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A comparative study of third-grade students' use of children's web directories

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A COMPARATIVE STUDY OF THIRD-GRADE STUDENTS' USE OF CHILDREN'S WEB DIRECTORIES

by
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ABSTRACT

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A COMPARATIVE STUDY OF THIRD-GRADE STUDENTS' USE OF CHILDREN'S WEB DIRECTORIES
2001/02
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The purpose of this naturalistic case study was for 72 third-grade students to effectively use the children's Web directories Yahooligans and Kidsclick to locate specific information on the Internet and then to compare the success rates of the two directories. The researcher taught a three-week unit of instruction on searching children's' Web directories to locate information. Students completed a five-question worksheet in which they were required to do a keyword search on a specified directory to answer each question. Students recorded their answers, the number of Websites visited to locate each answer, and the URL of the Website where the answer was located on the worksheet. Structured field observations were made to obtain an understanding of the behaviors and actions demonstrated by the students during their search sessions. The data collection worksheets were coded to obtain a numerical value that represented or measured the children's performance and then analyzed using SPSS software. Frequencies and percentages measuring success rates in answering questions were tabulated. It was concluded that both Yahooligans and Kidsclick are appropriate Web directories for the average third-grade student, and that Kidsclick should be the first directory children go to for their information needs when using the Internet.

MINI-ABSTRACT

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The purpose of this study was for third-grade students to use the children's Web directories Yahooligans and Kidsclick to locate information, and to compare the success rates of each. Both directories are appropriate for third-grade students, but Kidsclick should be the first directory children go to for their Internet searches.

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The Problem

Introduction and Background

The availability of the Internet in schools across the world has transformed access to curriculum related resources. In today's technologically rich educational environment, librarians and teachers need to take advantage of the wealth of resources available on the Internet to support and enrich their curriculum. School librarians can promote technology use by introducing the Internet in meaningful ways to help achieve educational goals. Librarians need to focus on the central library functions of information services and information skills instruction in using the Internet to meaningfully meet educational goals. Research is needed to consider how to design age-appropriate information resources to provide instruction in assessing and evaluating information from the Internet (Hirsh, 1998).

There are many reasons why teachers and librarians hesitate to use the Internet as an information resource in their educational settings with their students. They may be reluctant because of unreliable technology or a lack of technology, guidelines or policies governing the use of technology. They may believe that their students are developmentally too young to take advantage of such a resource. They may lack time to identify appropriate sites, fear that the children will get to inappropriate sites, and lack knowledge on how to best teach information literacy and Internet skills (Hubbard, 1998).

The mission of the library media program is to ensure that students and staff are effective users of ideas and information. This mission is accomplished by: providing intellectual and physical access to materials in all formats; providing instruction to foster competence and stimulate interest in reading, viewing, and using information and ideas; and working with other educators to design learning strategies to meet the needs of individual students (American Library Association, 1998). School librarians need to move from teaching isolated "library skills" to teaching information literacy skills to enhance students' learning. Librarians must help students think critically and solve problems efficiently. Librarians need to be facilitators or guides to help students develop strategies to locate and access information. They need to teach the students how to develop information literacy skills. There are a variety of information literacy skills models available today. Librarians need to take into account how their students think, learn, and process information in order to correctly diagnose information needs and then select a model of instruction that correlates with their students' needs. Once this has happened, their students who have a need to gather information should follow that model.

Statement of the Problem

How can Internet resources be effectively integrated into an elementary school library to meet educational goals? This is the problem to be studied. The problem of effectively integrating Internet resources into an elementary school library program is very important because the Internet's hypermedia, graphics, interactivity, and richness in multi-sensory stimuli, visual – visual, auditory, and tactical – appeal to children make it a motivating learning tool to locate information (Bilal, 1998). Because of a limited school

budget, students at many schools are relying on a limited source of library books and out-dated, inadequate print encyclopedias for information when a wealth of information is available from the Internet.

In order for school librarians to effectively integrate Internet resources into their elementary school library programs, a few problems must be addressed. These include how to utilize age-appropriate Internet information resources, how to select an appropriate information skills model, and how to provide developmentally appropriate instructional activities in accessing, evaluating and using information from the Internet.

Purposes or Objectives of the Research

The goals and objectives of this case study were for third-grade students to effectively use the children's Web directories Yahooligans and Kidsclick to locate information on the Internet and then to compare the success rates of the two Web directories. A program of instruction was incorporated to teach third-grade students how to use children's Web directories to locate, identify and select appropriate Internet Web sites that provide information related to a selected topic for classroom projects, research, and personal interest. The students learned information literacy skills and search techniques that can be applied not only to Internet resources but also to traditional print materials to locate the information they are looking for. Overall, this study intended to make the Internet an accessible, user friendly and viable information source for children eight-and nine-years-old through the use of the children's Web directories, Yahooligans and Kidsclick.

Theoretical Framework

Piaget developed a theory of cognitive development in which children go through distinct and sequential stages of development, and their cognitive processes are qualitatively different during each of the stages. These stages do not develop smoothly but occur by adapting to the world through assimilation and accommodation. Piaget characterizes third graders, ages eight and nine, as at the beginning of the concrete operational stage (Piaget, 1969). At this stage children can perform mental tasks on a concrete level. They can think logically about objects and events. A concrete operational child's thinking is less dominated by physical and perceptual experiences than earlier cognitive stages. Children are able to follow transformations, reverse their thinking, and have the ability to conserve. They can categorize and classify objects according to several features and can order them in series along a single dimension such as size. They are usually unable to think abstractly (Piaget, 1969). Piaget emphasizes that children think differently from adults as well as from each other at different stages of development. Because of Piaget's extensive and thorough accounts of problem solving in young children, he provides school librarians with some guidelines upon which to base their designs of learning situations for children. Synthesizing Piaget's cognitive theory with instruction entails viewing learning as an active process. Learning styles of children are active, learning by doing and adaptive. Teachers should provide learners with engaging activities and experiments that require adaptation.

Children who are in the concrete operational stage seek information that exactly matches their own search terms or the terminology used by the teacher or in the assignment. They are concrete thinkers and have trouble with anything that is not an

exact fit with their understanding of the question (Hirsh, 1998). Because they are in this stage, third graders need a general idea of what materials are available to them and where they are located. Student research should consist of using one source of information to answer a question or investigate a topic of personal interest. In-depth reports combining multiple sources are beyond the cognitive abilities of most third graders. They are naturally interested in new things and are eager to expand their knowledge. They should be encouraged to follow their own interests and to develop meaningful questions on their own. Third graders can learn to recall, summarize, and paraphrase information rather than copying word for word (Kuhlthau, 1988).

Hypothesis / Questions

The hypothesis for this case study was that effective teaching can influence third-graders to successfully locate information on the Internet through the use of children's Web directories. The researcher assumed that she could teach these skills and that the children were cognitively able to learn the skills necessary for successful information retrieval from the Internet. The researcher implemented a naturalistic case study with third-grade students. This study compared the success rate of the students' searches for information on the children's Web directories, Yahooligans and Kidsclick. This study attempted to answer these research questions:

1. Can third grade students effectively learn Internet skills?
2. How successful are third-grade students in searching Yahooligans to locate specific information?

3. How successful are third-grade students in searching Kidsclick to locate specific information?

Definition of Terms

Independent variable. The independent variable is the teaching by the researcher.

Dependent variables. The dependent variables are the skills demonstrated by the students after the instruction to locate relevant information.

Teaching. Teaching is defined as the different instructional strategies utilized throughout the case study.

Information literacy. Information literacy is the ability to read and use information that is essential for everyday life and necessitates recognizing information needs and seeking information to make informed decisions; it includes the ability to access and evaluate information effectively for a given need (Crane, 2000).

Definition of Computer Terms

Bookmark. A way to save the location of a Web site.

Homepage. The homepage is the primary page of a Web site.

Internet. An international network of computer networks that communicate with one another via a common communication language called Transmission Control Protocol/Internet Protocol.

Link or hyperlink. A connection to another Web page that appears on Web pages as differently colored, underlined or highlighted text. They can also be represented by graphics buttons, pictures, or embedded in an image map.

Navigation. Navigation is a term for getting around the Web or moving from link to link.

Search engine. A search engine is a program that searches the Web using keywords.

URL (Uniform Resource Locator). URL is a unique address that identifies the location of a particular document on the Web.

Web browser. A Web browser is the software that launches the computer to access and retrieve information from the Web.

Web directory. A Web site that categorizes Web resources into groups or disciplines so the user can find and access them.

Web page. A Web page is a single Web document displayed by the Web browser.

Web site. A Web site is a series of organized Web pages.

World Wide Web. The World Wide Web is a network of computers and software that provide links to Internet resources (Junion-Metz, 2000).

