimes.com/articles/20061208/im-teens-email.htm>.

<sup>6</sup> "Computer Usage & Ownership Results," ITS Survey 2002, University of Texas at Austin, 7 October 2002, found @ [http://www.utexas.edu/its-archive/surveys/2002/tables/comp\\_groups.html#comp](http://www.utexas.edu/its-archive/surveys/2002/tables/comp_groups.html#comp).

<sup>7</sup> "General Statistical Breakdown of Respondents," *Annual Undergraduate Computer and Technology Survey, 2006-2007*, Faculty of Arts and Sciences, Harvard University, Found @ [http://www.fas.harvard.edu/computing/about/statistics/survey07\\_1.html](http://www.fas.harvard.edu/computing/about/statistics/survey07_1.html)

1803 students reported owning a computer versus 634 who did not. In 2006, 3088 students reported owning a computer compared to 4 who did not.<sup>8</sup>

At the United States Military Academy at West Point, all cadets are issued computers when they arrive, and an academy organization exists to ensure the cadets' computers remain operational during their four years of school. Many classes, particularly math and science classes, use specialized software as part of the classroom learning experience. Even humanities courses, such as English, History, and American Politics, require the submission of typed essays. With computers a part of virtually every course, it seems prudent to ask how computers have affected the preparation for and conduct of class and examinations. As a history instructor, I am particularly interested in how my students respond to reading assignments digitally on a computer screen rather than as a paper text. Since nearly nine in ten teens access the internet and read online, what are student attitudes toward reading history online? Does student computer use in other areas translate into a preference for reading online versus from a book in a history course? If students prefer to read online, will more of them read more of their assignment if it is offered online?

In order to answer these questions, I periodically surveyed the students in my four class hours of HI352, Advanced History of the Military Art, a mandatory, core history course, in the spring of 2007. I attempted to identify their perceptions toward reading paper and digital materials and the actual frequency students read the materials. Cadets anonymously completed the surveys at the start of selected classes during the semester and as part of the computerized course end feedback.

### **Background**

James Longhurst and his colleagues at Carnegie Mellon University have examined student perceptions of digital reading. Longhurst has noted that students taking a history survey course at the university report an aversion to reading documents from their computer screens, and may not perform as well when doing so. Longhurst, however, is one of few authors to publish an academic discussion about teaching history online or with online supplements -- journals rarely discuss the impact of the computer either on student perceptions or actual reading comprehension of online materials.<sup>9</sup> Some studies outside the field of education examined the physical readability of texts on computer screens in the 1980s with the initial development of personal computers. Carol Bergfeld Mills and Linda J. Weldon notably synthesized a number of human-computer interaction studies on various factors affecting readability of onscreen text. At the time, they noted screens were less readable than paper, and they cited factors such as character fonts, screen formatting, contrast and color, and

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<sup>8</sup> "First Year Student Computer Inventory Comparisons," Information Technology & Communication, University of Virginia, 30 January 2007, found @ <http://www.its.virginia.edu/stuserv/ca/cainventory/compare/>.

<sup>9</sup> James Longhurst, "World History on the World Wide Web: A Student Satisfaction Survey and a Blinding Flash of the Obvious," *The History Teacher* Vol. 36, No. 3 (May, 2003), 344.

dynamic changes on the screen as strong influences on the readability of a text. The studies they examined did suggest that if the “quality and properties of the computer screen could be made more similar to those of paper; the differences in readability would disappear.”<sup>10</sup>

Many advances in computer screen technology have occurred in the last twenty years. Computer use has grown from a technical specialty to at least a middle class staple. Computer screens much more closely mirror the look of paper today than they did in the 1980s. Yet recently a website which sells eBooks announced it would send every e-textbook purchaser a scratch and sniff sticker with a musty “old-book” smell. The company may have been inspired by a Zogby International poll of 600 students which found that 43% of the students identified smell as the quality they most liked about books as physical objects.<sup>11</sup> Smelly eBooks illustrate a broader societal comfort with physical objects such as books over their digital counterparts. Digital cameras, for example, mimic the sound of the shutter opening and closing on a film camera to increase the user’s perception of the similarity between the camera types.

While no one would deny the importance of perception in assisting (or detracting from) the users of digital equipment, do students negative perceptions of reading electronic documents translate into “lower levels of assignment completion, decreased comprehension, or other unintended consequences” as Longhurst postulates?<sup>12</sup> Alex Zukas relates his experience with a completely online course in “Cyberworld: Teaching History on the World Wide Web.” He believes it takes longer to read typed work on a monitor than in hard copy, and bases his assessment on his own grading of student papers and his experiences with the length of time it took students to read materials from a monitor in his online course.<sup>13</sup>

Stephen Robertson echoes James Longhurst and Zukas in asserting students have an aversion to online readings, but Robertson believes this is because teachers do not maximize the capabilities of the computer to transmit knowledge effectively. Robertson believes teachers should take advantage of the possibilities of hypertext to introduce students to the more traditional association between primary sources, books, reviews, and discourse which creates historiography through online links between each of the items.<sup>14</sup>

Longhurst and Robertson’s findings present challenges for teachers considering the use of digital documents in history. Are their findings part of a larger trend in education? If students do have an aversion to digital reading, does this perception translate into reduced reading rates?

