Introduction

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THE DIGITAL LANDSCAPE FOR CHILDREN

Today children expect to find computers in libraries as much as they expect to find books (Douglas, 2002; Meyers, 1999; McIntyre, 2002; Hughes-Hassell & Miller, 2003). Young people assume it is normal to have access in their homes and schools to digital materials from such places as the U.S. Library of Congress, the Smithsonian, and their local public libraries. For school projects, home entertainment, and social experiences, children access and use digital tools and information as a critical part of their lives. Various studies show that young people (ages three to thirteen) have an extremely positive view of new technologies and believe that these digital tools can help them in defining their personal and cultural identities (Media Awareness Network 2000; Howe & Strauss, 2000; Manuel, 2002; Soloway, 1991; Walter, 2001). Children can better understand who they are in their increasingly complex multicultural world through the use of Internet resources (Howe & Strauss, 2000; Raseroka, 2003). Children can also be alerted to potential safety hazards (for example, violent crimes, environmental health hazards, Internet porn) through the use of technology (Walter, 2001, 2003). In addition, new digital information resources can foster learning that can challenge traditional educational structures and processes for children (Jonassen, Peck, & Wilson, 1999; Neuman, 2003; Walter, 2001).

Today's digital landscape can also be problematic for young people. Children see the world differently than adults; they have very different needs for technology and are quite diverse in their abilities, even in the age span of a few short years (Bilal 2002; Cooper, 2002; Moore & St. George, 1991; Siegler, 1998). Unfortunately, it is common that many new technologies do not take children's specialized needs into consideration, and therefore the access and use of digital materials can be challenging for

children (Druin, 2002). While there is an emerging and growing area of research that addresses these information science and technology issues for children, this work is still relatively new.

In 1997 a seminal issue of *Library Trends* was published that focused on "Children and the Digital Library" (Jacobson, 1997). At that time the Web was only four years old. A majority of public libraries and schools did not have access to the Internet, and the notion that children can contribute to the development of digital services was far from being discussed. Today things have changed. Online access for children has become commonplace, and researchers in various disciplines are interested in how children can contribute to designing future new technologies and new forms of libraries (Bilal, 2002; Large, Beheshti, & Rahman, 2002; Druin, 2002).

In This Issue

Based upon today's digital landscape, four questions are examined throughout the articles in this issue:

- How do new digital tools and materials impact children as information seekers, learners, and creators of their own digital experiences?
- How are the environments of children (for example, in homes, public spaces, school and public libraries) impacted by digital resources now available?
- How are children involved in changing new technologies, and what can be learned from these experiences?
- What new technologies are being developed, and how can these be used as building-blocks for future research?

In this issue some articles address many of the questions stated above, while other articles focus on one specific question more deeply. The articles' authors are many of the leading researchers in this growing yet still small field concerning children. Their work falls into two broad areas: issues concerning children's information access, and children's use of digital materials. All too often researchers consider just one aspect, yet children themselves are most interested in access issues when information use is possible (Druin et al., 2001). Therefore, this issue reflects the interests of children and offers both perspectives.

The first four articles focus on children's access to digital resources through information seeking in general or virtual reference experiences in particular. Eliza Dresang from Florida State University begins this issue by giving an overview of "The Information-Seeking Behavior of Youth in the Digital Environment." She uses the theory of "Radical Change" to discuss the challenges young people have in information seeking along with issues concerned with gender and the use of various story media. She explores the principles of interactivity, connectivity, and access to offer the reader

various perspectives on children's relationship with technology and digital materials. Dania Bilal from the University of Tennessee follows with her article, which focuses the discussion on "Children's Information Seeking and the Design of Digital Interfaces in the Affective Paradigm." Dania brings together an interdisciplinary body of literature to present a framework for considering the role that affect can play in children's information seeking. She also ties this to her own current research and presents findings from her empirical work with children.

The next two articles focus on a particular method of information seeking: virtual reference transactions. In "Teens Are from Neptune, Librarians Are from Pluto: An Analysis of Online Reference Transactions," the challenges of virtual reference experiences are presented. This empirical study by Virginia Walter and Cindy Mediavilla from University of California, Los Angeles makes use of virtual reference system transcripts to offer a glimpse into the information-seeking behaviors of teens concerned with homework preparation and the reference responses of librarians. This study suggests some important lessons not only for librarians but for the designers of virtual reference systems as well. Issues concerned with younger children and virtual reference are discussed further in the article "Just Curious: Children's Use of Digital Reference for Unimposed Queries and Its Importance in Informal Education" by Joanne Silverstein from Syracuse University. In her work, Joanne uses a different virtual reference system to understand what children's information-seeking experiences are like in informal learning settings. This empirical study points to specific areas of concern for children's questions, possible ways to address future new systems design, and critical issues for virtual reference librarians in the future.

The second section of this issue is focused on children's use of information. These articles are concerned with how people use digital resources in numerous contexts, including international locations, as well as how new resources should be designed for use in the future. The first article of this section discusses the "Initial Findings from a Three-Year International Case Study Exploring Children's Responses to Literature in a Digital Library" and is written by Sheri Massey, Ann Carlson Weeks, and Allison Druin from the University of Maryland. This article presents a case study with children from four countries and their reactions to reading books from a digital library. Insights are offered into children's use of digital materials, and possible research directions are suggested for children's recreational reading. The second article in this section is also a case study, but Claire McInerney from Rutgers University takes a broader look at using digital materials and studies an entire town's integration and use of technology. In her article, "Educational Inquiry and Creativity: Developing Digital Resources in Ireland's Information Age Town," she examines the challenges and successes in bringing technology into classrooms and curriculum.

The next two articles in this section review diverse literature with the goal of creating appropriate technologies and information structures for children. Linda Cooper from the Pratt Institute begins by discussing "Developmentally Appropriate Digital Environments for Young Children." In her article she brings together the literature on cognitive, physical, social, and emotional development to suggest that these factors can critically impact a child's ability to interact successfully with digital environments. She summarizes what should be done to address these findings with "design responses supportive of development." June Abbas from the State University of New York–Buffalo follows with her article focused on "Creating Metadata for Children's Resources: Issues, Research, and Current Developments." From a discussion of the literature, June presents the challenges of knowledge representation for children's information seeking and the possible approaches to creating metadata and controlled vocabularies to appropriately support young people.

The final article in this issue considers children's information use but with the goal to develop new, more appropriate technologies for children. In their article, "Interface Design, Web Portals, and Children," Andrew Large and Jamshid Beheshti from McGill University present their research experiences in designing new Web portals for children. By involving children in the design process along with more traditional research methods, Large and Beheshti propose a set of design guidelines for developing future new technologies.

In summary, what all of the articles in this issue have in common is a respect for children. Each of the authors appreciates how children differ from adults, what children's needs can be, and what impact this information should have on future research.

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