Organization of Remainder of the Study

The researcher implemented a case study in late February of 2002. The participants of the study were all of the 90 third-grade students in six different classes at the researcher's public elementary school. The case study took place in the students'

regular library class setting. The library has seven computer stations with reliable Internet connections for student use. The researcher used a computer with a 36" monitor for group instruction. Lessons consisted of a combination of library and research skills used to plan learning activities. Resource-based learning activities were developed to facilitate information problem solving and to incorporate the information skills. The case study began in late February and lasted for three weeks. Forty-five minute weekly lessons were taught using various instructional strategies. Actual student use of the Internet was completed in a structured setting with the two children's Web directories bookmarked on each of the computers. On the second week, students searched the Internet using either Yahooligans or Kidsclick to locate specific information for personal purposes. Students chose subjects of personal interest such as sports, singers and animals to search. On the final week, the students searched the directories to answer five educational questions and recorded the answers on student worksheets. The case study implemented was a descriptive study which compared third grade students' success rates using the children's Web directories Yahooligans and Kidsclick. During the search sessions the researcher and an assistant recorded observations of the students using the directories. The worksheets were collected and the answers were coded. The data was analyzed using SPSS software in the form of statistics such as frequencies and percentages, and in field observations.

CHAPTER 2

Literature Review

Introduction

The bodies of literature reviewed for this study included research studies and theoretical frameworks. Three main bodies of research on children's use of various types of information retrieval systems concentrated on their use of online public access catalogs, multimedia encyclopedias, and the World Wide Web.

The use of the Internet in schools and the increased access to the Internet by children at home raise many issues concerning information seeking and use. The Internet and the World Wide Web have redefined the way information is presented in educational and recreational situations. New information technologies demand a fundamentally different approach to teaching, learning and the delivery of curriculum. The presentation or medium of information has gone from a linear, logical, text-based presentation of information to interactive documents that contain various combinations of text, graphics, sound, and motion that can be accessed in a nonlinear manner. The roles of school librarians and teachers in educating and training young children to use the Internet must be addressed to recognize this change. Teachers and librarians must teach their students basic information literacy skills so that they are comfortable and capable of using this new information source. Children need not only to be educated in how to better plan their searches and conceptualize solution paths, but also how to organize, structure, manage,

and represent the information they find so that they can use it in purposeful ways when using the Internet as a resource (Schacter, Chung, & Dorr, 1988). School librarians can use a variety of instructional strategies to teach the task of using the Internet. Technology can be infused in instruction by structuring initial exploration, encouraging thoughtful evaluation of resources, applying Internet skills directly to student research, and by selecting appropriate resources for the students (Murray, 1998).

Problems that beset student searchers in online environments appear to involve three important information needs: knowledge of the library and its new role as an online information center; knowledge of information systems, databases, and their organization; and background knowledge of their research topics (Chen, 1993). Lack of information-seeking skills, lack of basic language and literacy skills, and lack of time for searching are also potential stumbling blocks for students in online search environments (Neuman, 1997; Solomon, 1994). There is also frequently a mismatch between the cognitive demands of the information available online and the developmental levels of the student searchers (Neuman, 1997).

Cognitive Theory of Children's Development

Piaget's theory states that cognitive development is dependent on physical maturation and adaptation to the environment and that the child's ability to think abstractly proceeds for all children according to an orderly succession of invariant learning states (Piaget & Inhelder, 1969). His theory further states that children go through distinct and sequential stages of development, in which their cognitive processes are qualitatively different during each of the stages. These stages do not develop

smoothly, but occur by adapting to the world through assimilation and accommodation. Within Piaget's framework, learning first results from the child's concrete interactions in the world and is extended with each new experience. Piaget characterizes third graders, ages eight and nine, as at the beginning of the concrete operational stage (Piaget & Inhelder, 1969). At this stage children can perform mental tasks on a concrete level. They can think logically about objects and events. An operational child's thinking is less dominated by physical and perceptual experiences. Children are able to follow transformations, reverse their thinking, and have the ability to conserve. They can categorize and classify objects according to several features and can order them in series along a single dimension such as size. They are usually unable to think abstractly (Piaget & Inhelder, 1969). Piaget emphasizes that children think differently from adults, as well as from each other at different stages of development. Piaget's accounts of problem-solving in young children, provides school librarians with some guidelines upon which to base their designs of learning situations for children. Synthesizing Piaget's cognitive theory with instruction entails viewing learning as an active process. Learning styles of children are active, learning by doing and adaptive. Teaching should provide learners with engaging activities and experiments that require adaptation.

Kuhlthau raises the issue of developmental states in information seeking and ties these findings to particular information needs, suggesting that a child's developmental level might offer a potential explanation for success or breakdown in searches for information (Kuhlthau, 1988). Children who are in Piaget's concrete operational stage seek information that exactly matches their own search terms or the terminology used by the teacher or in the assignment. They are concrete thinkers and have trouble with

anything that is not an exact fit with their understanding of the question (Hirsh, 1998). Because they are in this stage, third graders need a general idea of what materials are available to them and where they are located. Student research should consist of using one source of information to answer a question or investigate a topic of personal interest. In-depth reports combining multiple sources are beyond the cognitive abilities of most third graders. They are naturally interested in new things and are eager to expand their knowledge. They should be encouraged to follow their own interests and to develop meaningful questions on their own. Third graders can learn to recall, summarize, and paraphrase information rather than copying word for word (Kuhlthau, 1988).

Online resource guides would be an appropriate resource for third grade students. Elementary school librarians can research Internet sites and resources that are age appropriate and contain information on subjects needed by the students for educational and personal information. These resources can also include links to children's Web directories. Librarians can develop a set of bookmarks on a Web page that points students to the specific sites identified in earlier research and lists them under different subject headings. The Web page or resource guide can then be bookmarked on each computer for student access. Online resources focus students' activity on the Internet and direct them to specific materials librarians have identified as appropriate resources for use by students (Buchanan, 1997). Such resource guides help children find the information they need and want on the Internet (McDermott, 2000).

Benjamin Bloom also developed a theory of cognitive thinking. Bloom proposed a taxonomy of mental activities, independent of physical development, that ranks thinking tasks on the basis of their mental complexity. Bloom defines learning on a

hierarchy or ladder of skills (Bloom, 1956): recall, comprehension, application, analysis, synthesis, and evaluation. Memorizing facts or understanding the meaning of material is at the low end of the cognitive ladder, requiring only lower order skills. Critical or higher order thinking requires the ability to analyze or separate material into its component parts, to synthesize information or put its parts together to create a new whole, and to evaluate or judge material for a given purpose. Bloom's taxonomy provides an extremely useful tool in considering the levels of thinking required to carry out instructional tasks and activities of any kind. It is especially important for an implementation of a successful information skills curriculum. The processes and skills involved in information searching and the creation of research projects are specifically intended to provide opportunities for students to develop and practice critical thinking skills which overlap with the skills needed for them to be information literate (Crane, 2000).

Information Literacy

Crane defines information literacy as the ability to read and use information that is essential for everyday life and necessitates recognizing information needs and seeking information to make informed decisions. It includes the ability to access and evaluate information effectively for a given need (Crane, 2000).

School librarians need to move from teaching isolated "library skills" to teaching information literacy skills to enhance students' learning. Librarians must move from emphasizing information to stressing the importance of the information process. Librarians must help students think critically and solve information problems efficiently. The revised *Information Power: Building Partnerships for Learning* (ALA, 1998),

prepared by the American Association of School Librarians and the Association for Educational Communications and Technology reflects this change in emphasis. Nine "Information Literacy Standards for Student Learning" have been added to the content of *Information Power* (ALA, 1998):

Information Literacy

- Standard 1: The student who is information literate accesses information efficiently and effectively.
- Standard 2: The student who is information literate evaluates information critically and competently.
- Standard 3: The student who is information literate uses information accurately and creatively.

Independent Learning

- Standard 4: The student who is an independent learner is information literate and pursues information related to personal interests.
- Standard 5: The student who is an independent learner is information literate and appreciates literature and other creative expressions of information.
- Standard 6: The student who is an independent learner is information literate and strives for excellence in information seeking and knowledge generation.

Social Responsibility

- Standard 7: The student who contributes positively to the learning community and to society is information literate and recognizes the importance of information to a democratic society.
- Standard 8: The student who contributes positively to the learning community and to society is information literate and practices ethical behavior in regard to information and information technology.
- Standard 9: The student who contributes positively to the learning community and to society is information literate and participates effectively in groups to pursue and generate information.

Moore identifies three factors that are of central concern in developing information literacy. One is the nature of information literacy itself, the second is the teachers' understanding of that concept, and the third relates to the conceptions of

inexperienced information users (Moore, 2000). The process of information literacy has been characterized in many models, most of which list a series of steps or phases, and the skills essential to each. Concepts and guidelines from information literacy provide a framework for helping students and librarians address a variety of issues related to learning the skills necessary for utilizing Internet resources (Neuman, 1997).

Information Literacy Skills Models

The focus of teaching information skills today is on process models. These models emphasize a sequence of actions or processes in which the student must engage to access and use information. Since the mid-1980's, a number of librarians and library and information science scholars have developed process models for use in school libraries to help students structure their research. The models to be examined here are REACTS, Stripling and Pitts' model for the preparation of library related projects, Big Six, Pathways to Knowledge, Kuhlthau's information search process model, Information Literacy, and the FLIP IT! model.

