

Editorial**Inquiry in the School Library:
A 21st Century Solution?****Carol A. Gordon*****School of Communication and Information,
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As we turn the corner on the first decade of the 21st century, debates about the future of the book and the library abound. While these are compelling questions, they are part of a larger phenomenon: technology is changing our information and reading behaviour. Literacy is no longer confined to the printed page; it is multi-modal. Learning in an electronic age presumes visual literacy, media literacy, and technological literacy. The electronic landscape challenges the conventions of traditional reading and what it means to be information literate. Academic subjects are targeting literacies that are specific to disciplinary knowledge that evoke deep understanding rather than superficial familiarity. Re-conceptualizing how we learn to read and write in print and electronic places and how we learn how to learn in new environments is the primary educational challenge. It has an immediate and powerful effect on what inquiry looks like in the school library and the kinds of intervention students need to be successful, active users of information. What are the implications for the instructional role of the teacher librarian and the place of the school library in 21st century schools?

Good Ideas or Bad Solutions?

Birkerts (1991) describes a multiple billion dollar international initiative by Whittle Communications, an initiative that brought commercially sponsored education packages into the classroom in the form of electronic media:

Participating schools would receive, free of charge, \$50,000 worth of electronic paraphernalia, including a satellite dish and classroom video monitors. In return, the schools would agree to air

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the show. The show would resemble a network news program, but with 18 to 24-year-old anchors. A prototype includes a report on a United Nations Security Council meeting on terrorism, a space shuttle update, a U2 music video tribute to Martin Luther King, a feature on the environment, a "fast fact" ('Arachibutyrophobia is the fear of peanut butter sticking to the roof of your mouth') and two minutes of commercial advertising. "You have to remember that the children of today have grown up with the visual media," said Robert Calabrese [Billerica School Superintendent]. "They know no other way and we're simply capitalizing on that to enhance learning." (Birkerts, 1991)

When the Whittle Corporation encountered financial difficulties, the project collapsed and was replaced with the Edison Project. In the U.S., Edison schools have grown to be the largest school district in the nation with 150 schools and 85,000 students in over 25 locations. Multi-grade groups of 100 to 180 students are taught in "academies" labeled primary, elementary, junior, senior, and collegiate by four to six teachers in 90 minute blocks for a 200- day school year. Children in the primary level are required to master traditional reading (i.e., print-based reading) and mathematics before they are promoted to the next academy. The Common, an Edison intranet, is the "textbook." Like the first Whittle initiative, Edison schools are privately managed for profit.

It is not unlikely that there will be many global and national initiatives like the Whittle experiments that view a digital revolution as an add-on. The transition to the co-existence of print and digital media is a seismic shift in reading conventions that is profoundly shaping information and the way we learn from it. Good educational decisions rest on a strong vision of what an effective 21st century education looks like, informed by a clear understanding of how information is processed and read in print and digital environments.

The Tension between Print and Digital Text

In his prophetic book, *The Gutenberg Elegies: The Fate of Reading in an Electronic Age*, Birkerts (1994) presents a clear distinction between print and electronic media. He characterizes print as a medium that invites re-reading and sustained attention needed for focus and comprehension. Print is linear, requiring active engagement of the reader as she translates the printed word and interprets symbols. Pacing is variable, depending on the reader's comprehension. Engagement in print is private for both the sender and the recipient of the message. Print travels on an axis of time as the reader turns the pages and descends vertically down the page. Understanding comes from the earlier context that lays the groundwork for understanding what is to come. In this static reading environment where print conveys a sense of permanency, the reader, not the book, moves ahead. The arrangement of print corresponds to a traditional sense of history where materials are layered and sequenced.

Electronic media, on the other hand, is the opposite (Birkerts, 1994). It is non-linear, encouraging a horizontal, rather than vertical reading pattern. Information and content are not in a private space, but travel in networks. Engagement is public, taking place within a circuit of large connectedness. This kind of communication can be passive (e.g., watching television) or interactive (e.g., communicating with Web 2.0 tools). The content of electronic media is mutable,

rather than permanent; it can be edited or deleted. The image dominates and creates a strong impression, taking precedence over logic and concept. Detail and a linear pattern are lost to this more random and often multi-sensory environment. The pace is rapid and the movement is laterally associative rather than vertically cumulative. Print conveys a sense of permanence, while electronic media reduces that sense of permanence to a signal that is a means to an end.

The infrastructure of print and electronic media determines how information is presented, setting expectations for how information is organized. Visual and non-visual electronic media increase awareness of an ever-changing present, working against the traditional, linear historical perspective. In short, electronic media tends to erode language, flatten historical perspective, and sacrifice the private self (Birkerts, 1994).

A study of the Google Generation (Rowlands et al., 2008) adds empirical evidence to Birkerts' hypothesis. The study sought to identify how the researchers born after 1993 will access and interact with digital resources within the next ten years by examining their information behaviour. The report rejected assumptions that the "Google generation" is information literate in digital spaces, despite their apparent facility in this medium. The longitudinal design of the study used the following methods to collect data:

- An evaluation of published literature on information behaviour of young people over the past 30 years;
- The identification of longitudinal studies;
- The gathering of fresh evidence;
- A broad sweep of literature on the information behaviour; and
- A large-scale literature based review of how new technologies, especially those relevant to this study such as Web 2.0.

