PAMELA SANDLIAN

Children's Library Manager
Denver Public Library
Denver, Colorado

The Kid's Catalog Project: Customizing Networked Information

CHILDREN AND NETWORKED INFORMATION

Why customize networked information for children? After all, children are more computer literate than adults. While adults often refuse to touch a computer, children will walk right up to one, compelled to explore, play, and see what makes it tick. Unfortunately, information that children find through a variety of online catalogs and databases is often overwhelming, complicated, irrelevant to their needs, and presented in a complex display that is difficult to read. Sorting out this overwhelming display of text, complicated by myriad screens of directions and indecipherable help, library locations, codes, call numbers, and subject headings, is difficult for adults and overwhelming for children. Customers who are experienced enough to know what a call number is have difficulty locating material once they have deciphered the bibliographic record. While the goal of most customers is to identify an accurate source of information and then locate the material on the shelf, finding the item on the online catalog is often the most difficult part of the process.

Organizing this explosion of information is a Herculean task. Helping people decipher the information puzzle is complicated, time-consuming, and labor-intensive. The clues to solving the puzzle are often so complex that professional librarians, with years of experience, have difficulty locating information and answering reference questions. This task becomes more significant when we recognize the vital necessity that children become sophisticated information users in order to succeed in the 21st century. The traditional library tour with a review of the Dewey Decimal Classification system no longer suffices as a means for teaching children how to use the library. The networked information available in libraries, homes, and schools is not only technically difficult to acquire, but a dull source compared to other media. A generation of children who have grown up with sophisticated computer games complete with 32-bit color graphics, not to mention painless ease of access to information and recreation via the television, are not satisfied with the text-based online catalog. Creating customized information for children that incorporates appealing color and graphics sets up a successful relationship between the child, the library, and the computer. It acknowledges the importance

of children's information needs while at the same time creating a package that excites them. Customizing networked information is a step towards helping children become sophisticated information users.

A beginning solution to this information conundrum is the Kid's Catalog. Developed by a team from the Denver Public Library and CARL (Colorado Alliance of Research Libraries) Systems, Inc., this Macintosh and PC software product interfaces with online library catalogs. This paper outlines the theoretical planning and research foundations of this library project.

FOCUS GROUPS

The project started with input gained from children in a series of five focus groups during the summer of 1990 at the Denver Public Library. Children and their parents told us they had difficulty understanding how to use the library. Children rarely asked for assistance from staff; in fact, they asked if we could make the librarians shorter (i.e., they would feel more at ease asking a peer for help). They wanted an environment that was friendlier, more accessible, more comfortable. The children asked that fiction be organized by subject, instead of by author. They wanted information in other formats besides books. The online catalog system, CARL, was difficult for children to decipher. They had difficulty spelling, typing fast enough to avoid the built-in time allotment limitations to searches, and formulating the right words to initiate a search. The successful searches indiscriminately provided hundreds of titles, both juvenile and adult, relevant and irrelevant. Once this display of materials was available, children had difficulty deciding which books held the most promise for their query. After a great deal of thought about children's information needs, it became apparent that the online catalog had to better reflect the information use and skill levels of children.

The results of these focus groups provided valuable information for the planning of the new Denver Public Library, scheduled to open in 1995. Every element of library service to children was examined in an effort to repackage the Children's Library. As the library staff and architects set out to design a library that would work better for children, the development of a children's catalog became a vital component of providing improved library service to children (Sandlian & Walters, 1991). With the technological advances available to us today, the online catalog showed potential for developments far beyond an "automated card catalog." The opportunity to add value to the online public access catalog (OPAC) by rethinking the display of information and the design of the screen was an intriguing challenge. The possibility for integrating graphics, sound, and video as part of the information displayed in the online catalog was limited only by production time, imagination, and cost. To not only assist children in their information searches but also to entice them to explore information became a goal of the Kid's Catalog. Producing an "expert system" to help children become independent users of the online catalog and the library took hold as a project for the Denver Public Library.

Given the charge of the library to explore these ideas, I pursued funding and began putting together a team to accomplish the project. After receiving

an Apple Library of Tomorrow Grant, which supplied the requisite equipment, Denver Public Library staff began working with CARL Systems, Inc., to build the next-generation library catalog. Paula Busey, Tom Doerr, John Duanne, and I became the collaborators in the development of "Kid's Catalog." Combining the knowledge of librarians and computer specialists was a unique approach to software development.