The REACTS model was developed by two high school librarians, Stripling and Pitts, for use by students engaged in researching and writing term papers. They were primarily concerned with using the research project as a way to help students develop cognitive creativity and practice critical thinking and metacognitive skills. In their view, research assignments could be improved if they were structured and planned to promote cognitive skills along a continuum ranging from simple to complex. The result of their collaboration was a "Taxonomy of Thoughtful Research", which arranged research activities from fact-finding assignments to conceptualization tasks (Stripling & Pitts,

1988). The process is outlined in six levels of research tasks, research activities, and cognitive tasks:

Level 1	Recalling
Level 2	Explaining
Level 3	Analyzing
Level 4	Challenging
Level 5	Transforming
Level 6	Synthesizing

Stripling and Pitts also created a process model for the preparation of library related projects. This model is a ten-step guide to research, from the selection of a broad topic through the completion of the final project (Stripling & Pitts, 1988).

Step 1	Select a broad topic
Step 2	Obtain an overview of the topic
Step 3	Narrow the topic
Step 4	Create a thesis statement
Step 5	Formulate research questions
Step 6	Develop a research plan
Step 7	Locate and evaluate information sources
Step 8	Evaluate sources, take notes, and create a bibliography
Step 9	Draw conclusions, create an outline
Step 10	Create the project or product, write the paper

Eisenberg and Berkowitz have co-developed an information literacy skills process model called Big Six. Big Six is an information literacy curriculum, an information problem-solving process, and a set of skills that provide a strategy for effectively and efficiently meeting information needs (Eisenberg & Johnson, 1996). This model can be used in school settings with all content areas and grade levels. Eisenberg identifies effective integration of information literacy skills as having two requirements. The skills must directly relate to the content area curriculum and to classroom assignments, and the skills need to be tied together in a logical and systematic information process model (Eisenberg & Johnson, 1996). The model consists of the following six stages.

Stage 1: Task Definition
Stage 2: Information Seeking Strategies
Stage 3: Location and Access
Stage 4: Information Use
Stage 5: Synthesis
Stage 6: Evaluation

Pathways to Knowledge is another information skills process model developed by Pappas that provides students with a framework that can be applied to locating information. Within this framework, the search strategies of browse, hierarchical and analytical search enable searchers to locate information in both the electronic and print environments (Pappas, 1998). This model is an investigative process that engages students in answering questions, solving real world problems, confronting issues, or exploring personal interests (Pappas & Tepe, 1993). Pathways is a model which suggests that the process of gathering and using information is nonlinear. There are six broad categories in this model which are broken down into a variety of processes providing a menu of options. These search strategies become a process or framework that learners can apply to become independent searchers. These broad categories include (Pappas & Tepe, 1993):

Appreciation/Enjoyment
Presearch (Get an overview; Integrate concepts)
Search (Locate sources; Search for relevant information)
Interpretation (Interpret information)
Communication (Organize & format information; Share new information)
Evaluation/Assessment (Evaluate product and process)

Kuhlthau has developed yet another information search process model from her research, which suggests processes students apply as they gather and use information. Her model, developed with teenagers, serves as a guide for coaching students in the research process. She suggests that the students go through a period of frustration and/or

confusion as they engage in the process of narrowing their focus. The model has seven stages, which are named for the primary task to be accomplished at each point in the process (Kuhlthau, 1984).

Stage 1: Initiation
Stage 2: Selection
Stage 3: Exploration
Stage 4: Formulation of Focus
Stage 5: Collection
Stage 6: Presentation
Stage 7: Assessment

Young children under the age of eleven do experience the stages of this model, although they may be more involved in building their general knowledge than formulating a personal perspective, as teenagers do (Kuhlthau, 1997).

The American Association of School Librarians adopted a model titled Information Literacy, written by the Wisconsin Educational Media Association (WEMA). The document also contains a series of scenarios which provide examples of classroom applications based on this model. This model has seven broad "Information Processing Skills" (WEMA, 1993):

I. Defining the need for information
II. Initiating the search strategy
III. Locating resources
IV. Assessing and comprehending the information
V. Interpreting the information
VI. Communicating the information
VII. Evaluating the product and process

The processes included under each of these broad categories are written in terms of what the student will be able to do. The vertical layout of the model suggests a linear sequence of processes which students can apply to accessing and using information for problem solving.

School librarian, Alice Yucht, developed the information literacy skills model with her seventh grade students called FLIP IT! The model was developed to help her students work through any kind of problem solving situation. FLIP IT! is a four stage linear process or strategy that can be used for all kinds of educational, personal and even professional problem solving. FLIP stands for Focus – Links – Input – Product. IT is shorthand for If-Then, the formula for most deductive problem solving. Student-centered, FLIP IT! is based on the question "What do I already know that will help me here?" Each step will lead the searcher from the initial questions to the final answers by following a logical progression of critical thinking skills (Yucht, 1997). Used as a mnemonic device to keep the thinker on task, FLIP IT! can be applied to any form of information problem solving, whether it is a simple reference question , a complex research project, a lab report or a math problem.

Searching Behaviors of Children

Difficulties in accessing and using Internet information resources are related to the cognitive development, language skills, and inexperience of novice searchers. Children do not demonstrate the same higher-order thinking skills that adults do (Neuman, 1997). An example of a cognitive difference between children and adults that will affect their ability to perform a search is the lack of a developed recall memory (Borgman, 1995).

Children lack the basic literacy skills related to reading and spelling which limit the effectiveness of their online searches. Difficulties related to reading skills (Chen, 1993), alphabetizing (Edmonds, Moore, & Balcom, 1990), spelling (Solomon, 1993;

Kafai & Bates, 1997) and vocabulary (Solomon, 1993) all were contributing factors which limited the success of children's electronic searches. Children have found it difficult to extract information from child "unfriendly" Web sites (Kafai & Bates, 1997). The sophistication, complexity, and specificity of information obtained through electronic resources frequently exceeded the reading comprehension levels of the students as well as their needs (Neuman, 1997). Students have had a hard time evaluating information they find on the Internet. In one study, the children assumed everything they found on the Internet was correct (Kafai & Bates, 1997).

Students who lack the background knowledge or concepts related to their research topics are unable to pose appropriate research questions or select appropriate search terms. Students who do not take the time to develop a familiarity with topic-related concepts and vocabulary before searching online resources, severely compromise their chances of a successful search (Solomon, 1993).

Research on children's search behavior in using information retrieval systems, such as CD-ROM databases and Online Public Access Catalogs, provides a context for their information seeking behavior and the problems likely to be encountered. Children's search strategies varied with grade level, search tasks, domain and topic knowledge, and the design of the structure of the OPAC used (Hirsh, 1998). In using a CD-ROM encyclopedia, children had difficulties in finding search terms and in spelling and lacked conceptual understanding of how the encyclopedia worked (Marchionini, 1989).

A number of studies have found that primary school children in particular typically encounter problems in selecting effective search terms (Borgman, Hirsch, Walter, & Gallagher, 1995; Hirsh, 1998; Marchionini, 1989). Solomon (1993) found that

children were more successful when dealing with concrete rather than abstract concepts. The subject heading system in use and children's search terms were strong candidates for factors that contributed to success and breakdown in children's information retrieval in the OPAC. When children's interests tended toward simple, concrete objects that did not have widely used alternative terms, their queries often matched the Library of Congress Subject Headings and they experienced retrieval success (Solomon, 1993). Students failed to extend searches beyond the terms originally chosen or to use subject headings and tracings as keys to appropriate alternatives (Chen, 1993). Students also failed to switch approaches or to employ other terms when their searches stalled or when their search terms produced an insufficient number of hits (Neuman, 1997).

The nature of the interface was another potential factor in children's success breakdown in information retrieval (Solomon, 1993). In comparison with adults, children lacked sophistication in language manipulation and search strategy formulation (Large, Beheshti, & Breuleux, 1998). Children lacked understanding of the design of nonlinear online systems and the mechanics of computers. Children experienced difficulty with file arrangement (Neuman, 1997), the creation of search protocols to which the systems they searched could respond (Kafai & Bates, 1997), navigating the keyboard (Marchionini, 1989), and typing (Chen, 1993; Kafai & Bates, 1997).

Analysis of children's search strategies and their circumstances of use of the OPAC suggested that the following factors helped improve success rates of student searches; the instructional approaches and children's interests, the structure of interaction presented by the OPAC's interface, the children's natural choices of query terms, and the learning effects of time and experience (Solomon, 1993).

Only a few studies have examined children's use of the Internet and Web directories. Finding information on the Internet can be motivating and fascinating to many children. The Internet can challenge, as well as offer a source of exploration, enjoyment, comfort, and convenience to children. Searching the Internet increases children's self-confidence in finding information. Children are more persistent and motivated in seeking information over the Internet than in using traditional and online sources (Bilal, 1998). Important contributors to children's information retrieval behavior are their motivation, purpose, and interest in their topics (Solomon, 1993).

