

The Role of Books, Libraries, Technology, and Culture in Children's Lives: An International case study

April 30, 2004

Allison Druin

University of Maryland
Human-Computer Interaction Lab
College of Information Studies
Room 4121H Hornbake Building
College Park, MD 20742 USA
Phone: +1 301 405 7459
Fax: +1 301 864 7335
allisond@umiacs.umd.edu

Submitted to:

Library and Information Science Research

Abstract

Libraries can be a critical part of a child's world. Yet few researchers have investigated the concerns of children and what they can contribute to understanding and designing future new libraries. This paper presents a case study of 12 children who live in one of four countries: Germany, Honduras, New Zealand, and the U.S. By conducting interviews with children, their parents, teachers, librarians, and principals, as well as collecting drawings from children, this case study describes the role of books, libraries, technology and culture in these children's lives. Findings from this study include: these young people see informal reading as important; are keenly aware of the physical limitations of library spaces; appreciate and continually go to their school libraries; use technology (e.g., Internet applications or local software) for entertainment, social experiences, schoolwork, and personal empowerment; and, if living in the U.S, have a strong appreciation of public libraries.

1. Introduction

Researcher: *If you could wave a magic wand over the (school) library how would you change it?*

Child (8 yrs. old): *What's a magic wand?*

R: *I guess you could say it's a stick that some people think has special powers to change the world just by wishing.*

C: *Is it real?*

R: *I'm not really sure. Why don't I ask my question in a different way: If you could change the library how would you do it?*

C: *Oh, that's easy, I would change the floor into grass. I've always wanted to read a book sitting on the grass, but it's not safe.*

This eight-year old boy lives in inner-city Chicago, and attends a U.S. public school. He has never been to a public library; and has never heard his mother read to him as a child. Yet, when interviewed in his local school library, he had many ideas of how to change the world of libraries and books, some practical and others quite fanciful. This boy was one of 12 children asked to join a four-country study that began in Spring 2003, to better understand the role of books, libraries, technology, and culture in children's lives. The goal of this research was to understand how these resources might play a part in various social contexts for children and what patterns of behavior might be supported.

This study was initiated by an interdisciplinary research team at the University of Maryland, when this group embarked upon developing the International Children's Digital Library (ICDL), <http://www.icdlbooks.org> (Druin, In Press; Druin et al., 2003). The mission of this five-year project, launched in Fall 2002, was to select, collect, digitize, and organize children's books and to create appropriate technologies for access and use by children ages 3-13. From the onset, the team believed that this research needed to be shaped by an understanding of children as technology users, book readers, and library visitors (Druin, 2002). However, few researchers have investigated the needs of children and what they can contribute to understanding new forms of libraries (Dresang et al., 2003; Dresang & Gross, 2001; Druin, In Press; Meyer, 1999; McIntyre, 2002). Because the ICDL offered an international collection, the team was also interested in understanding how children perceived other cultures (e.g., local customs, holidays, languages). In addition, because children from around the world could access the ICDL, it became obvious that the team needed to work with young people from diverse parts of the world. This research participation extended not only to children, but to their parents, teachers, librarians and principals.

Therefore, over the past year, the team has spent time in Germany, Honduras, New Zealand, and the U.S. The team has pursued three central research questions:

- What roles do books, libraries, technology and culture play in children's lives?
- How are these roles similar or different across four countries?
- How do children want to change libraries and technology?

It should be noted that a “role” may be defined for the purposes of this study, as a contributing factor to a child’s social context and it may suggest certain initiated or supported behaviors. The sections that follow present the interdisciplinary research that informs this study, the methods and findings for this case study, and the implications of this research for the design of future new libraries.

2. The Research Landscape

A diverse research landscape contributes to the context of this study. The discussion that follows weaves together three themes:

- (1) the emerging diversity of a child’s world,
- (2) books and libraries in this world for children,
- (3) the use of technology by young people.

Preparing children for ethnically and culturally diverse experiences is an important concern (Bakken & Dermon-Sparks, 1996; Thorhauge, 2003). Everyday the news media report misunderstandings, intolerance, or outright aggression between people from different races and cultures. Children can absorb these stereotypes or misinformation to spur on continuing intolerance (Thorhauge, 2003). Thus it is important to teach children about other cultures at a very young age. This can be done through reading diverse children’s books (Agosto et al., 2003; Web, 1990) and through the use of technology (Howe & Strauss, 2000; Raseroka, 2003). Regardless of the means, it is important that children have the ability to identify with, empathize, and/or critique real-life people or fictional characters to help young people better understand the world around them and their own identity (Bettelheim, 1976; Campbell, 1988; Erikson, 1950; Patte, 2002; Sabljak, 2003). Developing books and technology that support multicultural audiences and their awareness of diversity is no small challenge (Agosto et al., 2003).

Questions concerning the role of books and technology in children’s lives have been raised by parents. According to a recent Kaiser Family Foundation study of over 1,000 U.S. parents, “Reading or being read to remains a constant in most children’s lives” (Rideout & Watella, 2003, p.9). Approximately 80% of children 0-6 years of age read or are read to in a typical day. When books play an important role in young people’s lives, research has shown an increase in children’s cognitive, social, and motivational development (e.g., Cass, 1967; Ellis & Brewster, 1991; Grugeon & Gardner, 2000; Malkina, 1995; Wright, 1995)

However, a growing number of parents feel that there may be trade-offs between “reading books” and “using a computer” that could result in compromising their children’s learning experiences (Rideout & Watella, 2003). Yet, other research shows that the presence of technology may actually increase the presence of books in people’s lives living in the U.S. (American Libraries, Dec 2003; Thorhauge, 2003). This same trend was seen in Denmark in the early 1990s when Internet access was made available in Denmark’s public libraries and library users increased substantially (Thorhauge, 2003).

Over 20 years ago, the U.S. Congress authorized the Library of Congress Center for the Book to study “the changing role of the book in the future” (Cole, 2003, p.4). A central conclusion of the study focused on the threat, not of technology but of the inability to read and the lack of will to read (Cole, 2003). Since that time, major initiatives have been developed to inspire children’s interest in books and reading, many in the U.S. coming out of the Center for the Book (e.g., book festivals, reading promotion partnerships) (<http://www.loc.gov/loc/cfbook/>) and the American Library Association (e.g., book awards, lobbying efforts, and library campaigns to promote the value of libraries) (<http://www.ala.org/>).

