

# What reading demands does searching on the Internet require? A review of the literature.

National Reading Conference, 2006

Laurie A. Henry, University of Connecticut  
laurie.henry@uconn.edu

## Purpose

The purpose of this project was to conduct a comprehensive literature review of empirical research from multiple disciplines in order to establish a clear conceptual framework for defining the reading demands that searching for information on the Internet requires. This literature review integrates and synthesizes the existing research literature from the fields of literacy education, information science, cognitive science, library science, sociology, and educational technology to accomplish three main goals: 1) to identify the specific reading skills and strategies that individuals use when searching for information on the Internet; 2) to identify patterns of new literacies utilized when reading during an Internet search; and 3) to discuss the implications of reading on the Internet for classroom instruction.

## Background

Reading on the Internet differs in important ways from reading in traditional, print-based texts (Leu, Kinzer, Coiro & Cammack, 2004; RAND Reading Study Group, 2002). One important area where new reading skills are required includes searching for information. Reading search engine results, for example, requires new reading strategies for success (Henry, 2006). Because the Internet contains so much information and because it is a poorly structured information domain, searching for information becomes central to success and reading becomes critical to this process. Searching for information on the Internet, and the literacy requirements this involves, is a central aspect of the new literacies that will define our students' future (International Reading Association [IRA], 2001).

The IRA (2001) has urged the literacy community to turn its attention to the profound changes in the way in which we access information and communicate across networked systems of Information Communication Technologies (ICT) such as the Internet. "An intensive program of research on literacy and technology issues will enable us to better understand the rapid changes taking place in the nature of literacy and literacy instruction" (¶6). This organization calls on "all literacy researchers" to look to the Internet and other ICT and "consider how they might contribute" to address this central issue: *What new literacy skills are required by the new forms of ICT and how can we best support students in acquiring these new literacies?*

## Theoretical Framework

Research that prompted this work posits first that the ability to effectively locate and use information is an important basic skill for education and essential for success in the 21st century (Leu, et. al., 2004; Sutherland-Smith, 2002) and, second, that the results from a single search task on the Internet can produce an overwhelming amount of information, often causing frustration and a sense of information overload (Brandt, 1997; Eliopoulos & Gotlieb, 2003; Nachmias & Gilad, 2002). "Information is power, and there is speculation that the Information Age will replace the Industrial Age with information replacing goods as the commodity of value" (Stephens, 2001). The term "Information Age" portrays the changes taking place in today's global economy hence it is time for educators to take control of this revolution in their classrooms.

The IRA (2001) poses that in order to become fully literate in the 21st century, students must be proficient users of information communication technologies (ICT). The most critical component of being proficient with the new literacies of the Internet and other ICT is developing strategies for locating and retrieving information efficiently (Berkowitz, 2002; Eagleton & Guinee, 2002; Eagleton, Guinee & Langlais, 2003). Without these strategies, a virtual bottleneck can occur preventing the user from being able to access information and engage in the important learning opportunities the Internet can offer. Therefore, I argue that the ability to efficiently locate information is the most important function of reading on the Internet (Author, 2006) and, therefore, demands our attention.

## Research Methodology

Relevant literature for this review was identified by the following procedures:

- 1) The time period searched was 1980 to 2005, which encompasses 25 years of research.
- 2) Five online databases (ERIC, InfoTrac, PsycINFO, Sociological Abstracts, and WilsonWeb) were accessed to search with combinations of the following key terms: information, education, literacy, skills, strategies, search\* and Internet. These terms were also used to search on the Internet using Google Scholar (<http://www.scholar.google.com>) to obtain research in electronic journals.
- 3) As a first level of screening, all abstracts were scanned to identify potentially relevant publications of research studies that addressed the central topic: reading demands and new literacies required while searching for information on the Internet.

Following the initial searching phase and first level of screening, the research standards set forth in the National Reading Panel (2000) were used as a guide in a second level screening of research studies from each discipline area. However, this process was modified to include published, peer review, qualitative studies. Additionally, studies with participants of all ages were included from both in school and out of school settings.

National Reading Panel (2000)	Current Literature Review (2006)	Differences in Methodology Criteria
Published in English in a refereed journal	Published in English in a refereed journal	Included published conference proceedings from ASIS&T
Focused on children's reading development in the age/grade range from preschool to grade 12	Focused on children's use of the Internet for searching in the age/grade from preschool to grade 12	Included adult's use of the Internet for searching
Used an experimental or quasi-experimental design with a control group or multiple-baseline method	Used an experimental or quasi-experimental design with a control group or multiple-baseline method	Included qualitative and mixed methodology designs without a control group condition

Table 1: Comparison to National Reading Panel (2000) research screening methodology

The final set of research publications was critically analyzed in order to accomplish the project goals. Each research study was examined to recognize common themes and identify trends that emerged across disciplines in regard to reading on the Internet. Specifically, reading demands and literacy skills and strategies that are used during the search process were identified. Additionally, evidence of New Literacies (Leu, et al., 2004) was also recorded. This stage of analysis was conducted using NVIVO (diGregorio, 2000) for organizing the literature and documenting specific attributes of the research. Additionally, any gaps in the current body of research were documented in order to make recommendations for future research in this area.

#### Results and Conclusions

As Internet users engage in searching tasks on the Internet, they employ a number of literacy skills and strategies. Among these are specific reading strategies similar to those used when reading traditional informational texts (Dreher, 2002; Guthrie & Kirsch, 1987). Reading strategies included primarily: 1) skimming and scanning techniques, and 2) the use of visual cues, headings and pictures. Additionally, misspellings and lack of vocabulary knowledge were common obstacles that impeded the search process. In regard to New Literacies as defined by Leu, Kinzer, Coiro and Cammack (2004), evidence of the five functions of reading on the Internet (identification of an important question, searching for information, evaluation of information, synthesis of information, and communication) was well documented in the body of literature reviewed.