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<sup>10</sup> Carol Bergfield Mills and Linda J. Weldon, “Reading Text from Screens,” *ACM Computing Surveys*, Vol. 19, No. 4 (December 1987), 329, 335.

<sup>11</sup> “Electronic books with musty book smell launched,” *The New Zealand Herald*, 23 August 2007, found @ [http://www.nzherald.co.nz/section/story.cfm?c\\_id=5&objectid=10459458](http://www.nzherald.co.nz/section/story.cfm?c_id=5&objectid=10459458).

<sup>12</sup> Longhurst, 344.

<sup>13</sup> Alex Zukas, “Cyberworld: Teaching World History on the World Wide Web,” *The History Teacher* Vol. 32. No. 4 (August, 1999), 510,515.

<sup>14</sup> Stephen Robertson, “What’s Wrong with Online Readings? Text, Hypertext, and the History Web,” *The History Teacher*, Vol. 39 No. 4 (August, 2006), 444.

The results of this study indicate when asked whether they preferred to read a paper document or a digital version of a document on a computer screen, 80-90% of students reported they preferred to read a paper document. Students did not appear to appreciably change their perception for or against reading documents on a computer from the beginning to the end of the semester. When assigned two different readings for the same lesson, one presented as a paper copy of a book, and the other presented as a digital file to be read online, students consistently read the paper reading assignment more than they read the digital reading (by 10-20%). Reading rates for assignments solely consisting of digital files were not less than reading rates for paper copies of books or articles, however. What follows is a description of the research methodology, a more detailed discussion of the results of the study, and some implications for teachers involved in course design who are considering using digital materials.

### **Methodology**

The objective of my research was to identify cadet perceptions about reading materials online and to determine if these perceptions, positive or negative, appeared to have any impact upon their actual reading activity.

I chose the four class hours totaling 64 students of my HI352, Advanced History of the Military Art, classes as the primary subjects of the study. I periodically included 64 students in the other section of HI352 taught by Professor Kiesling. Although the cadets represent the top performing students in history and all other academic majors at the academy, students were divided among the class hours randomly.

I collected all research data in the form of anonymous surveys given to the cadets at the start of class. Typically this consisted of a sheet of paper with a question, "Did you read the assignment for lesson X?" Below the question the cadets had the option of circling YES or NO. I did not announce prior to any lesson that I would conduct a survey or that lesson. I did not collect data for every lesson, but I did collect data for ten of the thirty-five possible lessons. In addition, I surveyed cadet reading preferences at the start of lesson one and in the course end feedback survey. All surveys were anonymous in that the students did not write their names or any other identifying marks on the survey sheets. I collected the sheets at the beginning of each hour and marked them by hour in order to separate the responses for analysis.

From the beginning of the course, I told the students my surveys were directed specifically to identify reading habits of cadets to make recommendations about the future use of electronic documents for the course, and that there would be no link between class quizzes and the survey information I collected. While this may have encouraged cadets to complete the surveys, it may have also influenced cadets to read or not read electronic assignments depending on their perceptions of computerized reading. The characteristics of the cadets in the course are probably also not representative of the larger body of cadets. Students in HI352 represent the top ten percent of students as a whole and the majority of the students majoring in history. The

course is offered primarily to 1<sup>st</sup> class cadets (seniors), although a small number of 2<sup>nd</sup> class cadets (juniors) are also represented. The perceptions of the cadets and the percentage reading rates may therefore not be representative of the cadets at USMA as a whole.

### **Perceptions of Online Reading**

The results of the lesson 1 reading preference survey appear to confirm student aversion to reading on screen mentioned by James Longhurst at Carnegie Mellon University. 90% of students reported preferring to read a paper copy of an assignment. 8% preferred an electronic copy, and 1 student wrote in “neither” on his survey. The course end feedback asked the question again, but gave the students two additional options, no preference or not to study. Only 81% of students selected they preferred to read a paper copy, but the remainder of the students who had preferred a paper copy on lesson 1 appeared to have switched their answer to say they preferred not to study at all (8%). Thus it appears that student preferences for reading a paper copy of an assignment remained stable throughout the course.

Students also answered whether they were more or less likely to read an assignment because it was only available electronically. Tables 1 and 2 (See Appendix A) show a significant increase (about twenty percent) in the number of students who reported they would be less likely to read an assignment only available in digital form. Table 3 (See Appendix A) shows students report they are even less likely to take notes about an electronic document than they are to read it.

When given the opportunity to provide open ended answers on any aspect of how the course could be improved, 17% of cadets mentioned using less electronic readings. One student said, “I really enjoy the readings, but hate reading off my computer screen and not being able to take notes/highlight, etc.” Another noted, “I would make the reading easier to find. Some was emailed, some was in a book, some was on blackboard, some was in my roommate’s book.” In class, students in several different class hours mentioned the difficulties of printing out the digital readings on their company printers. These comments support the cadet surveys which indicate 51% of cadets printed out their documents to read instead of reading them online.