However, thanks to tightening budgets, library services and programs are being cut or are not being developed, and examples of this can be seen throughout the world. Researchers found budgets to be so limited in South Africa’s school libraries that new services are being developed in public libraries to compensate (Hart, 2003). Similarly in Croatia, public libraries have been used creatively to supplement needed services. For example, a program of “bibliotherapy” has been established to support children of war-torn experiences with books and art therapy (Sabljak, 2003). In the Arab country of Oman, there were almost no schools 30 years ago and by extension, no libraries in schools. However, there are now over 1,000 established schools in the country and all have school libraries. But even with this change, there is still limited funding for professional development, therefore librarians either have little or no educational experience, or have no formal training in library science (Moore, 2003). This is similar to New Zealand where few librarians are formally trained, but partnerships are developed among teachers, part-time staff, parent volunteers, and even students to support their school libraries (Moore & Trebilock, 2003). Even in such economically stable countries like the U.S., library programs are increasingly being cut due to limited government funding (<http://www.ala.org/ala/aasl/aaslissues/aasladvocacy.htm>).

Yet, despite the lack of support, research has shown that school libraries can have a positive effect on student achievement in schools (Dresang, & Kotrla, 2003; Ireland, 2001; Lance, et al., 2000; Lance, 2002; Michie, & Chaney 2000). However, what the research does not offer is an understanding of children’s concerns about books and libraries from differing nations and culture. Typically these studies focus on just one country’s library structures, user experiences, and/or social landscape. Diverse social, economic, and political structures suggest the need to better understand various kinds of users, their libraries and information tools.

3. Methods

This section presents the qualitative approach taken in this case study. Following this a discussion of the study settings, participants, the data sources and analysis procedures are presented.

3.1 Methodological Approach

As Bogdan & Bilken (1998) suggest, “a qualitative researcher does not put together a puzzle whose picture she already knows; rather she is constructing a picture that takes shape as she collects and examines pieces of data” (p. 47). This has been the research path in this study. The team has chosen to use qualitative methods that follow the case study tradition.

In approaching this research, one critical goal has been to attempt to understand the research topic from the perspective of the study participants. This is novel and essential because few studies take into account the point of view of children, and still fewer consider how children can contribute to the design of future new libraries and information resources (Dresang et al., 2003; Dresang & Gross, 2001; Druin, In Press; Meyer, 1999; McIntyre, 2002).

3.2 The Study Settings and Participants

This study took place from Spring to Fall 2003 in four locations: Munich, Germany, La Ceiba, Honduras, Wellington, New Zealand, and Chicago, IL, USA. The site selection process began when the team identified a range of backgrounds and experiences to study in children (e.g., varying ethnic and economic backgrounds, attending schools with a range of pedagogy, and at an age where the team could follow the children’s progress in subsequent studies). The team looked to find sites that were distributed throughout the world, yet whose language could be understood by English and Spanish speaking researchers. Based on these criteria, and the interest of the local populations, four sites were selected. It should be noted that these sites were not selected because they necessarily represented their local populations, rather that they offered the study a diversity of participants and settings.

The children that were selected for participation were chosen by one or more of the following local school professionals: classroom teachers, librarians, and/or principals. Each location’s staff was given a short summary of the research project and the selection criteria. In all, 12 children were selected: five boys, and seven girls, representing eight ethnic backgrounds. All were eight years-old at the time the study started.

A profile of each study site and its participating children are summarized briefly in Table 1 that follows:

Table 1: Summary of sites and students selected for study

Country:	Germany	Honduras	New Zealand	U.S.A.
City:	Munich	Le Ceiba	Wellington	Chicago
Public/Private:	Private Int. School	Private School	Public School	Public School
Student Ages:	Pre-K (age 3) to 12 th grade (age 18)	1 st grade (age 6) to 12 th grade (age 18)	Kinder (age 5) to 8 th grade (age 14)	Infant (6 months) to 8 th grade (age 14)
Student Population:	-600 students -65 nationalities -mid-high income -majority intact families	-300 students -primarily Spanish -middle income -majority intact families	-250 students -22 cultures -low-mid income -majority divorced families	-800 students -African-American -low income -majority single-mother families
School Curriculum:	-International Baccalaureate Program -taught in English & German	-more traditional teacher-driven lessons -taught in English & Spanish	-child-centered constructivist pedagogy -taught in English & Maori	-teacher-centered with focus on discipline -taught in English
Library:	2 libraries with 10,000 books total	1 library with 10,000 books (50% outdated)	1 library with 6,000 books	1 library with 7,000 recently purchased books
Facilities:	-technology-rich -expansive physical space	-partial technology integration -expansive physical space with security	-lack of technology -lack of physical space	-technology-rich -expansive physical space (new building)
Parental Involvement:	-Parent advisory group	-Parent advisory group	-Parent Board of Trustees who hire/fires school staff	-Parent-Teacher Association (PTA)
Child Research Participants:	-1 German -1 German/British -1 British -2 girls & 1 boy -all speak English & German	-all Spanish -2 boys & 1 girl -all speak English & Spanish	-1 Maori (indigenous tribal culture) -1 British/Indian -1 continental New Zealander -2 girls & 1 boy -all speak English	-all African-American -2 girls & 1 boy -all speak English
Adult Research Participants:	-6 parents -1 teacher -2 librarians -1 principal	-6 parents -1 teacher -1 librarian -1 principal	-3 parents -2 teachers -2 librarians -1 principal	-3 parents -2 teachers -1 librarian -1 principal

3.3 Data Gathering

A four-person team was involved in data gathering and analyzing which included researchers from a range of ethnic backgrounds with diverse educational and professional experience. All children, their parents, teachers, librarians, and principals were interviewed separately concerning books, libraries, technology and culture [see Appendix for interview questions]. To better understand the perspective of children, artifacts were also collected. With this holistic approach to data collection, the goal was to enable children to feel more comfortable participating and contributing their unique perspectives (Neuman, 2002).

The interviews which ran between half an hour and one hour in length were tape-recorded, and a majority of the time notes were taken by an additional person (not the interviewer) who then used the recordings to fill in any missed data. If an extra note-

taker was not available at the time of the interview, the interviews were later transcribed from tape. All interviews used a question form which included a series of open-ended questions. However, additional questions were asked if the interviewer felt information or explanation was needed.

Children were also asked to answer four open-ended questions by drawing their answers, each on a different sheet of paper. These questions reflected the four areas of questions they were asked in their interview:

- What do you do for fun?
- What kinds of things do you do in your school or public library?
- If you could make a computer of the future what would it be?
- If you could live anywhere in the world, where would it be?

