



Undergraduates' Academic Reading Format Preferences and Behaviors



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ABSTRACT

This study of undergraduates' academic reading format preferences and behaviors asks the questions: What are undergraduates' format preferences when engaging with their academic readings, electronic or print? What factors impact their preferences and behaviors? How do these factors influence their actions? Almost 400 students at the University of California, Los Angeles completed the online Academic Reading Questionnaire in spring 2014 by agreeing or disagreeing with statements about their format preferences when engaging with their academic texts, and the contextual factors that impact them. Results show overwhelmingly that they prefer print over electronic formats for learning purposes, but multiple factors such as accessibility, cost, complexity and importance of the reading to the course affect their actual behaviors. The findings are then considered within the larger picture of previous studies of presentation format preferences, and research comparing reading comprehension in electronic and print formats. Zipf's Principle of Least Effort and the concept of information economics are used to suggest a theoretical basis for why factors outside of comprehension and learning efficiency impact the students' actual behaviors.

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INTRODUCTION

Back in 1940, Mortimer Adler recognized and defined different levels and types of reading in his classic work *How to Read a Book*. "There would appear to be several types of reading: for information, for entertainment, for understanding," (Adler, 1940, p. 28). Of course he could not have visualized the multiple formats for reading we enjoy today in both electronic and print media, but his basic premise holds true. In the academic world, we expect our students to read their texts for understanding, and as librarians and educators we know that reading comprehension and the ability to synthesize information and formulate new concepts are basic skills of information literacy. A growing body of evidence however, shows that the presentation format, print or electronic, affects how efficiently the brain processes information (e.g. see Eshet-Alkalai & Geri, 2007; Mangen et al., 2013). Expanding on Adler's observation that different levels and types of reading are employed according to the purpose and desired outcome of a reading task, we see that scanning and browsing for example, are effective strategies for many online tasks such as sorting through email, reviewing headlines, and checking facts and definitions. But the process of linear reading in print format appears to be more effective for deeper learning and comprehension goals, when focus and deep reading are demanded in order to internalize the information and make it understood.

This paper reports on a study of undergraduates' academic reading format preferences and behaviors performed at the University of

California, Los Angeles (UCLA) in spring 2014. It asks the questions: *What are undergraduates' format preferences when engaging with their academic readings? What factors impact their preferences and behaviors? How do these factors impact their behaviors?* Almost 400 respondents completed the online Academic Reading Questionnaire (ARQ) by agreeing or disagreeing with statements about their format preferences when reading and engaging with their academic texts, and the factors that influence their preferences and behaviors. Results show overwhelmingly that they prefer print over electronic formats for learning purposes, but multiple factors such as accessibility, cost, complexity of the reading and its importance to the course affect their actual behaviors. The literature review below of selected studies comparing reading comprehension in different formats, followed by highlights from previous studies of students' format preferences and behaviors, shows a general consistency among the findings, and an awareness by the students of their most optimal reading format. Placing the results within the context of Zipf's Principle of Least Effort (Case, 2005), and the concept of information economics (Ahituv, 1980; Eshet-Alkalai & Geri, 2007), suggests a theoretical basis for why factors outside of comprehension and learning efficiency affect the students' actual behaviors.

LITERATURE REVIEW

READING COMPREHENSION STUDIES

Mangen et al. (2013) conducted a study of the impact of print and electronic formats on 72 Norwegian tenth graders. Students from two

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different schools were first administered pretests to determine existing differences in reading abilities. They were then divided into two random groups; one was given a reading in print and the other the same text electronically in PDF format. Subsequent comprehension tests showed that the print readers scored significantly higher than those who read on the electronic format even when their different reading abilities were factored in. All the subjects in this study were teenagers, therefore it appears that the effect of format on deep reading effectiveness exists as an actual cognitive phenomenon and not determined by generational differences. Results from a similar study of reading comprehension across paper, tablets, and computers among college students in China also show a significantly better performance when reading in print than on the other electronic formats in both shallow and deep levels of comprehension (Chen, Cheng, Chang, Zheng, & Huang, 2014).

In his dissertation study performed at Liberty University, Casey Lee Wells (2012) did not find significant differences in the reading comprehension or motivational levels of 140 junior and high school students based on presentation format. He notes however, that “The review of literature also indicated that despite student acceptance of the electronic format, many students still simply preferred print. The current study could easily be furthered through an additional research question, and an accompanying researcher-created survey to collect student format preferences” (p. 91).

A major study of the reading habits of young people performed in the United Kingdom, (Clark, 2012) reports that 52% of the children said they prefer to read electronically (including social media and texting) than in print. Jonathan Douglas, the National Literacy Trust director expresses concern over this development because the results also show that “children who only read electronically are significantly less likely to enjoy reading and less likely to be strong readers” (Williams, 2013).