Improving reading comprehension is a critical national issue (RAND, 2002). However, issues related to comprehension and learning are most often framed in terms of conventional printed texts and academic tasks (Author, 2005). It is clear from the results of this project that an emphasis on reading skills and strategies that are required while searching on the Internet should be included in classroom instruction. Teaching students how to locate, read, and interpret search results on the Internet should be an important focus of reading comprehension instruction today as students are faced with new forms of text that the Internet provides. Just as literacy educators teach students to read different genres and text formats, from poetry to informational texts, it is important to teach students how to be a successful reader on the Internet.

#### References

- Henry, L.A. (2005). Information search strategies on the Internet: A critical component of new literacies. *Webology*, 2, Article 9.
- Henry, L.A. (2006). SEARCHing for an answer: The critical role of new literacies while reading on the Internet. *The Reading Teacher*, 59, 614-627..
- Becker, N.J. (2003). Google in perspective: Understanding and enhancing student search skills. *New Review of Academic Librarianship*, 9, 84-100.
- Berkowitz, B. (2002). Moving every child ahead: The Big6 success strategy. *Multimedia Schools*, 9, 17-22.
- Brandt, S.D. (1997). Constructivism: Teaching for understanding on the Internet. *Communications of the ACM*, 40, 112-116.
- Broch, E. (2000). Children's search engines from an information search process perspective. *School Library Media Research*, 3, 58-64.
- Christensen, E.W., & Bailey, J.R. (1998). Task performance using the library and Internet to acquire business intelligence. *Internet Research*, 8, 290-302.

- diGregorio, S. (2000, September). Using NVIVO for your literature review. Paper presented at Strategies in Qualitative Research: Issues and Results from Analysis using QSR NVIVO and NUD\*IST. Institute of Education, London.
- Dreher, M.J. (2002). *Children searching and using information text: A critical part of comprehension*. In C.C. Block & M. Pressley (Eds.) *Comprehension Instruction: Research-Based Best Practices*. New York: The Guilford Press.
- Eagleton, M.B., & Guinee, K. (2002). Strategies for supporting student Internet inquiry. *New England Reading Association*. Retrieved September 9, 2003, from <http://www.nereading.org/inquiryarticle/article.htm>
- Eagleton, M.B., Guinee, K., & Langlais, K. (2003). Teaching Internet literacy strategies: The hero inquiry project. *Voices from the Middle*, 10, 28-35.
- Eliopoulos, D., & Gotlieb, C. (2003). Evaluating web search results rankings. *Online*, 27, 42-48.
- Guthrie, J.T., & Kirsch, I.S. (1987). Distinctions between reading comprehension and locating information in text. *Journal of Educational Psychology*, 79, 220-227.
- International Reading Association. (2001). *Integrating literacy and technology in the curriculum: A position statement*. Retrieved March 3, 2004, from <http://www.reading.org/positions/technology.html>
- Leu, D.J., Kinzer, C.K., Coiro, J., & Cammack, D.W. (2004). *Toward a theory of new literacies emerging from the Internet and other communication technologies*. In R. Ruddell and Norman Unrau (Eds.) *Theoretical models and processes of reading* (5<sup>th</sup> ed.). Newark, DE: International Reading Association.
- Moore, P.S., & St. George, A. (1991). Children as information seekers: The cognitive demands of books and library systems. *School Library Media Quarterly*, 19, 161-168.
- Nachmias, R., & Gilad, A. (2002). Needle in a hyperstack: Searching for information on the World Wide Web. *Journal of Research on Technology in Education*, 34, 475-486.
- National Reading Panel. (2000). *Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and Its Implications for Reading Instruction*. (NIH Pub. No. 00-4769). Bethesda, MD: National Institute of Health. Retrieved January 9, 2005, from <http://www.nichd.nih.gov/publications/nrp/smallbook.htm#>
- Pew Internet & American Life Project. (2005, November). *Big jump in search engine use*. Retrieved December, 30, from [http://www.pewinternet.org/PPF/r/167/report\\_display.asp](http://www.pewinternet.org/PPF/r/167/report_display.asp)
- RAND Reading Study Group. (2002). *Reading for understanding: Towards and R&D program in reading comprehension*. Retrieved March 3, 2004 from <http://www.rand.org/multi/achievementforall/reading/readreport.html>
- Stephens, R.B. (2001). *Digital world: An Infobahn tourguide to planning information on the Internet*. Paper presented to the 37<sup>th</sup> International Congress, ISOCARP: International Society of City and Regional Planners, United Nations of Educational, Scientific and Cultural Organization. Retrieved January 11, 2005, from [http://www.unesco.org/most/isocarp/proceedings2001/cases/cs01\\_1440/planning\\_on\\_the\\_internet.htm](http://www.unesco.org/most/isocarp/proceedings2001/cases/cs01_1440/planning_on_the_internet.htm)
- Sutherland-Smith, W. (2002). Weaving the literacy Web: Changes in reading from page to screen. *The Reading Teacher*, 55, 662-669.
- Trotter, A. (2006, March). Plan to zero out U.S. technology grants draws fire. *Education Week*. Retrieved March 1, 2006, from <http://www.edweek.org/ew/articles/2006/03/01/25tech.h25.html?levelid=1000>
- Vansickle, S. (2001). Tenth graders' search knowledge and use of the web. *Knowledge Quest*, 30, 33-37.