In three out of the four sites, children completed these questions after the researchers left the site. Some children worked with their parents to complete drawings, others worked with their teacher or librarian, and others worked alone. All were told that the answers to the questions needed to be the child's alone, and any help they received from adults were in the form of reading, spelling, grammar, or encouragement to complete their drawings.

3.4 Data Analysis

The following data sources were analyzed for this study:

- 46 interviews:
 - 12 with children
 - 6 with teachers
 - 18 with parents
 - 6 with librarians
 - 4 with principals
- 48 drawings from 12 children

The unit of analysis for the interviews was considered to be a “verbal episode” (LeCompte & Schensul, 1999, p. 58). This meant that no particular length was stipulated for analysis but just that an idea was put forth and was ended when a distinct new topic was presented. The data was coded by “occurrence of category” for each child rather than “frequency of occurrence within categories” (LeCompte & Schensul, 1999, p. 63). Codes also emerged in the data by “patterns of omission,” when none of the participants at a particular site discussed a certain topic which was discussed by other countries’ participants (LeCompte & Schensul, 1999, p. 58). Multiple codes were also used to describe the data. In many cases, interview data from a teacher or parent was used to validate or further detail the interview data from the children. In addition, all direct suggestions for library and technology changes were noted.

The interviews were first read by the author of this paper and an initial coding framework was generated adapted from grounded theory analysis methods of “open coding” (Strauss

& Corbin, 1990). The only limitation placed on code generation was to focus on categories concerning the four areas of interest: books, libraries, technology, and culture. Once these codes were developed, they were then used by the research team's two graduate students to analyze the interview data more deeply. Sample data was used to compare the consistency of coding and the application of codes. Once an agreement on coding was established, the codes were revised and reconciled. This was done until the data was "saturated" (Strauss & Corbin, 1990) and no further refinements were found. Then artifact analysis was done on the children's drawings. The same codes were applied to the drawings, and again multiple codes were used when appropriate. These findings were used to validate the analysis of the interview data.

4. Findings

By analyzing interviews with the children their parents, teachers, librarians, and principals, *nine* codes emerged relating to **books, libraries, and technology**, and *four* codes emerged relating to **culture** [See Appendix II for full code definitions]. The number of children at each site who generated data where these codes or roles emerged is presented in Tables 2, 3, and 4. It is important for the reader to understand that children were not specifically asked about each role; rather these were the codes that were generated from more generalized questions concerning books, libraries, and technology. It should be noted that for example, books may also play other roles in these children's lives, but the research participants did not mention those roles in their statements or drawings.

Table 2: Number of children at each site where roles emerged for **Books and Technology**

Roles	Books				Technology			
	GY ¹	HO	NZ	US	GY	HO	NZ	US
Economic				1				
Empowerment		2	2	1	1			
Entertainment	3	3	3	2	3	3	2	2
Escape			1	1				
Family	3	3	3	2	1	1	1	
Schoolwork	3	3	3	2	3	3		
Social	3	3			1			
Sole access								
Not important								1

1. GY = Germany; HO = Honduras; NZ = New Zealand; US = United States.

Table 3: Number of children at each site where roles emerged for **Public and School Libraries**

Roles	Public Libraries				School Libraries			
	GY ¹	HO	NZ	US	GY	HO	NZ	US
Economic								
Empowerment			1			1		
Entertainment				2	3	3	3	2
Escape								
Family			1	2	3	2		2
Schoolwork				2	3	3	3	2
Social						1		
Sole access								1
Not important	3	3	2					

1. GY = Germany; HO = Honduras; NZ = New Zealand; US = United States.

Table 4: Number of children at each site where roles emerged for **Culture**

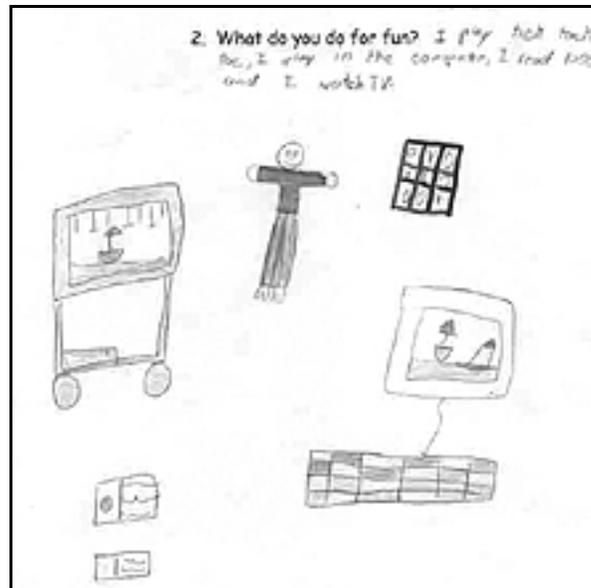
Roles	Culture			
	GY ¹	HO	NZ	US
Embrace my culture	3	3	3	
Embrace others' culture	3	3	3	
Not important but some understanding				1
Not important & little understanding				2

1. GY = Germany; HO = Honduras; NZ = New Zealand; US = United States.

In the sections that follow, the roles that books, libraries, technology and culture play in the study's children will be contrasted and summarized based on the codes that emerged from analyzing the interviews and the confirming drawings.

4.2 Books

All of the study's children, except for one boy in the U.S. (Chicago), read books for personal entertainment (see Table 2). Children reported reading in bed, lying on the floor, sitting in a treehouse, even reading in a closet. In response to the question, "What do you do for fun?" at least one child at each site drew books (see Figure 1). One boy in Honduras was so caught up in reading his books for entertainment that his mother pointed out, "The last time he got into trouble was because he wanted to finish his homework or his test early so he could go and read the books."



[Figure 1- Example drawing from a child in Honduras showing what he does for fun: "I play tick tack toe. I play in the computer. I read books, and I watch TV."]

The one boy who did not report reading for entertainment was also the only child in the study where books played no role in his family life (e.g., his mother never read to him as a child and never took him to the public library). Books can also help children escape from family life. For example, one girl in New Zealand suggested, "...sometimes when my mum and I have a fight or like that, then I turn my music up and read...When I get annoyed I read."

Books also played a critical role in many of the children's school experiences. Children talked about using books for reports on local heroes, projects on ancient Egypt, and acting out Russian plays. For many of the children their ability to read added to a sense of personal empowerment. One boy in New Zealand explained, "I take out books, but most people only get out two. But better readers like *Caroline** and me get out three very often."