PRELIMINARY RESEARCH

Research began with an investigation of literature involving children and online catalogs. Although there is limited work in this area, a number of researchers greatly influenced and confirmed our original theories. Walter and Borgman's (1991) science catalog project at UCLA prompted HyperCard training and provided a design platform that was investigated, simulated, then completely redesigned. Edmonds and associates' research with children's use of online catalogs convinced us that catalogs should be designed to assist children in their use of the library (Edmonds, Moore, & Blacom, 1990). Kuhlthau (1988) reinforced our understanding of cognitive levels and the abilities of children and presented the idea that library services should be mindful of these abilities. Solomon's (1991) OPAC research with children provided a basis for conducting our own research with children.

CHILDREN'S RESEARCH STUDY

Funding through an LSCA grant provided resources to conduct research with children at three local elementary schools: Mission Viejo, a suburban elementary school in the Cherry Creek School District, and Park Hill and Edison Elementary, both urban Denver public schools. The purpose of the research was, first, to identify children's online catalog "breakdowns" (i.e., problems and failures) and, later, to evaluate the Kid's Catalog in relation to these breakdowns. This paper reports preliminary findings, particularly on the success of the Kid's Catalog.

The qualitative study was conducted through a combination of observations, interviews, and focus groups. The children were randomly selected from first- through fifth-grade classrooms at the elementary schools. Formal research took place in the school libraries with the support of the school media specialists.

Investigation began with an evaluation of the current OPACs. Two systems, NOTIS and CARL, were evaluated for their ease of use by children (see Figure 1). Seventy-seven percent of all transactions performed by children on NOTIS and CARL were not successful due to a number of breakdowns, including problems with spelling, keyboarding, computer procedures, and inaccurate queries or the inability to shift their search strategies (broaden or narrow the search or find an alternate term). Solomon (1991) summarizes these breakdowns into three categories: skill breakdowns, which include spelling, reading, and keyboarding; rule breakdowns, which involve misunderstanding mechanical requirements such as proper spacing, and author, title, and subject queries;
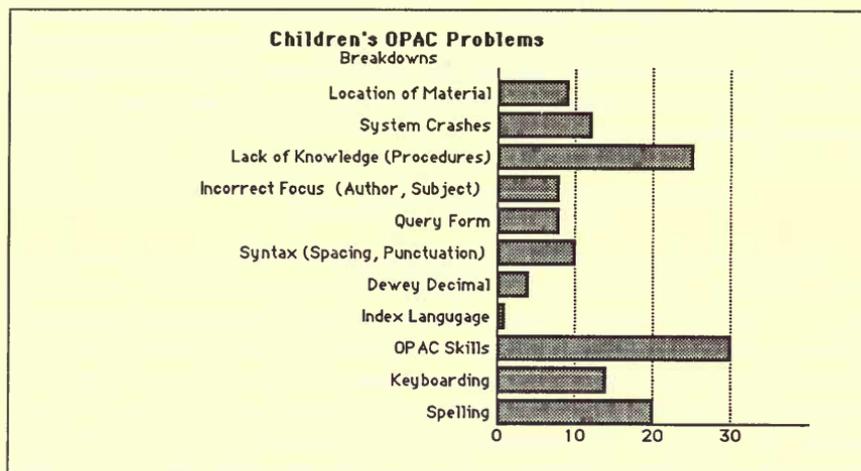
Children's OPAC Problems
Breakdowns

Location of Material			
System Crashes			
Lack of Knowledge (Procedures)			
Incorrect Focus (Author, Subject)			
Query Form			
Syntax (Spacing, Punctuation)			
Dewey Decimal			
Index Langugage			
OPAC Skills			
Keyboarding			
Spelling			

Figure 1. Study of children's use of CARL and NOTIS systems

and knowledge breakdowns, which include lack of content knowledge and inability to revise search strategies.

Interviewing children revealed a range of experiences in libraries. Some children try to find things on the OPAC, locate the author or a general call number, then go browse the shelf. Some children never use the online catalog but go directly to the shelf to browse. Some children successfully manipulate the online catalog but do not utilize any of the bibliographic information. Some children have mastered the OPAC and are quite successful at manipulating the catalog and the system, to the extent that they are even able to retrieve books at other library sites.

THEORETICAL FOUNDATIONS

Observing the repeated difficulties of children with these two OPAC systems provided valuable information for designing an interface for children. This information reinforced my experiences working with children in libraries over the past 15 years. Through observation, independent research, intuition, and thoughtful contemplation, I had been developing a theoretical foundation for the design and implementation of the Kid's Catalog. The following assumptions reflect commonly held views at libraries around the country regarding children as library users, information, and online catalogs. To create a new generation of library catalogs, it became necessary to challenge and rethink these assumptions.