Israeli researchers Ackerman and Goldsmith report in their study (2011) that on-screen learners (OSL) did not score as well as on-print learners (OPL) when performing untimed reading tasks. Their study also showed a significant difference of overconfidence between the groups when predicting performance levels, reflecting OSLs’ distorted sense of their own proficiency.

Yoram Eshet-Alkalai and Nitza Geri’s study of comprehension when reading news online or on print shows high school students performing better using online format, but college students comprehending better when reading the news in print (2007). They suggest that different people place different values on information and this impacts the differences in format preference for reading the information. “The results of this study confirm the basic premise of information economics (Ahituv, 1980) that information does not have an absolute universal value, so people differ in their preferences for information formats, and their performance is affected by the information representation format,” (2007, p. 276). They also summarize the findings of several earlier cognitive studies on reading comprehension by stating that “online reading creates a higher cognitive load on the reader,” a factor contributing to better information retention when reading in print (2007, p. 270). Cited studies show that difficulties with knowledge-construction and disorientation are more common when reading electronically, and digital readers demonstrate a “lower sense of ownership, engagement and willingness to learn” (2007, p. 270).

A flurry of articles has recently appeared in the popular press on the effects of format on reading strategies and comprehension. The Washington Post discusses the impact of online reading on deep reading skills in an article titled “Serious reading takes a hit from online scanning and skimming, researchers say” (Rosenwald, 2014). It cites the Mangen study (2013) and acknowledges the difficulties that even educated adults experience when transitioning from online scanning mode to the deeper focusing skills needed to read novels and classic literature. Wired Magazine (Keim, 2014) echoes the same theme in an

article titled “Why the Smart Reading Device of the Future May Be... Paper.”¹

READING FORMAT PREFERENCE STUDIES

Are students changing their study behaviors and learning styles as electronic books, journals and resources become more prevalent in academic libraries? What do they say about the differences of reading in print and digital formats? Contrary to popular stereotype, surveys for more than a decade show that undergraduates consistently prefer reading their academic texts in print. The convenience, ecological sustainability, and often the lower cost of accessing texts electronically however, are factors that influence their actual practices.

In the early 2000s, Dilevko and Gottlieb asked if students still felt “that print books and print journals have something to offer and, if so, what?” (Dilevko & Gottlieb, 2002, p. 383). Three hundred ninety-four undergraduates at the University of Toronto responded to their survey. Among their findings was the perception that print offered greater reliability, reflecting a cautious attitude towards online sources and the idea that they should use print books for their “high-quality work, whereas use of online sources was invariably associated with the need to just get things done quickly and easily,” (p. 391). Students also stated that reading and engaging with print were easier than reading electronically; many found reading online journals acceptable, but “thought that books were too long to be read online,” (p. 391).

In Ziming Liu’s study of format preferences (2006) graduate students at San Jose State University were found to prefer accessing their readings online, but then printed them out to read and study. They utilized a mix of print and online sources, but their preference patterns were found to vary among different disciplines.

The University of California (Li, Poe, Potter, Quigley, & Wilson, 2011), in collaboration with Springer Publishers, conducted a survey of academic e-book usage by its students, staff, faculty, and researchers at all ten campuses (University of California, 2011). Almost 500 of the 2561 responses were from undergraduates. A positive response to the question “Do you use e-books for your academic work?” generated the follow-up “When doing your academic work, do you generally prefer print books or e-books?” Forty-nine percent of the total respondents (2410) stated a preference for print books, 34% for electronic and 17% answered no preference or that it depends on the context of the usage. Post-doctoral researchers indicated the highest preference for e-books (49%), followed by graduate students (35%), and faculty and lecturers (33%). Undergraduates were the academic population in this study with the least preference for using electronic books, showing the highest preference for print. “Undergraduate students indicated the highest preference for print books (53%); many undergraduate respondents commented on the difficulty they have learning, retaining, and concentrating while in front of a computer” (Li et al., 2011, p. 5). Students also commented on the cost factor, “If they were the same cost I would prefer the paper version because reading on the computer makes it harder for me to understand the information” (p. 11). Respondents to this survey from UCLA constituted only 11% (n = 292) of the total respondents; the break-down of participants’ university status at the campus level is not stated and therefore the responses of UCLA undergraduates in this study is unknown.

Over 1300 faculty, staff and students in the humanities and social sciences at the University of Maryland were surveyed about their attitudes towards and usage of electronic books in 2012 (Corlett-Rivera & Hackman, 2014). Results showed that more respondents preferred scholarly monographs in print, but liked electronic versions for conference proceedings, general and specialized reference works and citation and style guides. Format preference for edited collections was evenly

¹ See also: Konnikova, M. (2014, July 16). Being a Better Online Reader. *The New Yorker*; and Flood, A. (2014, August 19). Readers Absorb Less on Kindles than on Paper, Study Finds. *The Guardian*.

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