To compare the kinds of books the children liked to read, researchers asked each child to show them example books in their school library. For all of the children outside of the U.S., they showed books that were published in many different countries (e.g., U.S., Australia, Mexico, UK). However, for the children in the U.S., the books they showed were published in the U.S. For all of the study's children, fiction and fantasy were by far their favorites (e.g., *Harry Potter*; *Brain Drain*; *Dream Master*; *Battle of the Atlantic*; *Becky Bananas This is Your Life*; *When Sophie Gets Really Really Angry*). A mix of picture books and chapter books were presented reflecting the transition children at this age are making in their reading development.

* The children's names have been changed to protect their privacy, but the assumed names still represent the cultures or countries they come from.

4.3 Libraries

The most common similarity among all of the study's children was the importance of school libraries in their lives (see Table 3). In almost all cases, the children's drawings that depicted their libraries were that of their school libraries, not public (see Figure 2 for example). For one boy in the U.S., the school library was his sole access point for books, "I don't have much books at home and my mom and me don't go to the public library....but at the school library I can get what I want."



[Figure 2- Example drawing from a child in Germany: "I read and play games on the computer"]

When children described their use of school libraries, their descriptions were most similar if they came from either of the study's private schools in Honduras or Germany. Children from these schools used their school libraries extensively for schoolwork, personal entertainment and social experiences. Books were not the only tools mentioned. In Germany, the children talked about using the library computers for entertainment (e.g., surfing the web, playing games).

In contrast, the study's children had diverse relationships with their *public* libraries. Only in the U.S. were public libraries consistently used by more than one child. As one U.S. girl explained, "I go on some Saturdays, me and my momma. We check out books and I play on the computer. We go to the downtown library. Sometimes they have puppet shows that tell stories." However, in Honduras none of the study's children used the public libraries. The librarians and teachers explained that the resources are so lacking for public libraries in Honduras that even their school's significantly outdated collection far exceeds what is offered at the public library. In Germany, two of the children had gone to public libraries in the past but did not currently frequent them, and one child went to the public library a few times a year as a part of their family activities. This was also the case in New Zealand where two of the children had gone to public libraries in the past, but when they became school age, the school library fulfilled their needs.

In all of the cases where the children did use their public libraries, it was an integral part of their family life and socializing. To a lesser extent, the children used the public library for school work. Only in the U.S. did the children mention going to public libraries to use computers and access the Internet. For example in New Zealand, public library computers were used only “to find books.” As one boy explained, “Not often do I use the computer because I know where to go to find the books.”

The children in all locations suggested numerous ideas for changing their libraries. In addition to the boy in the U.S. who suggested grass for the floor of his library, a boy in Germany suggested that he “...would change the floor into a soft place, full of soft things.” In New Zealand, two out of the three children suggested a larger “floor space” for reading. Easier access to books was also mentioned by a number of children, particularly in Honduras where the library book shelves actually went right up to the ceiling, so the only way to retrieve some books was to stand on a ladder. In Germany, one girl suggested access using “magic shelves that would organize the books the way it makes sense.”

4.4 Technology

Something that was mentioned quite consistently among all of the study’s children, except one boy in the U.S., was that computer applications were used as tools for personal entertainment and socializing (see Table 2). From Saturday mornings at home to school recess time, children and their parents and teachers talked about using computers for something other than school work. This was also quite clearly reflected in the children’s drawings (see Figure 3).



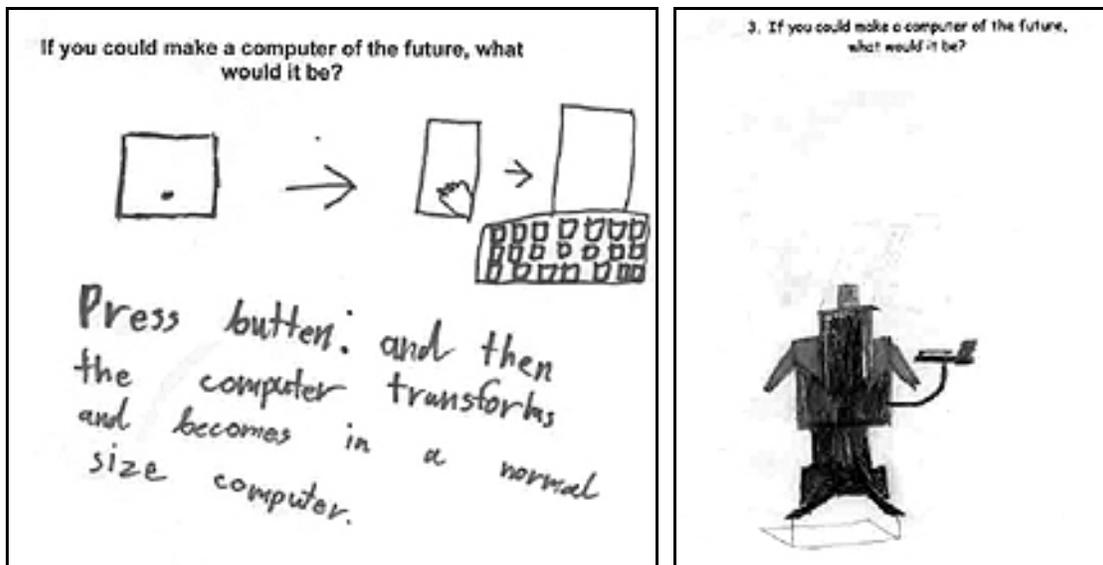
[Figure 3- Example drawing from a child in New Zealand: “Full of GAMES!”]

In Honduras, one girl pointed out, “Sometimes at recess I go with one of my friends [to the library] and we play on Disneychannel.com.” In the U.S., the two girls in the study

reported going to the public library to play computer games, “I go to the public library with my grandma, sometimes after school, a few times a week. First me and my grandma use her library card to get on (computer) games and then when it is time to go I pick out books.”

However it was only with the study’s children in the U.S. that home computers were considered to be a luxury. For the children in the private schools in Honduras and Germany, computer technology was an integral part of their school work, family life, and entertainment.

When children were asked for suggestions of how to change technology for the future, two children from Honduras replied “make them work” (possibly due to the age and inconsistent working condition of the computers in their library). Overall, the children in their interviews tended not to offer much in the way of significant changes to technology. However in their drawings, children suggested far more fundamental (and sometimes fanciful) changes to computers’ physical size, shape, and wires (see Figure 4). Such innovations as “transforming” computers from book-sized technologies to desktop computers were suggested, along with wireless computing and robotic creatures.