A study of a group of elementary school children's Internet searching found that most children sought information by using browsing strategies and that a few used multiple synonyms to refine their queries. When querying the Internet, 62% of the children used inappropriate syntax such as natural language. Children searched more successfully when the assigned task was vague than when it was specific (Schacter, Chung, & Dorr, 1998).

Although browsing is preferred to analytical searching by primary school students, the students are willing and able to utilize the Web's directories (Large, Beheshti & Moukdad, 1999). Bilal (1998) reports that children found it difficult to search using Yahooligans Web directory, specifically designed for children and failed to use Boolean operators. Children are reactive searchers who do not systematically plan their strategies and do not employ sophisticated search techniques (Schacter, Chung, & Dorr, 1988). Several researchers have emphasized the importance of user training and specially designed, user-centered interfaces if children are to exploit more effectively Internet based information resources (Bilal, 1998; Hirsh, 1998).

Studies of Children's Internet Web Directories

Children's cognitive and mechanical skills are not as developed as those of adults (Hirsh, 1998; Kuhlthau, 1998). These differences pose issues when developing an Internet Web directory specifically for children. Web directories have become a primary means for accessing information on the Internet. Children seeking searching success should use the directories designed for them. Children's Web directories are designed for them in both the construction of their interface and the composition of their database. The primary characteristic of a children's Web directory is that its database has been compiled by manual selection. Librarians should teach their students about the strengths and weaknesses of Web directories, their fitness to specific types of queries, effective search strategies, navigation, and information evaluation. To support a variety of learning styles, children's Web directories should offer an assortment of search methods (Kuntz, 1999). Different search methods include keyword, subject, alphabetical by subject, grade/curriculum, Dewey Decimal classification and featured links. Other features of the search tools in children's Web directories include help files, spell check, URL searching, links to alternate search services, advertising privacy policy, and layout and design. Some sort of spelling aid should be a feature in any children's search tool supporting keyword searching.

The variety of features found in children's Web directories is an indication of the amount of careful thought that has gone into creating engaging, easy-to-use interfaces that can efficiently organize large amounts of selected age-appropriate material for young audiences (Kuntz, 1999). Understanding the strengths, weaknesses, and retrieval performance of Web directories designed for children could lead to improvement in

directory effectiveness, as well as assist information professionals in incorporating specific skills in information literacy programs to teach students how to effectively use these directories (Bilal, 1999).

A study of three children's search Web directories shed light on the strengths and weaknesses of Yahooligans, Ask Jeeves for Kids (AJFK), and Super Snooper and provided an idea about their fitness for specific types of queries. AJFK is suitable for queries that are formulated in plain English but not those with broad concepts. Yahooligans is suited for queries with both narrow and broad concepts due to its hierarchical structure of subject headings. Users who prefer to browse by subject are best served by using this directory. Super Snooper's large database size makes it a better choice for tasks that require a large amount of information gathering. Children who have problems with spelling should also use it. Both Super Snooper and Yahooligans outperform AJFK on truncated searches, since the latter interprets them as misspelled (Bilal, 1999).

Summary

Studies related to student use of electronic resources and online searching suggest a number of elements essential for the creation of a dynamic and effective information skills curriculum. These elements include instruction about the information search process as a structure within which meaningful information seeking proceeds, an exploration of the research topic, attention to basic information literacy skills, attention to searching strategies, and emphasis on information handling and use.

CHAPTER 3

Methodology

Introduction

The goals and objectives of this case study were for third-grade students to effectively use the children's Web directories, Yahooligans (http://yahooligans.com) and Kidsclick (http://sunsite.berkeley.edu/kidsclick!/) to locate information on the Internet and then to compare the success rates of the two Web directories. A program of instruction was incorporated to teach third-grade students how to use children's Web directories to locate, identify, and select appropriate Internet Web sites that provided information related to a selected topic for classroom projects, research, and personal interest. The students learned information literacy skills and search techniques that can be applied not only to Internet resources but also to traditional print materials. Overall, this study intended to make Internet resources an accessible, user friendly and viable information source for children eight and nine-years-old.

Kidsclick is a noncommercial children's Web directory created by a group of librarians at the Ramapo Catskill Library System in 1997 to address concerns about the role of public libraries in guiding their young users to valuable and age appropriate Web sites. The database contains websites manually selected by librarians that they believe children in grades kindergarten through seventh grade will find entertaining or enlightening. Categorizations of Web sites in the Kidsclick directory include an

evaluative review, a two to four-sentence summary, reading level and description of illustrations for each site. Kidsclick's search access methods are keyword, subject, and alphabetical by subject. Other features are help files, a link to spell check, URL links, and a privacy policy. Kidsclick has no advertising.

Yahooligans is a commercial children's Web directory developed by Yahoo, Inc. in 1994 for children ages 7 to 12-years-old. Yahooligans builds its database through user submission of sites and through the automated search robots that collect new sites and pages. Categorizations of Web sites in the Yahooligans directory include an evaluative review, a one to three-sentence summary, and ratings of "cool" sites. Yahooligans search access methods are keyword, subject, and alphabetical by subject. Other features are help, URL links, and a privacy policy. Yahooligans does contain advertising.

Description of Methodology

The methodology selected for this thesis was a naturalistic case study of third-grade students. It examined the children's behavior and success rates when using the two Web directories, Kidsclick and Yahooligans, to locate information in their natural school library setting. The researcher selected this type of study because she believes behavior is best understood as it occurs without external constraints and controls. The setting influences the way the children behave, and therefore, it is not possible to understand the behavior without taking into account the situational characteristics. The researcher collected both qualitative and quantitative data directly from the subjects through a data collection worksheet and observations recorded in field notes. Detailed narratives provided in-depth understanding of contexts and behaviors. The emphasis was on the

process of how and why the behaviors occurred which allowed for conclusions that explain the reasons for the results. The data gathered was analyzed to generate assumptions on the student use of both Web directories. Theory was developed from the bottom up. The researcher tried not to predetermine how the students were to behave. She focused on the students' point of view of their interactions and behaviors while searching for information on the Web directories.

Design of the Study

The researcher taught a unit of instruction on searching children's Web directories to locate information to her third-grade students. Instruction took place in the students' natural school library setting. The researcher meets with each class for a scheduled library visit once each six school days. Library classes are one hour long. The researcher spends approximately forty-five minutes on instruction and/or storytelling and allots the last fifteen minutes of class for book selection during regularly scheduled library visits. The unit for this case study consisted of three sessions lasting approximately forty-five minutes each session. The first lesson was group instruction on learning the basics of using a Web directory. The second lesson was a review session with demonstrations of keyword searches as a group, followed by individual practice using the designated children's Web directory. In the final lesson, the students completed a data collection worksheet in which they located and recorded the answers to five questions by doing keyword searches on one of the two chosen children's Web directories. Library classes are scheduled on a six-day schedule, Day's 1 through 6, unlike a traditional Monday through Friday class schedule. The researcher randomly chose the classes that meet on

odd numbered school days to use Yahooligans Web directory for their searches to locate information. Classes that meet on even numbered days used Kidsclick as their Web directory for searches.

Sample and Population

The case study took place in an elementary school in a metropolitan oceanside resort community. According to the 2000 census, the population of the community was 15,378 with a median age of 47. The population was 93.6% white and 4.3% black. The remaining 2.1% of the population was made up of American Indians, Asians, Pacific Islanders, Hispanics and other. The average household income was $70,908. The median home value was $169,769. The majority of the workers commute 15 to 44 minutes to executive, administrative, or management jobs. Of the residents eighteen-years-old and older, 45.8% had advanced schooling beyond high school, with 6.1% attaining a graduate or advanced degree.

According to the 2000-2001 New Jersey School Report Card, there were a total of 411 students enrolled in the case study's kindergarten through third grade school. English was the first language spoken at home for 100% of the students, with 2% having limited English proficiency. There was a daily student attendance rate of 94.7% and a mobility rate of 23.5%. The average class size was 16. The student computer ratio was 6.3 : 1 with all room locations in the school wired for access to the World Wide Web.

According to school records, as of February 8, 2002 the total school population for grades pre-school handicapped through third was 358. The population for the case study included all 90 third grade students in the researcher's school. This group

consisted of 46 girls and 44 boys. These students were grouped in six regular education classrooms and one self-contained special education classroom. The 8 students in the self-contained class were mainstreamed into three regular education classes for special areas classes such as library and physical education.

All third grade students and their parent or guardian signed an acceptable use policy at the start of this school year. Although this was the responsibility of the classroom teacher, the researcher double-checked with all classroom teachers to make sure newly enrolled students were not overlooked. A permission form for the students to take place in the case study was sent home for each parent or guardian to sign before the case study began. (See Appendix) Students who enrolled, dropped out or were absent for part or all of the case study were not used in the study.