Analysis of data included surveying extensive reviews of related literature, surveying data mining and deep log analysis of a web site intended for younger people (Rowlands et al, 2008). The findings of the study revealed that 89 percent of users start their searches with a search engine, while only two percent start from the library. The average times that users spend on e-book and e-journal sites are very short; typically four and eight minutes respectively. Information searching is characterized by skimming, scanning and squirreling, or hoarding, but not reading what is downloaded. New "forms" of reading are emerging as users 'power browse' horizontally through titles, contents pages and abstracts. Rowlands et al. conclude, "It almost seems that they go online to avoid reading in the traditional sense" (p. 294)

The picture that emerges from internet research is that most visitors to scholarly sites view only a few pages, many of which do not even contain real content, and in any case do not stop long enough to do any real reading. This is either a symptom of a really worrying malaise – failure at the library terminal—or maybe a sign that a whole new form of online reading behaviour is beginning to emerge, one based on skimming titles, contents pages and abstracts: we call this 'power browsing.' We urgently need to understand the root causes of this phenomenon. (Rowlands et al., 2008, p. 305)

Concerns about information handling and new reading patterns in library and information science research is echoed in other disciplinary areas. Wolf (2007), a reading researcher, claims that the medium of digital technology is changing the way we read and write. Our brains have the ability to re-program these processes, altering the way the brain functions and adapts to technology use. Wolf describes a new reading paradigm as decoding of information, with little comprehension. Our ability to interpret text, to make rich mental connections that are formed when we read deeply and without distraction, seems to be disappearing. Since reading is not an instinctive skill for human beings, Wolf concludes that minds must be trained to translate symbolic characters on the computer screen into a language they understand. She not only sees a connection between deep reading and deep thinking; she does not distinguish between them. Without reading there is no thinking (Wolf, 2007).

Carr (2008) describes deep reading that the printed page evokes:

The kind of deep reading that a sequence of printed pages promotes is valuable not just for the knowledge we acquire from the author's words but for the intellectual vibrations those words set off within our own minds. In the quiet spaces opened up by the sustained, undistracted reading of a book, or by any other act of contemplation, for that matter, we make our own associations, draw our own inferences and analogies, foster our own ideas. (Carr, 2008)

Can deep reading happen online, or does the electronic medium discourage focus and concentration?

School Libraries as Agents of Multi-Literacy

The dichotomy of print and electronic environments suggests that teaching multiple literacies is part of a 21st century education. "It is not a case of one or the other but of all forms of reading being incorporated into the curriculum in a variety of ways" (Brooks, 2008, p. 1). A national study by Scholastic surveyed children five through seventeen years of age in the U.S. who go online to extend their reading experiences (e.g., by going to author sites or connecting with other readers). The researchers found that these students are more likely to read books for fun every day. In the minds of students, books and computers are not mutually exclusive. They believe technology will supplement, not replace book reading, and say they will always want to read books printed on paper (Scholastic, 2008). The study concludes that technology can be used to engage children and young adults in reading. According to an Australian survey on literacy research, teachers agree: "Regardless of skill level, all of the teachers viewed ICT and computers in particular, as having enormous potential for literacy development" (Eakle & Garber, 2004, p. 356)

Where does a multi-literacy approach "fit" into the school's academic program? Who is prepared to teach these literacies across traditional and online formats? The research reported by Rowlands et al. (2008) makes a claim that is highly significant for school libraries:

There are two particularly powerful messages emerging from recent research. When the top and bottom quartiles of students--as defined by their information literacy skills--are compared, it

emerges that the top quartile report a much higher incidence of exposure to basic library skills from their parents, in the school library, classroom or public library in their earlier years. It seems that a new divide is opening up in the USA, with the better-equipped students taking the prizes of better grades. At the lower end of the information skills spectrum, the research finds that intervention at university age is too late: these students have already developed an ingrained coping behaviour: they have learned to “get by” with Google. (Rowlands et al., 2008, p. 302)

These findings convey a sense of urgency about when information literacy is most effectively taught. Teacher-librarians are positioned to do this. They have the technical teaching expertise to teach information skills in the context of inquiry learning that bridges all kinds of literacy.