[Figure 4-Suggested changes to computers from (left) a child in Germany: “Press a button and then the computer transforms and becomes in(sic) a normal size computer”, and (right) a robot from a child in Honduras]

4.5 Culture

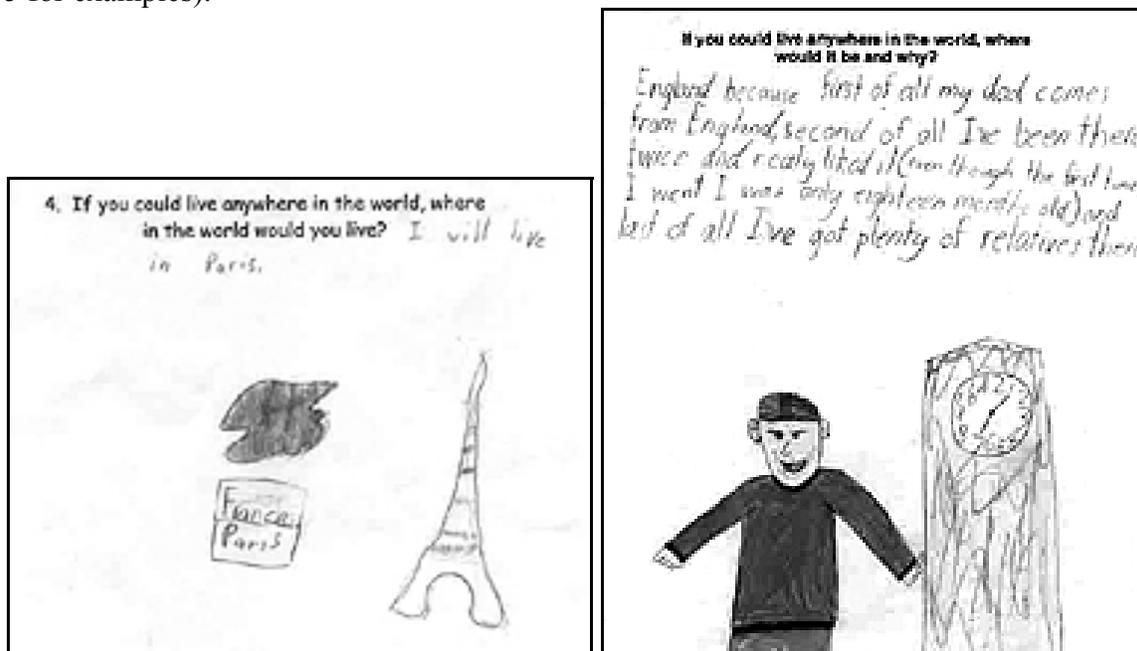
All of the study’s children in New Zealand, Honduras, and Germany expressed some form of appreciation for their cultural identities as well as the culture of others (see Table 4). These children were also quite well-traveled. Even for the less wealthy public school children in New Zealand this was still the case.

For children in New Zealand and Germany who went to schools with a great deal of ethnic diversity, others’ cultures were celebrated and a part of the very fabric of their school lives. From school-wide plays with songs and dances from indigenous culture, to

classroom projects that represent the 65 countries the children come from, these children are surrounded with cultural diversity. Even in Honduras where there was less cultural diversity, there was still an awareness and interest in other cultures and this was seen in the children's interviews where they easily discussed their perceptions of other cultures. For example when one girl was asked what children are most like her, she answered, "Maybe in California, maybe because they like to read a lot and they speak English."

In contrast, the study's children from inner-city Chicago in the U.S., when asked these same questions, described people in their own neighborhoods. One girl explained, "Most different from me are at my friend's house in Chicago. They are different people around there. Their cousins even look and act different." It was only the boy from the U.S. who understood cultures outside of his own. His mother works as a beautician with women from Africa. According to his mother, he spends a good deal of his time talking with the women after school.

The children's drawings also reflected their very different way of seeing the world. When asked where they would live if they could anywhere in the world, the children in the U.S. drew pictures of children in the states, and the children outside of the U.S. mentioned such places as Paris, Australia, Disneyworld, Miami, and England (see Figure 5 for examples).



[Figure 5- (left) Example drawing from a child in Honduras that suggests: "I will live in Paris" (right) Example drawing from a child in New Zealand who would live in England, "because first of all my dad comes from England, second of all I've been there twice and really liked it..."]

5. Discussion of Findings

In the sections that follow each research question will be discussed as it relates to the study findings.

5.1 What roles do books, libraries, technology and culture play in children's lives?

Nine roles emerged from the data describing books, technology, and libraries, and four roles emerged from the data describing culture. Not surprisingly, these roles ranged from school-related to family-oriented to social experiences, all important aspects of children's lives. The most commonly occurring roles to emerge from the data were in the areas of entertainment, schoolwork, and family. In other words, books, technology, and libraries all played a role in entertaining children, supporting them in their schoolwork and bringing their families together. Books and technology also played a role in empowering children and supporting them as they developed their self-image, however this did not emerge as strongly in the case of libraries. This may perhaps be that the library was seen more as a place to use books and technology, which can be empowering, but not in its own right. The most interesting data to emerge was in the occurrences of the role of "not important." Only in the data concerning public libraries did this emerge strongly for children. In the section that follows this will be further discussed as it pertains the differences between countries.

5.2 How are these roles similar or different across four countries?

Children in this study, no matter the culture, family background, economic status, or experience with technology had one thing in common, their appreciation for the role that school libraries played in their lives. For each country's children these libraries were critically important, at times, being the only access to books and materials they could have. On the other hand, it seemed that the children with differing socio-economics status discussed books, libraries, technology and culture in very different ways. What was most interesting was that the children in Honduras and Germany (the two private schools) were most similar.

However, what differed significantly in this study was the children's appreciation for their cultural identity and that of others'. All of the study's children outside of the U.S. embraced and understood their identities as much as others. However, only the children in the U.S. went to a school where almost 100% of the students were of one ethnic culture. In addition, traveling outside of the country, let alone outside of the state, was also particularly uncommon.

Another contrast between the study's children in the U.S. and those in New Zealand, Honduras, Germany, could be seen in the role that public libraries played in their lives. Due to institutional and economic structures, public libraries did not seem as necessary as they were for the study's children in the U.S. The children outside of the U.S. explained that the Internet was not available in public libraries and computers were tools for finding books in the collection, but nothing else. This is similar to the limited use of public libraries by teenagers in the UK, who obtain much of their information elsewhere (e.g., Internet, school libraries) (Shenton & Dixon, 2002).

As for books, all of the children with one exception, read books for schoolwork, entertainment, and family life. The only child who did not has been plagued with reading challenges and researchers now think he may be reading on a level 2-3 years younger than his own age. This is consistent with the literature that suggests that children who read with their parents and who live in a family or social setting that reads will read for pleasure (Elkin, 1996).