The setting of the case study was the natural library setting of the school. Group lessons were held in the teaching area of the library and the 36" monitor was used for instruction. Instruction took place during each third-grade's class regularly scheduled library visit. There were seven computer stations with Internet access which use the Web browser Internet Explorer for student use. The children's Web directories, Kidsclick and Yahooligans were bookmarked on each computer to make access for the children more easily accessible.

Instrumentation

A student worksheet that contained five questions was one instrument that was used in the case study. This worksheet required the students to do a keyword search on a specified children's Web directory to locate the answer to each question. Each question

on the worksheet allowed the children to record how many Websites they looked at before they found the answer. It allowed the children to search for up to three Websites before going on to the next question. Each question had a space to record the answer and the URL of the Website where the answer was located. (See Appendix)

Structured field observation was the other instrument used for data collection in the case study. Structured field observation allowed the researcher to describe the behavior of the children as it occurred in their natural library setting. The researcher identified the behaviors observed, reflected on the behaviors observed, identified a system of coding information, and interpreted and analyzed the results.

Data Collection and Other Procedures

The researcher observed naturally occurring behavior over the course of the case study in order to obtain a rich understanding of the behaviors and actions being demonstrated by the students. Observation was comprehensive in that it was continuous and total. The researcher was a participant observer in that she is the librarian teaching the unit. The researcher took field notes recording the observations of the students while they conducted their searches for information using the children's Web directories, Kidsclick and Yahooligans. The researcher utilized a trained assistant who was a nonparticipant observer. The assistant is a parent volunteer in the school. She has a Bachelor's degree in Business and Marketing. She received training from the researcher by reading and reviewing three chapters about field observations from graduate textbooks, demonstrating the process of taking field notes, reviewing all information contained in first three chapters of the case study, and by practicing taking field notes

before the actual observations occurred. The assistant aided the researcher by taking field notes on one group of students using the computers on one side of the library while the researcher took notes on the other group of students. The field notes contained two kinds of information. The first type was descriptive. Descriptive field notes captured the details of what occurred. The second type of field notes, reflective, recorded the observers' feelings, interpretations, or subjective ideas related to the research. The field notes constituted a portion of the raw data that the researcher analyzed to address the research problem.

The researcher also collected raw data by reviewing the instrumentation data collection device worksheet the students completed during the last session of the study. This worksheet included five questions that the students answered using either Kidsclick or Yahooligans. The students did a keyword search on the Web directory to locate a Website that had the information to answer to the question. The student had the chance to visit three Websites to locate the information before giving up and going on to the next question. The student colored in a circle for each Website visited for each question. When or if the answer was found, the student wrote the answer on the line provided and then wrote down the URL of the Website where they found the answer on the line provided.

After all of the students completed the worksheets, the researcher searched each directory to discover how many hits for relevant Websites a keyword search produced. The researcher purposely waited until after the students completed the worksheets to see if the directory contained Websites with information that enabled the students to answer the various questions. A search was done at this point so as to not bias the study. The

researcher intended to not only discover if the students could locate the answers, but also if the directories contained Websites which had the information to answer the questions. This made the situation more naturalistic as a searcher usually does not know for certain which sites a directory's database contains.

Data Analysis Plan

Field notes were organized to separate the data into workable units, while looking for categories and concepts, topics and themes. This was completed by reading through the notes to look for words or phrases that seemed to stand out and then created codes for these categories of data. The researcher accomplished this by examining all of the entries that had the same code and writing a sentence or two about the information. The researcher then looked for relationships, patterns, ideas, explanations, and understandings among the categories. This data was organized and summarized by the researcher to create generalizations and conclusions.

The researcher also analyzed the data collected with the worksheet the students completed using the SPSS statistical software program. Each of the five questions were coded to obtain a numerical value that represented or measured the children's performance at the time the worksheet was given. Each question was coded with one of the following seven possible answers; correct answer first site, correct answer second site, correct answer third site, no answer after three sites, wrong answer, incomplete answer, or no attempt to answer the question. Frequencies and percentages measuring the children's performances in answering the questions were tabulated. These percentages were used to compare the subjects' performances for each Web directory.

The results were reported as a percentage of questions answered correctly and tallied the number of Websites visited before locating each answer. Comparisons were made to ascertain which Web directory had a higher success rate for locating the correct answers to the questions in the fewest attempts. All findings will be reported in the next chapter.

CHAPTER 4

Presentation and Evaluation of Data

Research Activities

The total population for this case study was 90 third-grade students from the researcher's public elementary school. Due to absences during the three-week study and non-return of the permission slip, a total of 72 students' responses were used for the data analysis. After two instructional lessons, the students were asked to complete a worksheet on the third week of the study. On this worksheet, they were required to attempt to answer five questions, record the number of Websites searched, and copy the URL of the Website where they located the answer using a specified children's Web directory. Students were to try at least three times to answer each question. The worksheet contained a biography, poetry, animal, geography, and sports question. A total of 34 students used Yahooligans and 38 used Kidsclick. Table 1 displays the number of students included for each directory and number of questions answered. Data collection took place during the students' regularly scheduled 60-minute library class. The students were allowed to take as much time as needed to complete the worksheet. The average time a student needed to complete the worksheet using Yahooligans was approximately 35 minutes. The average time a student needed to complete the worksheet using Kidsclick was approximately 25 minutes. During the students' searching sessions, the

researcher and an assistant recorded field notes of the students' behavior in narrative and tabular form. Worksheets were collected, answers checked, data coded and then analyzed using SPSS software.

Table 1

Number of Students Answering Questions for Each Web Directory

Web Directory		Biography Question	Poetry Question	Animal Question	Geography Question	Sports Question
Yahooligans						
	Valid	34	34	34	34	34
	Missing	0	0	0	0	0
Kidsclick						
	Valid	38	38	38	38	38
	Missing	0	0	0	0	0

Observations of Student Search Sessions

The researcher and the assistant observed the six classes of third-grade students participating in the search sessions for the case study during their regularly scheduled 60-minute library visit. The students took approximately 30 minutes to complete the worksheets using the Web directories, Kidsclick and Yahooligans. The students had varying degrees of difficulty in completing the worksheets using each Web directory. The students' behaviors and actions were similar for the two Web directories and will be grouped together since no observable differences were noted. The observations generated in this section were general problems and feelings that the students demonstrated during the search sessions.

Many students in the classes had some degree of difficulty in determining which Website best answered the question. The students appeared to randomly open Websites without reading the summary of the Website included in the hits generated by the directory. Only 12 students were observed reading aloud the summaries or reading level which is included only in the Kidsclick directory. Random opening of Websites was clearly observed with the geography question and sports question when the students attempted to answer the questions with irrelevant sites on insects, biographies of people from Mississippi, and songs of the Mississippi.

Students had problems entering the keyword in the search box. Spelling and keyboarding errors were observed. Students exhibited frustration with body gestures, sighs, verbal cues and cries for help. Both the assistant and researcher reassured the students with these problems to try their searches again. The students were able to use the back button to reenter the search term.

This case study was the first time the students used the computers to search the Internet during library class. The navigational skills demonstrated by the students were very good. They were able to open Internet Explorer, open the bookmarked Web directory, and navigate throughout their searches. Students utitilized the back button to get back to the home page of the directory most frequently. They were also observed using the bookmark and Yahooligans or Kidsclick homepage hyperlink located on each search results page to get back to the main search page.

Although the majority of students had no problem navigating their way through their searches, twelve students were observed having great difficulty with their searches which resulted in incomplete or incorrect answers. The researcher was very familiar with

all of the students, so she was able to identify the children with these major problems as students from the self-contained classroom and special education classified students. They had problems navigating, typing and reading the information. They exhibited much frustration by the looks on their faces, sighs and blank stares into the computer monitor. Most of these students turned in their worksheets unanswered or incorrect. The researcher and assistant assured all of the students that it was all right for them to complete only what they were capable of completing on their own.

Several students attempted to help each other with the search sessions. When students were observed talking or gesturing to each other, they were reminded that they were to complete the worksheets on their own and that it was fine for them to get wrong or incomplete answers. Ordinarily, the researcher would allow the students to help each other during library class, but for this case study she asked the children to complete the worksheets on their own.

During one search session the Internet connection was disrupted for approximately eight minutes. Throughout the school year the network had been very unstable. The students seemed to be accustomed to such a disruption and sat patiently waiting for the connection to be restored while chatting with their classmates. The researcher was just beginning to tell the students to take a break and select their new library books when the Internet connection came back on and the students resumed their search sessions without any further disruptions.

The search sessions for the Yahooligans directory went more slowly than the search sessions for the Kidsclick directories. They lasted on average about 5 to 10 minutes longer.

Overall, the students had only minor difficulties while completing their search sessions. The only major problems were observed with the self-contained and special education students with their inabilities to read and navigate through their searches. Some students did need support from the researcher and assistant at times with reminders in using the back button, recording answers and keyboarding skills.