Information

Assumption: More information is always better; the larger the pool of information, the higher the probability that you will find what you are looking for.

Reality: In certain subject areas, the ability to create a subset of information sources allows the researcher to manipulate a richer environment of materials that are specifically applicable to his/her needs. This is particularly true in literature environments for children. While the premise of intellectual freedom is always the overriding goal, allowing children a search option that provides an isolated selection of juvenile titles assists children in decision making. In public library settings, "getting rid" of the adult titles helps alleviate a large amount of noise that confuses children when they are looking for materials. Evaluating appropriate subject matter and reading levels is an added detail that is confusing to children who are trying to find a book about tigers, coyotes, or sharks. In a networked environment, the ability to create an information-rich pool of customized sources is critical to the successful search. The Kid's Catalog interface provides this option for libraries and users.

Assumption: All information is of equal value, and library professionals should not identify certain materials as more valuable than others.

Reality: Democracy of information is a misleading premise of intellectual freedom. All information is not equal, and library professionals are some of the best resources to assist customers in pinpointing the material that best suits their needs. We currently provide this service to the walk-in customer; why not create electronic pathways that re-create this knowledge? The Kid's Catalog design is modeled on the premise of continually adding value to the catalog information.

Online Catalogs

Assumption: Classification systems collocate materials logically by subject.

Reality: Classification systems force materials into single subject areas. Any shelving or placement of materials is a static placement. Information is dynamic; it is always changing or being connected and correlated in new ways. Technology allows us to create multiple collocation schemes by manipulation of the database. The design of the Kid's Catalog allows the information professional the flexibility to create connections throughout the database. The question of how to shelve the material, by subject or format, can be eased by a creative interface design that organizes information in multiple patterns.

Assumption: If you provide information on the screen, the customer will read it.

Reality: Users young and old do not read directions on the screen. The challenge is to design an interface that is so "user friendly" that directions are not needed. The Kid's Catalog design team minimized directions to a few words instead of providing sentences or paragraphs of online instructions. The language used in the directions has been tested with children to insure that it is understandable to them. The layout of the MARC record utilized color, larger fonts, and labels to assist children in deciphering the bibliographic information on the screen. Consistency in the interface design from screen to screen and a combination of intuitive and linear information paths create an online environment that needs few user instructions. This design is further enhanced by the addition of color graphics that communicate information and add a level of inquisitive frivolity and aesthetic appeal. With no coaching,

children as young as first grade can independently manipulate the Kid's Catalog within three to five minutes. Preliminary evaluation of the Kid's Catalog reveals a 69% success rate for children in first through fifth grade. Success is defined as an unassisted search that resulted in the child locating the bibliographic record.

Assumption: Only text-based bibliographic information should be available in an online catalog.

Reality: The almost daily advances of microprocessors and telecommunications create a sophisticated technology that provides dimensions of information storage and retrieval that were previously unthinkable. The virtual library is not a dream but a possibility. Information contained in book jacket covers, indexes, and tables of contents, as well as audio capability, are elements that were not included in the first version of the Kid's Catalog due to limited time and resources. Inclusion of these additional data elements in the MARC record would greatly enhance information retrieval in a networked environment. The communication of information should embrace graphics and audio capabilities.

Children as Library Users

Assumption: If children are ever to become successful at using the library and catalogs, they must learn the rules.

Reality: Providing education for library users is an important role for information professionals. The complexity of libraries, bibliographic records, Library of Congress Subject Headings, and search strategies is beyond the cognitive capabilities of most children, especially children younger than fifth grade. Fifth-grade students can begin to combine the information from several sources. This is an appropriate age to learn the Dewey Decimal Classification system, including how the decimal is used to create subdivisions (Kuhlthau, 1988). The Kid's Catalog is designed to introduce children to libraries in a successful, nonstressful manner. Many of the searches are entered "behind the scenes," so children will benefit from the knowledge of library professionals without having to understand complex search strategies or Boolean logic. A prescribed set of subjects and authors is provided for children based on their literature and their subject requests.

Assumption: Children are short adults with simple information needs. Materials don't need to be in order or categorized by subjects—they just go pick out any book.

