



Practicing Critical Evaluation of Online Sources Improves Student Search Behavior



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ABSTRACT

This research investigated the effect of critical source evaluation on student online search behavior and results. The study employed an experimental design in which participants in the treatment condition conducted a prompted critical evaluation of a set of provided sources, while participants in the control condition reviewed them without any prompts. Participants in both conditions then searched online for sources on an assigned research topic. Server log data and participant survey responses were analyzed using both quantitative and qualitative measures to identify the impact of the intervention, guided practice in the critical evaluation of online information, on their search behavior. Results showed that the treatment condition participants who conducted the prompted critical evaluation of sources performed better on most measures of search behavior, and appeared to be better prepared to search effectively and complete their group assignment. Implications for instructors and librarians teaching information literacy skills are discussed.

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INTRODUCTION

Since the Internet is the starting point when searching for information for many of today's students, the importance of teaching students to critically evaluate online sources is more important than ever. Librarians often teach information literacy (IL) skills to students either through dedicated classes or one-shot presentations in classes. Such instruction may be the only exposure students receive to learning critical evaluation skills. When librarians are able to schedule IL instruction sessions in academic classes, they have a limited amount of time to discuss evaluating sources as part of their presentations (Taylor & Dalal, 2014). However, librarians do not always have access to classes, or may not be welcomed by faculty members (Saunders, 2012). Faculty tend to rely on coursework and assignments as the primary vehicle for students to learn IL skills, or may expect that students learn the skills on their own, and so do not actively integrate it into their curriculum in a systematic way (McGuinness, 2006). Thus, the onus is on librarians to initiate and sustain discussions with faculty about IL instruction and to proactively build collaborative relationships (Saunders, 2012). Overcoming these institutional challenges is crucial to librarians' success in delivering effective IL instruction to students.

Beyond the basic library research skills traditionally covered by IL instruction, critical information evaluation skills are crucial for today's Internet savvy students. Web-based information problem solving is a

pivotal 21st century skill that is required in everyday life in and out of the classroom (Raes, Schellens, De Wever, & Vanderhoven, 2012). However, studies consistently show that students are unlikely to exert much effort in making credibility evaluations online (Metzger, 2007). Young people tend to be pragmatic and opportunistic when searching for information, and not overly concerned about quality (Connaway, Dickey, & Radford, 2011; Flanagan & Metzger, 2008). Motivated mainly by time constraints, students may compromise credibility for the sake of convenience, and demonstrate willingness to accept a "good enough" source rather than find one of better quality (Connaway et al., 2011; Warwick, Rimmer, Blandford, Gow, & Buchanan, 2009). Pragmatism and convenience often trump careful research and evaluation. Overcoming these ingrained attitudes is another significant obstacle to teaching students the importance of critical evaluation skills.

In order to provide librarians with convincing empirical evidence for the value of IL education, it is important to quantify the effect of critical evaluation of online sources and demonstrate its value. Such evidence will help communicate the importance of these crucial skills to both faculty and students. To address this need, an experimental study was conducted to empirically measure the quantifiable impact of guided practice in the critical evaluation of online information. This research makes a contribution to the field by conducting an experimental study with random assignment to produce measurable outcomes based on between-group comparisons of outcomes. The study is also innovative because the participants evaluated actual sources found by prior students researching an authentic assignment, rather than exemplars selected by the researchers.

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LITERATURE REVIEW

STUDENT ONLINE RESEARCH BEHAVIOR

For many students, the Internet is the starting point when searching for information (Becker, 2012; Herring, 2011). Undergraduates rely on Google to do research and, for many of them it may be the only research tool they use (Connaway, White, Lanclos, & Le Cornu, 2013; Head & Eisenberg, 2010; Kolowich, 2011). They often assume that search results are recommendations of credibility and rely on search engine brands as endorsement of quality (Hargittai, Fullerton, Menchen-Trevino, & Thomas, 2010). Students put their trust in search engine results as recommendations of quality, and seem to believe that the search algorithm evaluates results (Asher, Duke, & Wilson, 2013; Taylor & Dalal, 2014). These “digital natives” (or Generation Y or Millennials) have grown up accustomed to having access to online research tools (Manuel, 2002). While they demonstrate an apparent ease and familiarity with computers, and surf the Web with ease, they also frequently lack the critical and analytical skills to assess the information that they find online, and to conduct college research (Lippincott, 2005; Rowlands et al., 2008).