There were few differences in the strong role that computers played in children's entertainment and social experiences. Across all backgrounds, schooling approaches, parental involvement, children embraced technology as a way to relax and to be social with their peers. What was different was how much a role technology played in their school lives. It was clear that if the school had the resources to integrate and infuse technology into the curriculum (as the private schools in Germany and Honduras has) then children used technology to research, write, draw, and even read. This confirms the research that finds that school libraries can be a "tangible expression" of a school's values and educational goals (McNicol, Ghelani, & Nankivell, 2002). What did not emerge were clear differences by gender in the roles technology played. The boys in the study were not any more enamored with or used more of the technology than the girls.

5.3 How do children want to change libraries and technology?

A number of studies have shown children to be interested in using the Internet as opposed to going to the library for homework resources, however, no children in this study discussed replacing their libraries with the Internet. This provides further evidence that technology may not be a threat to traditional libraries and books, confirmed by the Center for the Book in their research (Cole, 2003).

What the children in this study did suggest was the importance of "library as place" (Lincoln, 2002). In particular, the children were quite concerned with the *library floor*. Upon reflection this makes sense, since this is where children do a great deal of their informal reading and meeting, however none of the literature on libraries emphasizes floors and the importance of them to children. When it comes to physical layout, the literature has been more concerned with the placement of books, bookshelves, and catalogue labeling. In a sense the literature has been more focused on the physicality of *searching*, as opposed to the physicality of *using* materials.

When it came to suggesting changes to technology, children had a harder time verbalizing their suggestions than drawing them, which is consistent with the Human-Computer Interaction literature on working with children as design partners (Druin, 2002; Druin, 1999). The suggestions they did have were concerned with changing the physical computer. Three children from three different countries suggested reducing the size of the computer, but allowing it to be transformed at the press of a button. Children discussed robotic creatures, wireless computing and multiple input devices, all important issues facing today's technology developers. The children suggested that it is just not good enough to leave a computer on a desk. Children are active, mobile beings and they want their technologies to be the same way.

6. Conclusions

Based on the findings of this study, the following implications can be suggested for librarians and developers of digital libraries:

Implications of the study for **librarians**:

- Children love their school libraries.
- Supporting various reading locations (e.g., the floor, couches, hidden alcoves) is critical in supporting children's love of reading.
- Children want to read books that are diverse in publishing origin, culture, and language.
- Technology has a role in attracting children to public libraries.
- Children see a role for both books and computers in their libraries.

Implications of the study for **developers of digital libraries**

- Technology can be a bridge to books.
- Children want technologies that can support them in their mobile active lives.
- The collection can and should be diverse and large.
- Laptops can be critical in supporting informal reading locations.
- Children's love of computer games can be used to engage them in learning experiences.
- Children can be involved in the design of new technologies using the appropriate design methods.

Many in the library community have been concerned with the impact that technology might have on future libraries (OCLC, 2003). But this concern is not shared by the children in this study. These young people see computers side-by-side with books in their libraries. A number of children in their drawings of libraries, drew both books and computers. In some sense, these children suggested there is a place for both books and technology in their definition of a library. The implication of this for parents, teachers, or librarians is that we need not fear that technology will diminish the importance of books or libraries in children's eyes. But no matter the presence or non-presence of technology, children in this study care a great deal about their school libraries, and particularly the floors of the library.

Some may question whether seeing the world through the lens of a child is valid. To answer this concern it should be noted that when we interviewed the children in this study, their points were easily confirmed by their parents, teachers or librarians. At no time did the children describe something that could not be validated by adults. Most

often the adults interviewed would elaborate on a point made by a child. We found that the children saw their world quite clearly, and knew what they wanted changed.

In summary, the research presented in this paper is a small-scale descriptive study aiming to provide some initial insights into the roles that books, libraries, technology, and culture play in children's lives. However, due to the small number of participants and the short duration of the study, additional research will be needed to understand if these findings transfer to other children or extend to other countries. Additional research will also be needed to apply the study's findings to support the development of new forms of libraries in the future.

7. Acknowledgements

I am in debt to all of the children, parents, teachers, librarians, and principals who gave so generously of their time to participate in this research. However, this research could not have taken place without the extraordinary efforts of the research team: Ann Weeks, Adrienne LaGier, and Sheri Massey. The ICDL development team has also been of critical importance to this research, in particular, Ben Bederson and Jane White. In addition, my colleagues in the College of Information Studies have helped to shape my writing on this research, specifically Bruce Dearstyne, Dagobert Sorgel, and Marilyn White. And finally this work could not have been done without the generous support of the Institute of Museum and Library Services, the National Science Foundation, and the Microsoft Corporation.

8. References

- Agosto, D. E., Hughes-Hassell, S., & Gilmore-Clough, C. (December 2003). The all-white world of middle-school genre fiction: Surveying the field of multicultural protagonists. *Children's Literature in Education*, 34 (4), pp. 257-275.
- American Libraries* (Dec 2003). Bill Gates: Why he did it. 34(11), pp. 48-56.
- Banks, J. (1998). The lives and values of researchers, implications for educating citizens in a multicultural society. *Educational Researcher*, 29 (7), pp. 4-17.
- Bakken, L. & Louise, D. S. (1996). Developing anti-bias identities: Early childhood, adolescence, and young adulthood. *Multicultural Education*, 4(2), pp. 20-22.
- Barber, W. & Badre, A. (1998). Culturability: The merging of culture and usability. *Proceedings of Human Factors and the Web*. Accessed December 27, 2003, <http://www.research.att.com/conf/hfweb/proceedings/barber/>.
- Bettelheim, B. (1976). *The uses of enchantment: The meaning and importance of fairy tales*. New York: Knopf.
- Bogdan, R., C. & Bilken, S., K. (1998). *Qualitative research for education: An introduction to theory and methods*. MA: Allyn & Bacon.