A Leadership Vision for School Libraries

Rowlands et al. (2008) recommend a new vision for 21st century libraries:

The library profession desperately needs leadership to develop a new vision for the twenty-first century and reverse its declining profile and influence. This should start with effecting that shift from a content-orientation to a user-facing perspective and then on to an outcome focus. (p. 308)

School librarianship has a strong instructional tradition that has molded its vision of teaching and learning in the 21st century. The evolution from book-centered bibliographic instruction to learner-centric information literacy has matured in recent iterations of school library standards for learning around the world. The AASL *Standards for the 21st Century Learner* (2007) conceptualize information skills as thinking skills that lead to content specific learning outcomes. Todd (2002) advocates for evidence-based practice that takes a learning outcomes approach. The Canadian Association of School Librarians (CASL) developed *Achieving Information Literacy: Standards for School Libraries in Canada*, which won the International Association of School Libraries (IASL) Commendation Award in 2004 for an outstanding and innovative publication. The Australian and New Zealand Institute for Information Literacy (ANZIIL) supports organizations, institutions and individuals in the promotion of information literacy and, in particular, the embedding of information literacy within the total educational process. School librarians around the world are embracing an extended vision of information literacy that aligns information skills with thinking skills.

School librarians are positioned to meet the challenge of educating a generation that is learning differently from any other. A Task Force of the American Association of School Librarians developed a position statement on the reading role of the school librarian across traditional and online formats:

With a deep knowledge of the wide variety of authentic reading materials available in the school library media center and beyond, the library media specialist has a key role in supporting print and online reading comprehension strategy instruction in collaboration with classroom teachers and reading specialists. (American Library Association, 2009)

<http://www.ala.org/ala/mgrps/divs/aasl/aasliissues/positionstatements/roleinreading.cfm>

The Task Force also created the *Reading Role Toolkit* containing reading research and best practices (see ALA, 2009, <http://www.ala.org/ala/mgrps/divs/aasl/aaslissues/toolkits/slmsroleinreading.cfm>).

The explicit reading role of teacher librarians is part of the inquiry process. They have diagnostic teaching tools, such as the Information Search Process and the SLIM (Student Learning Impact Measure). They have a conceptual framework for intervening through Guided Inquiry (Kuhlthau, Maniotes, & Caspari, 2007). This technical expertise, otherwise known as best practice, is generated by school library practice that is evidence-based and research-based.

The Research

The leadership role that the school library profession has taken to build its vision for meeting 21st century teaching challenges is celebrated in this issue of *School Libraries Worldwide* through research that informs the teaching role of school librarians.

Kuhlthau discusses the effects of global interconnectedness, enabled by information technology, which calls for new skills, knowledge and ways of learning to prepare students for living and working in the 21st century. A Guided Inquiry approach supports the concept of instructional teams that enable students to learn through vast resources and multiple communication channels. As a result, school libraries are equipped to be dynamic learning centers in information age schools and school librarians are equipped with the vision and capacity to be leaders in 21st century teaching and learning.

Schmidt, Kowalski and Nevins present a case study that shows Guided Inquiry at work. The authors see inquiry through the lens of science as they craft an inquiry unit that brings information literacy and scientific literacy together. They engage students in a modified Scientific Literature Review (SLR) to immerse them in a scientific community populated by peer-reviewed studies. As their students read and interpret the sustained discourse of the scientists, Smith, Kowalski and Nevins study the evidence generated by student inquiry. This study models reflective practice as practitioners are empowered by the research process that helps them understand what works and how they can do it better next time.

Jones and Dobson view reflection from the point of view of the learner. They define it as a disposition to learning that is essential for inquiry learning. Examining reflection as a disposition recognizes the affective dimension of learning that is critical in increasingly complex information environments. They propose that students learn reflection through a process of modeling and provide a framework for developing students' disposition to reflect. In this article Jones and Dobson use theory to build a model for teaching students to be reflective and anticipate further research that will test the model. This is an important step in developing teaching methods that are empirically tested.

Arnone, Small and Reynolds also recognize that practitioners need empirically tested tools that enhance their teaching. They describe the development and psychometric properties of the *Perceived Competence in Information Skills* (PCIS) measure. This measure helps educators support student inquiry by identifying and addressing gaps in student confidence. Self-

determination theory lays the groundwork for testing the measure. The researchers offer recommendations for ways school library professionals can use the PCIS measure to assess the impact of their programs and services on students.

Small and Snyder test a research instrument they used in a three-phase impact study of New York public school libraries. This study follows a strong tradition of impact studies that alert the educational community to the powerful contributions of school libraries to learning. The article focuses on the design, development, and testing of a research instrument. Its implementation in the statewide library impact study is part of a multiple research methods design to investigate the school library's impact on student achievement, motivation for learning, and technology use, as well as a range of other variables.

Gordon takes a holistic view of school library instruction to develop a theory of evidence-based information literacy instruction. The article describes a culture of inquiry that emerges from interdisciplinary theory building that involves constructivist learning theory and action research that brings action and reflection together as a practitioner's tool for program improvement. The emerging theory states that action research is a tool of evidence-based practice and is a source of questions for the school library research community that addresses practical problems of instruction. This research agenda grows from practice and addresses the needs of the practicing school librarian as a teacher of inquiry.

This collection of articles explores 21st century challenges through research that studies inquiry learning, reflection as a disposition for students, reflective practice as best practice, the construction of theory and models, and development, design and testing of research instruments that enable future research. The thread running through the research stitches research and practice together to create solutions for 21st century teaching and learning.

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Author Note

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