Reality: Librarians and parents alike will tell you that the questions that come from children equal and often exceed the level of complexity found at an adult reference desk. The Kid's Catalog was developed out of a desire to provide customized access to a very specialized subject area. Adult reference staff shriek when children walk into the library and the children's librarian is not available. In times of staff cutbacks and increased professional generalization, the information needs of children do not get simpler—often they simply go unmet. The Kid's Catalog database has been created to respond to the multiplicity of topics that children request, including information on countries, weapons and wars, monsters, sports, biographies, rocks, planets, crafts, games, trains, planes, cars, riddles, and scary stories.

Assumption: Only nonfiction materials count; fiction is frivolous.

Reality: It doesn't matter how many facts are relayed, people will always remember the story. While there is currently an explosion in the quality and quantity of nonfiction publishing for children, fiction is consistently used to introduce, reinforce, and illustrate significant concepts. Whether children are learning geography, astronomy, or math, an appropriate story communicates additional levels of meaning. On its own, fiction provides recreation, comfort, solace, humor, and escape. Children have sophisticated reading requests that require a new concept in the online catalog: the online reader's advisory. The Kid's Catalog provides capabilities for connecting fiction with nonfiction categories; it also provides a database of recommended children's literature. This customizeable database currently lists award and multicultural categories, as well as children's favorite topics, including animal and scary stories. Recommending good books has always been an important role for librarians, and the computer can help us do it more effectively. Children who may be hesitant to ask a librarian for help can independently browse suggestions for reading in a manner that gives them an added sense of autonomy and privacy. Libraries can encourage children to create their own lists of recommended books for inclusion on the catalog.

Assumption: Only those who can type and spell should have access to an online database.

Reality: These mechanical functions hinder the access of information to a large pre-literate population. While many children have large verbal vocabularies, their writing, spelling, and typing skills lag behind their oral skills. The Kid's Catalog has created multiple access points that require no typing; emphasis has been placed on recognizing rather than correctly spelling their search request, whether it is an author, title, subject, or series request. Another problem, linked to children's cognitive abilities, is their difficulty in shifting search strategies once their initial option fails. In the Kid's Catalog, a database of over 5,000 options has been created that provides alternative relationships and search strategies. Observing children using the Kid's Catalog has demonstrated that they don't stop at one option if they do not find what they want—they continue to explore other avenues to find their desired information.

Assumption: Children work on online catalogs alone.

Reality: Children have a community network of information dissemination. They rely on their peers for information. Observing children working in the library reinforces this premise. Children gather around the online catalog as a group, prodding and assisting the child at the keyboard to help produce a successful search. They recommend favorite topics and titles, looking up the name of the book that their friend just read. The creation of a mechanism that allows networking ideas and information in school and library settings provides an exciting look into the future of global education. While the Kid's Catalog does not currently address the community networking needs of children, it is a perfect environment for creating such a scenario.

Assumption: The Kid's Catalog interface is just for children.

Reality: Nearly all of the problems children have in accessing information are paralleled in the adult information use realm. From physicists in Switzerland

to computer scientists in California, adults have little time, patience, or expertise when it comes to successfully manipulating the vast array of information currently available. When demonstrating the Kid's Catalog, one of the most frequently asked questions is, "When are you going to make one for adults?" Information professionals throughout the country have shown interest in adapting this concept for their varying clients and library settings.

Customizing online catalogs for children is a first step in creating successful information users in the future. Figure 2 represents the main menu screen of the Kid's Catalog and should provide a sample of the results of our customization efforts. By creating an interface that encourages children to use and explore information, we can encourage development of the skills necessary to manipulate and retrieve information. Information professionals play an important role in customizing information over the networks and in our libraries.

Figure 2. Main menu of the Kid's Catalog

ACKNOWLEDGMENTS

REFERENCES

Edmonds, L.; Moore, P.; & Blacom, K. M. (1990). The effectiveness of an online catalog. *School Library Journal, 36*(10), 28-32.

Kuhlthau, C. C. (1988). Meeting the information needs of children and young adults: Basing library media programs on developmental states. *Journal of Youth Services in Libraries, 2*(1), 51-57.

Sandlian, P., & Walters, S. (1991). A room of their own: Planning the new Denver Children's Library. *School Library Journal, 37*(2), 26-29.

Solomon, P. (1991). Information systems for children: Explorations in information access and interface usability for an online catalog in an elementary school library (Doctoral dissertation, University of Maryland, College Park, 1991). *Dissertation Abstracts International, 52*, 1927-A. (University Microfilms No. DA9133166)

Walter, V. A., & Borgman, C. L. (1991). The Science Library Catalog: A prototype information retrieval system for children. *Journal of Youth Services in Libraries, 4*(2), 159-166.