Biography Question Results

The first question on the worksheet was a biography question that asked what Eli Whitney invented. After all students completed the worksheets, the researcher went to each directory to record the number of hits for each question on each Web directory. On Yahooligans there were six Websites that matched the search for Eli Whitney and all of the sites contained relevant subject matter to answer the question. There were two hits on Kidsclick, both of which contained relevant subject matter to answer the question. Table 2 and Figure 1 display the student responses of answers for the biography question using both of the Web directories. Students found the answer more frequently on the first Website with Yahooligans, but the success rate for the correct answer overall was higher with Kidsclick. Students using Yahooligans had an overall accuracy rate of 64.7%. Students using Kidsclick had an overall accuracy rate of 86.8%. Incomplete, incorrect, or no answers occurred more frequently on Yahooligans.

Table 2

Biography Question Responses for Yahooligans and Kidsclick

Web Directory	Correct Answer 1st Site	Correct Answer 2nd Site	Correct Answer 3rd Site	No Answer After 3	Wrong Answer	In-Complete Answer	No Attempt	Total
Yahooligans	17	5	0	0	0	3	0	34
Kidsclick	11	22	0	0	0	1	0	38
Total	28	27	0	0	0	4	0	72

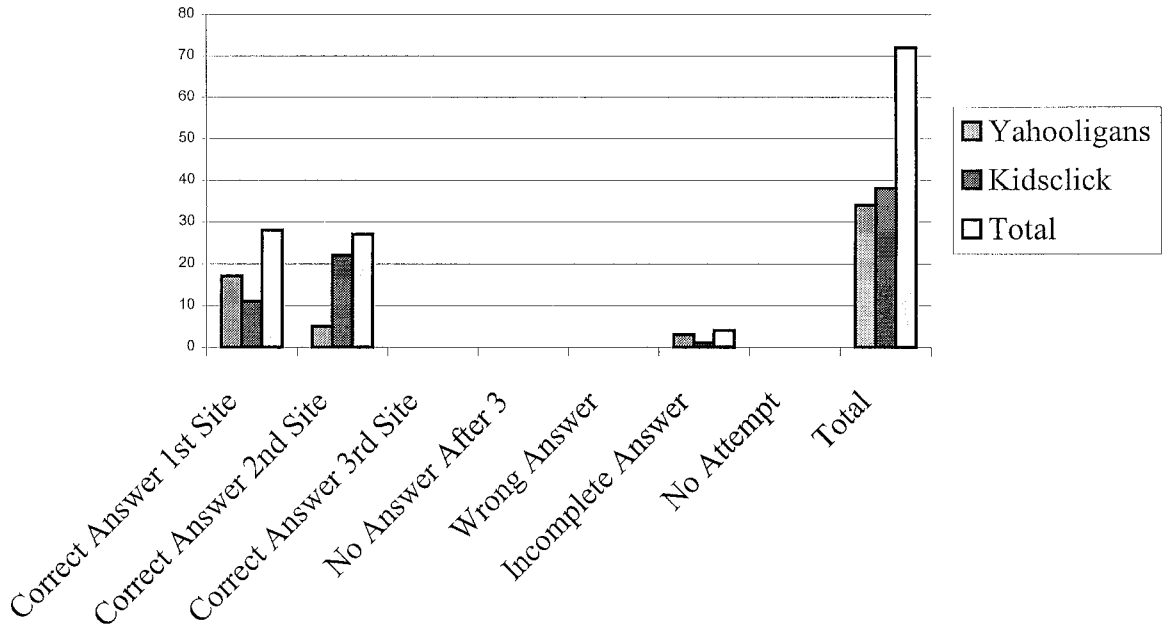

Figure 1. Biography Question Responses for Yahooligans and Kidsclick.

Poetry Question Results

The second question on the worksheet was a poetry question that asked what was haiku. After all students completed the worksheets, the researcher went to each directory to record the number of hits for each question on each Web directory. On Yahooligans

there were six Websites that matched the search for haiku and all of the sites contained relevant subject matter to answer the question. There were three hits on Kidsclick and all three contained relevant subject matter to answer the question. Table 3 and Figure 2 display the student responses of answers for the poetry question using both of the Web directories. Students found the answer with a success rate of 81.6% on the first Website with Kidsclick, while only having a success rate of 50% on the first Website using Yahooligans. Students using Yahooligans had an overall accuracy rate of 73.5%. Students using Kidsclick had an overall accuracy rate of 92.1%. Incomplete, incorrect, or no answers occurred more frequently on Yahooligans.

Table 3

Poetry Question Responses for Yahooligans and Kidsclick

Web Directory	Correct Answer 1st Site	Correct Answer 2nd Site	Correct Answer 3rd Site	No Answer After 3	Wrong Answer	In-Complete Answer	No Attempt	Total
Yahooligans	17	7	1	3	1	2	3	34
Kidsclick	31	1	3	0	2	1	0	38
Total	48	8	4	3	3	3	3	72

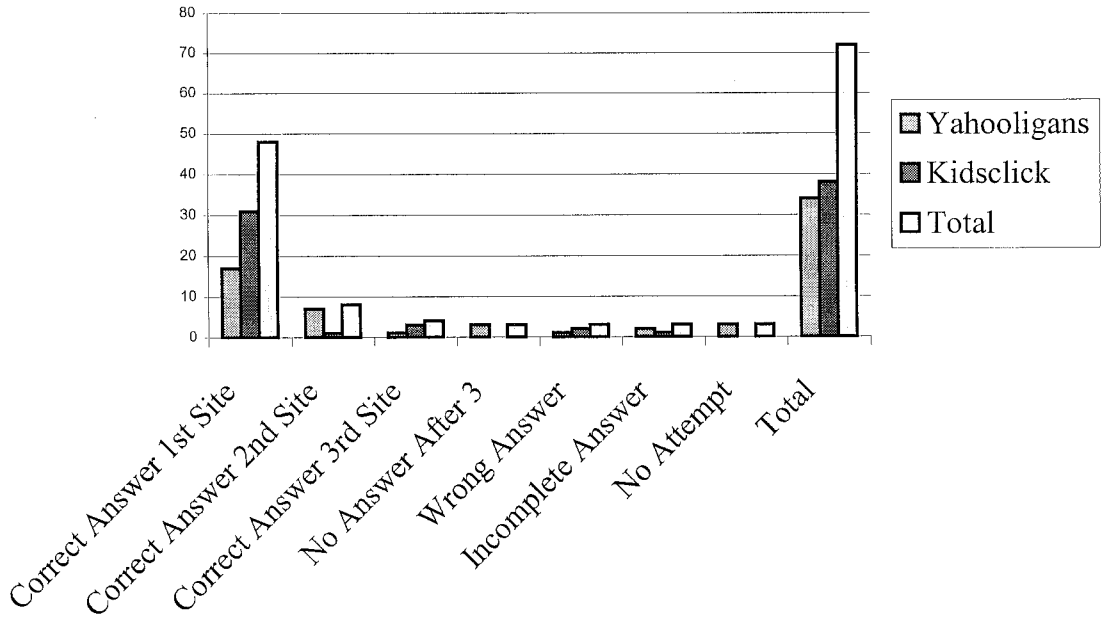

Figure 2. Poetry Question Responses for Yahooligans and Kidsclick.

Animal Question Results

The third question on the worksheet was an animal question that asked what kind of food do pandas eat. After all students completed the worksheets, the researcher went to each directory to record the number of hits for each question on each Web directory. On Yahooligans there were 20 Websites that matched the search for panda bears, with 16 of them containing relevant subject matter to answer the question. There were three hits on Kidsclick, with two containing relevant subject matter to answer the question. Table 4 and Figure 3 display the student responses of answers for the animal question using both of the Web directories. Students found the answer with a success rate of 50% on the first Website with Kidsclick, while only having a success rate of 29.4% on the first Website using Yahooligans. Students using Yahooligans had an overall accuracy rate of 61.8%.

Students using Kidsclick had an overall accuracy rate of 92.1%. Incomplete, incorrect, or no answers occurred more frequently on Yahooligans.