- Caidi N. & Komlodi, A. (July/August 2003). Cross-cultural considerations in digital libraries research: Report from the JCDL 2003 Workshop. *D-Lib*, 9(7/8) Accessed December 11, 2003, <http://www.dlib.org/dlib/july03/07inbrief.html#KOMLODI>.
- Campbell, J. (1988). *The power of myth*. NY: Doubleday.
- Cass, J. (1967). *Literature and the young child*. London: Longmans, Green & Co.
- Cole, J. Y. (Spring 2003). Promoting books and reading in the electronic age: The Center for the Book at 25. *Publishing Research Quarterly*, 19 (1), pp. 3-10.
- Dresang, E. T., & Gross, M. (2001). Evaluating children's resources and services in a networked environment. In J. C. Bertot & C. R. McClure (Eds.) *Evaluating networked information services: Techniques, policy, and issues* (pp.23-44). Medford, NJ: Information Today.
- Dresang, E. T., Gross, M., & Holt, L. E. (2003). Project CATE: Using outcome measures to assess school-age children's use of technology in urban public libraries. *Library & Information Science*, 25(1): 19-42.
- Dresang, E. T. & Kotrla, M. B. (2003). Breaking barriers with student-centred teaching and learning using library books in the United States' poorest schools. In Proceedings of *IASL School Libraries Breaking Down Barriers*, Durban, South Africa, 7-11 July, pp. 54-70.
- Druin, A. (In Press). What children can teach us: Developing digital libraries for children. *Library Quarterly*.
- Druin, A. (2002). The role of children in the design of new technology. *Behaviour and Information Technology (BIT)* 21(1): 1-25.
- Druin, A., Bederson, B., Weeks, A., Farber, A., Grosjean, J., Guha, M. L., Hourcade, J. P., Lee, J., Liao, S., Reuter, K., Rose, A., Takayama, Y., & Zhang, L. (2003). The International Children's Digital Library: Description and analysis of first use. *First Monday*, 8(5) Accessed December 28, 2003: http://firstmonday.org/issues/issue8_5/.
- Elkin, J. (1996). Looking to the future: The Esme Green Memorial Lecture. *The New Review of Children's Literature and Libraries*, 2, pp. 1-13.
- Ellis, G. & Brewster, J. (1991). *The storytelling handbook for primary teachers*. England: Penguin Books.
- Erikson, E.H. (1950). *Childhood and society*. New York: Norton.
- Grugeon, E. & Gardner, P. (2000). *The art of storytelling for teachers and pupils*. London: David Fulton Publishers.
- Hart, G. (2003). Public libraries stepping into the gap? A study of learners' use of libraries in a disadvantaged community in Cape Town, South Africa. In Proceedings of *IASL School Libraries Breaking Down Barriers*, Durban, South Africa, 7-11 July, pp. 71-82.
- Howe, N. & Strauss, W. (2000). *Millennials Rising: The next generations*. NY: Vintage Books.
- Ireland, L. H. (2001). The impact of school library services on student achievement: An annotated bibliography, 5th edition. *ERIC Document Number ED 450 807*.
- Lance, K. C. (June 2002). What research can tell us about the importance of school libraries. *White House Conference on School Libraries*. Accessed December 28, 2003: <http://www.ims.gov/pubs/whitehouse0602/keithlance.htm>.

- Lance, K. C., Rodney, M. J. & Hamilton-Pennell, C. (2000). How school libraries help kids achieve standards: The second Colorado study. *Colorado Department of Education Report*. Denver, CO: Department of Education.
- LeCompte, M. D. & Schensul, J. J. (1999). *Ethnographer's toolkit: Analyzing and interpreting ethnographic data*. London, UK: AltaMira Press.
- Lincoln, Y. S. (2002). Insights into library services and users from qualitative research. *Library and Information Science Research*, 24 (1), pp. 3-16.
- Malkina, N. (1995). *Storytelling in early language teaching*. Forum, 33, 1, 38.
- McIntyre, M. H. (2002). *Start with the children: The needs and motivation of young people*, Accessed July 17, 2003: <http://www.resource.gov.uk/documents/re179rep.pdf>.
- McNicol, S. Ghelani, T. & Nankivell, C. (2002). The role of school libraries in resource-based learning. *Education Libraries Journal*, 45 (3), pp. 5-11.
- Meyer, E. (1999). The coolness factor: Ten libraries listen to youth. *American Libraries*, 30(10), Accessed July 23, 2003: <http://www.urbanlibraries.org/coolnessfactor.html>.
- Michie, J. & Chaney, B. (2000). Assessment of the role of school and public libraries in support of educational reform. *General Audience Report*. Washington, DC: US Department of Education.
- Moore, M. E. (2003). School libraries in the Sultanate of Oman: Breaking down barriers. In Proceedings of *IASL School Libraries Breaking Down Barriers*, Durban, South Africa, 7-11 July, pp. 286-296.
- Moore, P. & Trebilock, M. (2003). The school library team: How does it influence learning and teaching? In Proceedings of *IASL School Libraries Breaking Down Barriers*, Durban, South Africa, 7-11 July, pp. 111-121.
- Neuman, D. (2002). Qualitative research: An opportunity for school library media researchers. In D. Callison (Ed.) *Measuring student achievement and diversity in learning: Papers of the Treasure Mountain Research Retreat #10*, Excelsior Springs, Missouri.
- OCLC (2003). *OCLC Environmental Scan: Pattern Recognition*, Accessed March 17, 2004: <http://www.oclc.org/membership/escan/introduction/default.htm>.
- O'Hare, W. P. (2001). *Children's population: First data from the 2000 census*. Annie E. Casey Foundation and the Population Reference Bureau. Accessed January 12, 2003: http://www.aecf.org/kidscount/trends_children.pdf.
- Patte, G. (2002). Libraries and disabled child readers. *The Review of Children's Literature and Librarianship*, 8, pp. 13-31.
- Raseroka, K. (2003). Libraries for lifelong literacy: IFLA presidential theme 2003-2005. *IFLA Journal*, 29(2): 109-112.
- Rideout, V. J. & Wartella, E. A. (October, 2003). *Zero to Six: Electronic media in the lives of infants, toddlers, and preschoolers*. Accessed October 30, 2003: <http://www.kff.org/entmedia/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=22754>.
- Sabljak, L. (2003). Bringing libraries and books closer to children during war—UNICEF projects in Croatia. *IFLA Journal*, 29(4), pp. 313-316.

Shenton, A. K. & Dixon, P. (2002). Youngsters' use of public libraries for information: Results of a qualitative research project. *The New Review of Children's Literature and Libraries*, 8, pp. 33-54.

Strauss, A. & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.

Thorhauge, J. (2003). Danish strategies in public library services to ethnic minorities. *IFLA Journal*, 29(4), pp. 308-312.

Webb, M. (1990). Multicultural education in elementary and secondary schools. *ERIC digest number 67*, ERIC Clearinghouse. Accessed October 27, 2002:
http://www.ed.gov/databases/ERIC_Digests/ed327613.html.

Wolcott, H. (1997) Case study methods in educational research . In Jaegar, R. (Ed.) *Complimentary methods for research in education* (2nd ed.) Washington, DC: AERA.

Wright, A. (1995). *Creating stories with children*. England: Oxford University Press.