### **Frequency of Reading: Digital versus Paper Text**

How did these negative perceptions about electronic documents translate into the rate at which students read their assignments? I examined the survey data to determine reading percentage rate by lesson, day, hour, and single versus combined reading assignments. The data for percentage reading rate by lesson and single versus combined reading assignments can be found in Appendix B.

Reading rates by lesson indicate an overall downward trend from a high of 94% on lesson 1 to a low of 44% on lesson 40. Significantly, in every case where

there is both an electronic and a paper reading assignment in the same lesson, the reading rate for the paper assignment is higher than for the electronic assignment (by about 20%). On the other hand, when lessons contain only a paper reading assignment or only an electronic reading assignment, there appears to be little difference in the reading rate between paper and electronic assignments.<sup>15</sup>

I found no significant difference in the reading rates of different class hours. Monday appears to have a somewhat higher reading rate than the other four days of the week, but Tuesday through Friday all have reading rates between 50 and 60%.

### **Implications for Course Design**

The results of this study can only be considered as a start toward further research in understanding cadet – student attitudes and practices with digital reading assignments. Nevertheless, the study suggests several considerations for teachers engaged in course design. First, and perhaps most important, students appear to have a negative attitude toward reading history assignments online despite their heavy use of computers in daily life. This study did not specifically examine **the reasons** behind this negative attitude. Among the possibilities are the students don't like to read online because it may still be physically/mentally more difficult to read online than with a standard book, the students may be reminded of the more enjoyable ways they can use their computer like sending IMs (and are perhaps doing so at the same time they are reading), and students may be frustrated with the variety of different formats of digital documents which they may have to deal with or intermittent availability of university internet services.

If using digital materials, teachers should pay particular attention to the informal and formal comments by students about the challenges of dealing with the materials. Where is the focus of complaints about digital materials? Do cadets bemoan an inability to get on Blackboard or other university online resources? Or do they say it's too hard to read onscreen? One of the few possible reasons for student dissatisfaction which can be ameliorated by the teacher is the variety of formats of digital documents. Perhaps providing a CD with all of the documents at the beginning of the course would assist with easing the challenges of working online and dealing with digital data. In any case, adopting a high number of digital readings will likely lower student satisfaction with the course, which is itself a point of consideration in deciding whether to employ them.

Second, when required to read more than one format of assignments at the same time, students appear to read paper assignments at a significantly higher

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<sup>15</sup> I should note that I dropped lesson 1 from consideration when computing the numbers for electronic reading rates for the single reading type assignments. Lesson 1 was the highest reading rate of any lesson and there were no surveys of **paper** document single assignments between lesson 2 and 8 to balance out this high reading percentage on lesson 1, although the overall reading trend suggests paper document reading rates in these lessons would have been high.

rate. It is possible this is because the paper readings typically come from a survey book while the electronic documents generally provide specific details to amplify the basic reading. The students may recognize this and decide when economizing on reading to skip the supplementary material.<sup>16</sup> On the other hand, reading rates appear to be no different for paper and electronic readings when one or the other is assigned by itself for a single lesson. This suggests course designers may desire to **avoid** what is currently common practice in the history courses: to assign a general reading and couple it with a supplementary reading in the same lesson, especially when one is offered in paper copy and the other in electronic form.

Third, even when presented with digital readings, half of all cadets printed out the readings instead of viewing them on their computer. Although it also happens at other universities, this point is particularly important at the United States Military Academy where all students live in barracks and compete with one another directly for company printing resources. The cost of printing the documents shifts from the history department or the student through the print plant to USCC, but more importantly to the cadets, the cost in time spent by the cadet dealing with printing the readings is significant compared to possessing the readings in a booklet from the beginning of the course. Printing a fifteen or twenty page document will frequently take more than five minutes, which added up over the course of a forty lesson semester, is theoretically two hours or more of lost study time if half the lessons contain electronic readings. If any problems with the network ensue, the student will most likely choose to blame the department assigning such an “onerous” reading requirement.

Finally, this study made no attempt to compare the reading comprehension of students with paper versus electronic assignments. Longhurst postulates that students presented with longer reading assignments online will end up “surfing” or ‘browsing’ or ‘channel-flipping’ rather than actually reading” because that is what they normally do online.<sup>17</sup> This deserves further study, but if true, warrants a re-thinking of the way digital documents are used on courses. A teacher could consider assigning no specific reading for a given lesson, or offer one link on the web to a reputable source, but require the cadets to find information about the topic online from other sources as well, which would maximize student use of the web in a manner they are accustomed to.

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<sup>16</sup> One possibility for a future study would be to compare the reading rate of students enrolled in HI301/302 whenever there are two readings assigned for the same lesson to see if students read the supplemental materials provided in the History of the Military Art readers at a decreased level. If so, this may indicate that despite cadet perceptions, they do not read electronic materials at a lower rate than paper materials.

<sup>17</sup> Longhurst, 354.

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