Effective searching of the web is a complex process of reasoning and decision-making (Todd, 2000). In the online environment, a successful student has to continuously decide where to go next and constantly has to evaluate how the information they retrieve is related to their learning goals (Bennert & Mengelkamp, 2013). However, rather than viewing evaluation as a process of reflection and judgment, students may see it instead as merely a procedural step to be cursorily completed (Julien & Barker, 2009). They often reduce the cognitive effort of reviewing information through shortcuts such as relying on familiar sites, search engine descriptions, skimming, and ending searches as soon as an acceptable result is found (Thomas, 2004). They prefer starting a new search session rather than conducting the more difficult and time-consuming tasks of evaluating multiple results (Warwick et al., 2009). They tend to spend little time or effort evaluating search results (Walraven, Brand-Gruwel, & Boshuizen, 2009) and do not employ any systematic strategies for judging website legitimacy (Mizrachi, 2010). When they do evaluate online information, they often utilize criteria that are entirely different from those promoted by librarians and instructors (Hargittai et al., 2010). Instead, they are more likely to make evaluations based primarily on site design and surface features rather than content (Harris, 2008). Technological affordances may also impact how content is experienced and evaluated, with students showing a predisposition toward sites that are novel and interactive (Sundar, 2008). Overall, students have trouble evaluating information and do not have a critical attitude towards online information (Brand-Gruwel, Wopereis, & Vermetten, 2005). They often behave as “information consumers” who prefer convenience and ease of use (Becker, 2012; Joo & Choi, 2015).

Many qualitative studies have investigated student behavior during online research. Taylor (2012) surveyed 80 college students and found that they proceeded erratically through the information search process, and appeared to not be concerned with the quality, validity, or authority of information found on the Internet. Head (2013) reports on findings from Project Information Literacy's six studies with survey and interview data from >11,000 US college students, which suggest that most students adopt a strategic approach to their information-seeking research that is driven primarily by efficiency and predictability in response to the overwhelming amount of information available online. Taylor and Dalal (2014) surveyed 389 college students and found that the students appeared to have difficulty with identifying authors, assessing authority, and determining the accuracy and objectivity of online sources. Georgas (2014) examined the information-seeking behavior of 32 undergraduates, and found that while students believed themselves to be skilled researchers, their behavior did not support that belief. Students did not examine their topics to identify keywords, performed natural language or simple keyword queries, rarely

reformulated their queries, skimmed results quickly, and did not move beyond the first page of results. The author states that “Reasons for such behavior are all variations on a theme: impatience, lack of perseverance, convenience, and following the path of least resistance” (p. 524). Joo and Choi (2015) surveyed 332 undergraduate students on the factors that influenced their use of online library resources, and found that accessibility was the strongest factor while credibility was the weakest.

THEORETICAL BACKGROUND

Several theories address the basis for these attitudes. The Principle of Least Effort (PLE), originating in the work of George Zipf, suggests that most people will choose easily available sources of information, even when they are clearly of lesser quality than other, harder to find sources (Rosenberg, 1974; Zipf, 1949). The literature on PLE shows that most researchers, even experienced scholars, rely on information access systems that are perceived as easy to use (Mann, 1993). A related concept is “satisficing” which suggests that information seekers often accept the first satisfactory alternative over a higher-quality alternative (Agosto, 2002). The concepts of PLE and satisficing correlate with research findings on student information-seeking behavior that emphasize efficiency and ease of finding results as primary motivations, rather than the scholarly goals that faculty and librarians might hope for. In a longitudinal study of undergraduate information seeking behavior, Warwick et al. (2009) found that students completed information seeking tasks with the minimum amount of effort judged necessary. Using “strategic satisficing,” the subjects “estimated what the minimum literature requirements were and chose specific goals that they could fulfill easily and quickly with their existing skills” (p. 2412). Self-teaching or learning from friends were the most frequently reported methods reported for learning research skills. New skills were only adopted when immediately required by an assigned task, and students “deployed considerable ingenuity in finding ways to avoid or limit complexity” (Warwick et al., 2009, p. 2414).

Competency Theory suggests that students who lack IL skills do not realize it and therefore are unlikely to seek out instruction (Gross & Latham, 2007). Low-skilled students are unlikely to self-identify as lacking skills in either a classroom or library context, and at the same time are unable to accurately assess the skill levels of others (Gross & Latham, 2007). Students with low level skills hold inflated views of their own competence in information seeking and often overestimate their abilities to find and evaluate online information (Manuel, 2002). They may perceive their own fluency with technology as eclipsing any need to learn IL skills (Brown, Murphy, & Nanny, 2003). Instructors need to recognize that much of what students know about research comes from their experiences using Google, and they may have difficulty adapting their online search process into academic research using library resources (Porter, 2014).

PRIOR RESEARCH

Effective searching and evaluation skills are often taught by librarians in information literacy (IL) instruction sessions, either in full classes or as one-off sessions in other classes. IL instruction has been shown to reduce library anxiety in college students (Van Scoyoc, 2003), increase self-efficacy in online searching skills (Monoi, O'Hanlon, & Diaz, 2005), and increase confidence in doing library research (Wong, Chan, & Chu, 2006). Although there is a significant amount of Library and Information Science (LIS) literature on IL instruction, much research consists of case studies, surveys, interviews, and pre/post-tests. This research lacks experimental evidence of the effect of the instructional intervention on the results of students' online searching. This lack of quantifiable measures of effectiveness makes it less likely that instructors and students will see the value of such an intervention on the outcomes of students' research for in-class assignments.

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