Table 4

Animal Question Responses for Yahooligans and Kidsclick

Web Directory	Correct Answer 1st Site	Correct Answer 2nd Site	Correct Answer 3rd Site	No Answer After 3	Wrong Answer	In-Complete Answer	No Attempt	Total
Yahooligans	10	7	4	6	2	1	4	34
Kidsclick	19	10	6	0	0	1	2	38
Total	29	17	10	6	2	2	6	72

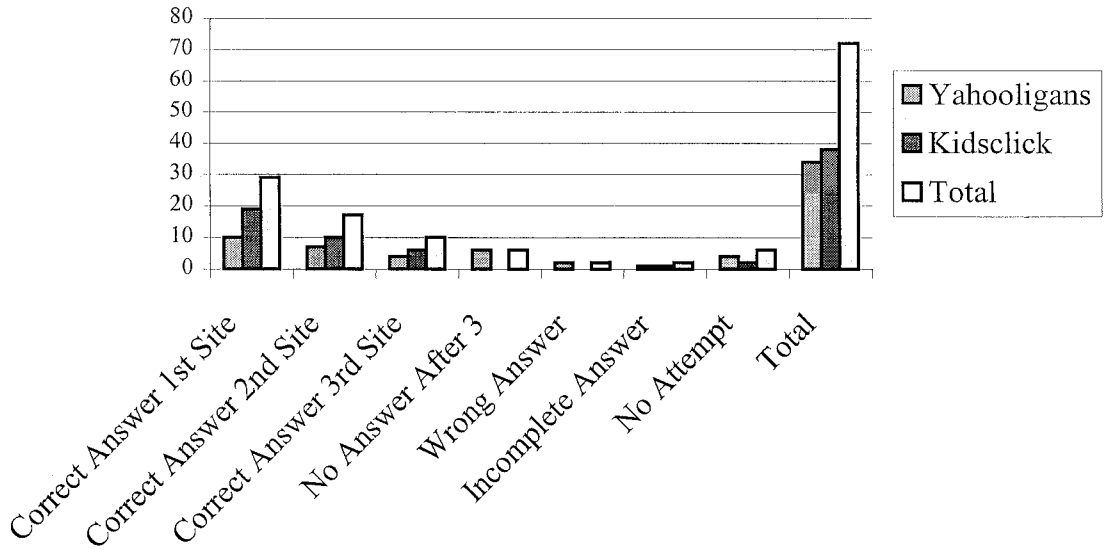

Figure 3. Animal Question Responses for Yahooligans and Kidsclick.

Geography Question Results

The fourth question on the worksheet was a geography question that asked the length of the Mississippi River. After all students completed the worksheets, the researcher went to each directory to record the number of hits for each question on each

Web directory. On Yahooligans there were 15 Websites that matched the search for Mississippi River, with only 4 of the sites containing relevant subject matter to answer the question. There were four hits on Kidsclick with none of them containing relevant subject matter to answer the question. Table 5 and Figure 4 display the student responses of answers for the geography question using both of the Web directories. Students were unable to answer the question at all with Kidsclick because a search of the directory did not produce any relevant hits. The answer was located through the Yahooligans directory but at a lower success rate of 47.1% than with the previous three questions using the same directory.

Table 5

Geography Question Responses for Yahooligans and Kidsclick

Web Directory	Correct Answer 1st Site	Correct Answer 2nd Site	Correct Answer 3rd Site	No Answer After 3	Wrong Answer	In-Complete Answer	No Attempt	Total
Yahooligans	11	4	1	3	11	0	4	34
Kidsclick	0	0	0	32	3	1	2	38
Total	11	4	1	35	14	1	6	72

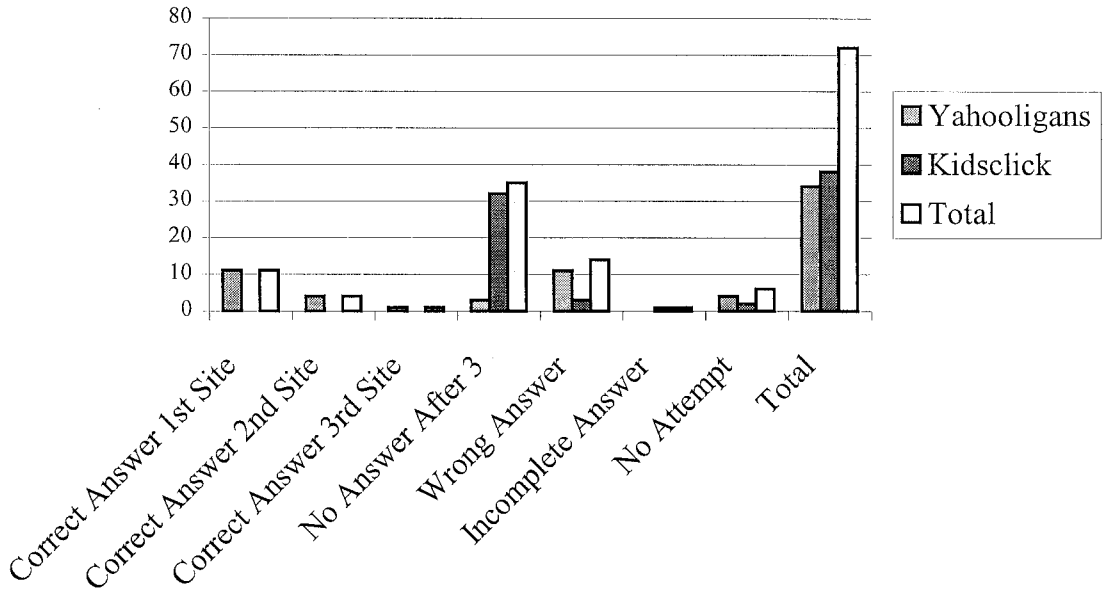

Figure 4. Geography Question Responses for Yahooligans and Kidsclick.

Sports Question Results

The fourth question on the worksheet was a sports question that asked in which country is cricket a popular sport. After all students completed the worksheets, the researcher went to each directory to record the number of hits for each question on each Web directory. On Yahooligans there were 16 Websites that matched the search for cricket, with only 3 of the sites containing relevant subject matter to answer the question. There were three hits on Kidsclick, with one of them containing relevant subject matter to answer the question. Table 6 and Figure 5 display the student responses of answers for the sports question using both of the Web directories. Students were only able to answer the question four times with Kidsclick because a search of the directory only produced one relevant hit which was a complicated Website to navigate with a high reading level. The answer was located 21 times through the Yahooligans directory. Students using

Yahooligans had an overall accuracy rate of 61.8%. Students using Kidsclick had an overall accuracy rate of 10.5%.

Table 6

Sports Question Responses for Yahooligans and Kidsclick

Web Directory	Correct Answer 1st Site	Correct Answer 2nd Site	Correct Answer 3rd Site	No Answer After 3	Wrong Answer	In-Complete Answer	No Attempt	Total
Yahooligans	12	8	1	5	3	1	4	34
Kidsclick	3	1	0	25	4	2	3	38
Total	15	9	1	30	7	3	7	72

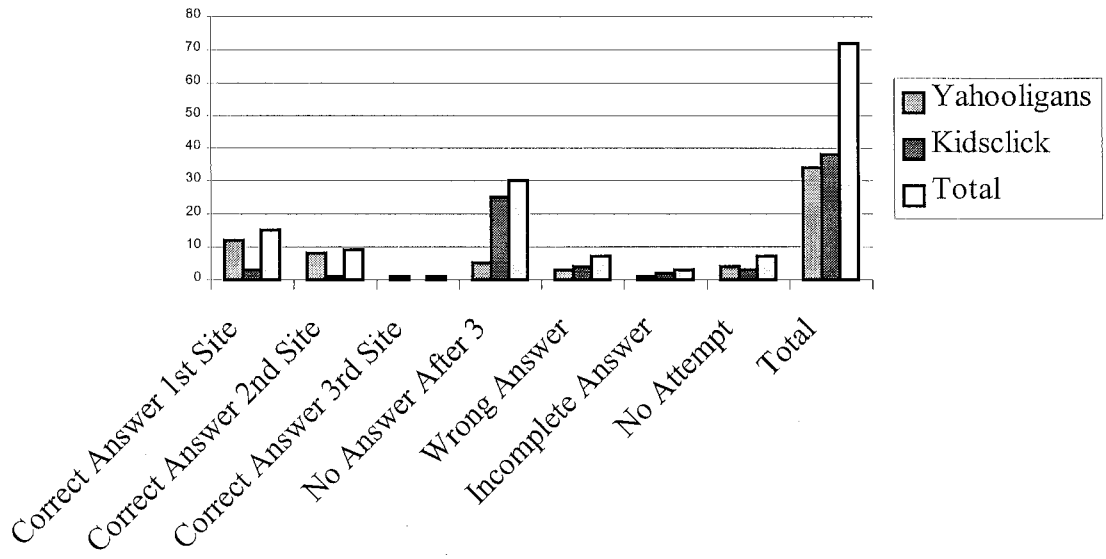

Figure 5. Sports Question Responses for Yahooligans and Kidsclick.

Final Results

The percentage of each question answered correctly for each Web directory is displayed in Table 7. Kidsclick had a higher percentage of correct answers for the biography, poetry, and animal questions. Yahooligans had a significantly higher percentage of correct answers for the geography and sports questions. Overall, for all of the questions, Yahooligans had a higher success rate for correct answers of 64.7%. Kidsclick success rate for all of the questions combined was 56.3%.

The percentages for overall correct answers using each directory were also tabulated without the using the geography question as displayed in Table 8. This was done because Kidsclick did not have any relevant Websites in its database which would answer the geography question. The researcher wanted to also show the rate of success the students had with the directories when a question was excluded because the directory did not contain any relevant Websites. When only the questions with relevant Websites in each database were used, the overall success rate of correct answers using Kidsclick was higher with a rate of 70.38% over Yahooligans success rate of 69.13%.