Appendix I: Example Interview Forms

CHILD INTERVIEW QUESTIONS:

Books

- What kinds of book do you like to read for fun?
- What is your favorite book?
- Why is it your favorite?
- How do you choose a book to read for fun?
- On an average school day, how much time do you spend reading books, magazines, or newspapers not required for school?
- How much more or less do you read during school holidays or days when do you not go to school?
- Where do you usually go to read for fun?

School Libraries

- How often do you go to your school library?
- What kinds of things do you do in your school library?
- What do you like best about going to your school library?
- What do you like least about going to your school library?
- If you had a magic wand and could change anything about your school library, what would it be?
- What do your friends think about your school library?
- How often do you check out a book from your school library?
- What other kinds of things about going to your school library?
- Could you show us the kinds of books you like in your library?
- What's the worst thing about going to your school's library?

Public Libraries

- How often do you go to your public library?
- What kinds of things do you do in your public library?
- What do you like best about going to your public library?
- What do you like least about going to your public library?
- If you had a magic wand and could change anything about your public library, what would it be?
- What do your friends think about your public library?
- How often do you check out a book from your public library?
- What other kinds of thing do you borrow from your public library?
- What's the best thing about going to your public library?
- What's the worst thing about to your public library?

Technology

- How often do you use a computer?
- Where do you use a computer?
- How often do you go online?
- What do you do online?
- What do you like best about using a computer?
- What do you like least about using a computer?
- On an average school day, how much time do you spend using a computer?
- How much time do you spend on a computer on a day when you are not in school?

Global Society

- If you could live anywhere in the world, where would it be? Why?
- If you could visit anywhere in the world, where would it be? Why?
- Where in the world do you think that there are children who are most like you?
- Where in the world do you think there are children who are most different from you?
- How often do you read books about other countries? Why do you read them?
- Ask two of the next five questions:
 - If you could meet a child from Honduras what questions would you ask?
 - If you could meet a child from the US, what questions would you ask?
 - If you could meet a child from Germany? What questions would you ask?

TEACHER INTERVIEW QUESTIONS (Concerning Child Research Participant):

Why did you select the student for the study?

What kinds of books does your student generally read?

Does the child talk with you about the books he/she reads?

How would you describe the child's reading habits?

The child's reading ability?

The child's interest in reading?

Would you describe the child's ability level as in the top, middle, or bottom third as compared to other children in the classroom?

Would you describe the child's motivation level as in the top, middle, or bottom third as compared to other children in the classroom?

If there are computers in the classroom, does the child use the computers?

For what purpose(s) does he/she use the computers?

How do you integrate the computers in your classroom curriculum?

How often do you interact with the child's parent (or primary care giver)?

What is the most frequent purpose of your interaction?

What literacy experiences does this child have in the home?

Library Use

- How often do you use the library?
- For what purpose(s) do you use the library?
- How often do the children in your class use the library?

Collection

- Please describe the library's collection.
- In what ways does the library's collection meet your needs?
- In what ways does the library's collection not meet your needs?

Computer Facilities/Access

- What computer facilities are available in the school?
 - What access do children have to computers?
 - Is there Internet Access for teachers?
 - Is there Internet Access for children?
-

Principal Interview Questions

Name:

What is your student school population?

What is your teachers' backgrounds/experience?

What is your experience/background in school leadership?

What have been your biggest successes?

What have been your biggest challenges?

Do you have questions for the research team?

Librarian Interview Questions

Name:

ABOUT THE CHILDREN

- How often does each of the children in this study come to the library?
- Does each of the children come to the library independently, only with a class, before or after school?
- What kinds of books does each generally read?
- If there are computers in your library, does each use the computers?
 - How does each use the computers?
- Does each child use the public library, if so which public library?

ABOUT THE LIBRARY

- What are the hours the library is open?
- How is it staffed?
- Please describe the collection.
- How are the materials in your collection selected?
- What is the annual budget for books/magazines for your collection?
- What is your annual budget for technology for the library?
- What online databases are available for use by children? By teachers?
- Do you have materials in other languages?
 - If so, what is the size and scope of the materials in other languages?
 - How are these materials used and by whom?
- Do you have materials in the collection about Germany? New Zealand? Honduras? US?
- How is the library used by individuals, classes, teachers?
- What computer facilities are available in the library? School? Classrooms?
- Is there Internet access for teachers? For children?
- What are your biggest challenges as the school's librarian?
- What are your biggest successes as the school's librarian?
- What do you think the children like best about the library? Like least about the library?
- If you could change one thing about the library what would it be?
- How long have you been the school's librarian?
- Do you have any questions for us?

Appendix II: Code Definitions

Codes for **books, libraries, and technology**:

- a tool or place for *entertainment*
(e.g., reading books for your own personal enjoyment, not for a school assignment; going to the library to pick out books that have nothing to do with what you are studying in class; playing computer games at home)
- a tool or place to be *social* with peers
(e.g., reading a book so that you can talk about it with your friends; going to the library to see friends; using the computer with a friend)
- a tool or place for *personal empowerment*
(e.g., feeling good about yourself because you can read a more difficult book than other students in your class; getting special privileges at the library because of your advanced reading or interests; feeling good about what technical skills you have when using a computer)
- a tool or place to *escape* the real world
(e.g., reading a book so that you can calm down after a fight with your mother; going to the school library so you don't have to do a classroom activity; using the computer to think about where to travel next)
- a tool or place for *economic advancement*
(e.g., reading books to do better in school to get a good job; going to the library to look for after school jobs; using computers to learn job skills)
- a tool or place for *schoolwork*
(e.g., reading books at home for a school project; going to the school library as a class; using a computer to do research for a homework assignment)
- a tool or place for *family life*
(e.g., reading a book with your mother before going to sleep at night; going to the library for the afternoon with a grandmother; using the computer with a brother)
- a place that is *the sole access point* for books
(e.g., going to the school library is your only way to bring home books)
- plays no role or is *not important*
(e.g., not reading certain kinds of books; not going to public libraries; not using computers at home)

Codes for **culture**:

- I celebrate and *embrace my own cultural identity*
(e.g., I am proud of my where my family comes from; I share my family traditions; I go to special places that show me my ethnic history)
- I celebrate and *embrace others' cultural identities*
(e.g., I am very interested in where other families come from; I try out others' family traditions; I visit others' local landmarks)
- *not an important* part of my world, but I have *some understanding*
(e.g., I am not concerned with mine or others cultures, but have some knowledge of it)
- *not an important* part of my world, and I have *little understanding*
(e.g., I am not concerned with mine or others cultures, and have little knowledge of it)