Table 7

Percentage of Correct Answers for Yahooligans and Kidsclick

Web Directory	Biography Question	Poetry Question	Animal Question	Geography Question	Sports Question	Overall Correct
Yahooligans Percentage of Correct Answers	79.4%	73.5%	61.8%	47.1%	61.8%	64.7%
Kidsclick Percentage of Correct Answers	86.8%	92.1%	92.1%	0%	10.5%	56.3%

Table 8

Percentage of Correct Answers for Yahooligans and Kidsclick Without Geography

Web Directory	Biography Question	Poetry Question	Animal Question	Sports Question	Overall Correct
Yahooligans Percentage of Correct Answers	79.4%	73.5%	61.8%	61.8%	69.13%
Kidsclick Percentage of Correct Answers	86.8%	92.1%	92.1%	10.5%	70.38%

Recording URL's

Each question on the worksheet was followed by a space to record the URL of the website where the student located the answer. The majority of the students were unable to copy the address from the address bar to the space provided for it on the worksheet. Overall, only 39.6% of the correct answers had the corresponding correct website copied down on the worksheet. Students were observed saying "Oh no, I have to copy all of that down!", "What does that mean", "Yuck", and other negative comments. Most appeared to try their hardest to copy the addresses, but just were unable to copy it correctly. A few students copied the name of the site instead of the address. Once again, the special education and self-contained students had the greatest difficulty with copying the address down on their worksheets.

Conclusions and recommendations based on all of the preceding findings will be discussed in the next chapter.

CHAPTER 5

Summary, Conclusions and Recommendations

Summary

The purpose of this case study was for third-grade students to effectively use the children's Web directories, Yahooligans and Kidsclick to locate specific information on the Internet and then to compare the success rates of the two Web directories. This study attempted to answer these research questions:

1. Can third-grade students effectively learn Internet skills?
2. How successful are third-grade students in searching Yahooligans to locate specific information?
3. How successful are third-grade students in searching Kidsclick to locate specific information?

The researcher implemented a naturalistic case study with all 90 third-grade students in her public elementary school. The researcher taught a unit of instruction over a three-week period on searching children's Web directories to locate information to her third-grade students. During the final week of the study, the students completed a data collection worksheet in which they located and recorded answers to five questions by doing keyword searches on one of the two chosen Web directories. Observations of the children's' behaviors and actions were recorded by the researcher and an assistant. Due to absences during the study and non-return of the permission slip, a total of 72 students'

responses were used for the data analysis. The quantitative and qualitative data generated was analyzed and conclusions and recommendations were made.

Conclusions

The majority of third-grade students were able to effectively learn Internet skills. They were able to open Internet Explorer, open the bookmarked Web directory, and navigate throughout their keyword searches. There were sixteen students who were observed having major difficulties with the basic Internet skills associated with keyword searches of the children's Web directories, Kidsclick and Yahooligans. These were the students from the self-contained classroom and the special education classified students. They had problems opening the bookmarked directories, navigating, and typing in their keyword searches. These students were also having great difficulty in reading the questions as well as the contents of the directories. There were no noticeable differences observed of student's Internet skills when using the two Web directories during the search sessions. It is concluded that the third-grade students who are at the approximate third-grade educational level are able to demonstrate the basic Internet skills needed to conduct searches on the children's Web directories, Kidsclick and Yahooligans. Students with special educational needs are not able to demonstrate the basic Internet skills needed to conduct searches on the children's Web directories Kidsclick and Yahooligans.

Third-grade students had an overall success rate of 64.7% in answering all five of the questions on the worksheet using the Yahooligans directory. The students had and overall success rate of 56.3% in answering all five of the questions on the worksheet using the Kidsclick directory. These results can be looked at from two different

perspectives. The first perspective examines each directory from total view of all questions, and not taking into consideration the number of relevant Websites the searches generated from each directory. This perspective would lead to a conclusion that Yahooligans is the better Web directory for third-grade students to use for their Internet information needs.

The second perspective takes into account that the percentage of success for Kidsclick was greatly lowered because the geography question had no relevant Website hits, and the sports question only had one relevant Website hit which was at a seventh-grade reading level. The other three questions were answered at a higher success rate on Kidsclick over Yahooligans. In this perspective, Kidsclick was the more successful directory. The second perspective would only use the four questions that had relevant hits from both directories. This would exclude the geography question. If the geography question was excluded from the data, then Kidsclick would have a higher success rate of 70.38% over Yahooligans success rate of 69.13%.

Kidsclick directory had fewer hits of Websites for each questions than Yahooligans. It is concluded that the reason for fewer hits on Kidsclick is that it is a newer directory and that it is noncommercial directory produced by librarians, not a corporation. Although it had fewer relevant Websites in its database, the children had a higher success rate in finding the correct answers when the relevant sites were available through Kidsclick. This suggests that Kidsclick is the superior directory for third-grade students to use while searching the Internet. Furthermore, with time the directory's database of Websites should increase making it an even better directory for children.

Third-grade students demonstrated the same successful Internet navigational skills while using both the Yahooligans and Kidsclick Web directories. Both of these directories are appropriate when considering the Internet skills needed by third-grade students to successfully navigate themselves through searches for information. Since the Internet skills necessary to navigate through both of the directories were successfully demonstrated equally by the third-grade students, the success rates of the two directories must next be addressed. The higher success rate for Kidsclick when relevant Websites are available leads to a final conclusion that third grade students' information needs would be best served by first searching the Kidsclick directory for specific information. The searches were more quickly and successfully accomplished using Kidsclick when relevant Websites were available. If students do not find the relevant Websites on Kidsclick needed to obtain their information needs, then the student should be directed to conduct a second search on Yahooligans.

Both Yahooligans and Kidsclick are appropriate children's Web directories for the average third-grade student to use to search for specific information on the Internet, but the researcher concluded that Kidsclick should be the first directory children go to for their information needs when using the Internet.

Recommendations

Based on the great difficulties that the self-contained and special education classified students demonstrated in their search sessions of both Kidsclick and Yahooligans, it is recommended that further research be conducted to see how the needs of these students could be better met when using Internet resources. The learning styles,

physical and cognitive developmental levels, and other special needs of such students must be taken into account and the best modifications must be determined and made when maintstreaming them into regular education classes.

Further instruction on using children's Web directories needs to be given to the third-grade students on selecting appropriate Websites. During the search sessions on both Yahooligans and Kidsclick, the students were observed randomly opening Websites. Both of the directories include a brief description or summary for each Website retrieved during a search. Kidsclick also includes a reading level and description of the type of illustrations contained in each Website in its database. The students should be reminded to read the description/summary, reading level and description of illustrations when included from the hits of Websites from their searches of the directories. Reading this information will help the students have quicker, more successful, and more productive search sessions.

The Internet is a constantly changing entity. Both the Yahooligans and Kidsclick Web directories are also constantly going through changes, additions, updates, and revisions. Research into these two directories needs to be an ongoing process in order to keep up with the changes and best meet the needs of students.

Further research of different and larger groups of third-grade students in their use of Kidsclick and Yahooligans to locate specific information would help the validity and reliability of this study.

It is obvious that the Internet is and will continue to be a major information source for students at school and at home. Instruction in the skills necessary for making efficient and effective use of this information source will and should continue to play an important role in library information instruction.

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APPENDIX

OCEAN CITY PUBLIC SCHOOLS
OCEAN CITY, NEW JERSEY 08226

PRIMARY SCHOOL
5TH AND WEST AVENUE
TELEPHONE: 399-3191

February 22, 2002

Parents and Guardians,

Over the next three weeks your child will be participating in a unit of study to learn how to use the children's Web directory, Kidsclick (http://sunsite.berkeley.edu/kidsclick!/) in their library class. The goal of this unit of study is to incorporate a program of instruction that will teach third grade students how to locate, identify and select appropriate Internet resources that provide information related to a selected topic for classroom projects, research, and personal interest. The students will learn information literacy skills and search techniques that can be applied not only to Internet resources but also to their print counterparts. Overall, this study intends to make Internet resources an accessible, user friendly and viable information source for children eight and nine-years-old.

I am using this unit of instruction as the basis of my Masters Thesis from Rowan University. Library classes will be conducted as usual. Please sign and return the attached permission form to allow your child to participate in this unit of study. If you have any questions or concerns about your child participating in this unit of instruction, please contact me during school hours at the number listed above.

Sincerely,

Kristin Montanero, Librarian

I give my child permission to participate in the library unit of instruction, "Third-grade Students use of Kidsclick and Yahooligans". I understand that the observations and results of this case study will be used in Mrs. Montanero's Masters Thesis for Rowan University.

_____ _____

Child's Name Parent Signature

OCEAN CITY PUBLIC SCHOOLS
OCEAN CITY, NEW JERSEY 08226

PRIMARY SCHOOL
5TH AND WEST AVENUE
TELEPHONE: 399-3191

February 22, 2002

Parents and Guardians,

Over the next three weeks your child will be participating in a unit of study to learn how to use the children's Web directory, Yahooligans (http://www.yahooligans.com) in their library class. The goal of this unit of study is to incorporate a program of instruction that will teach third grade students how to locate, identify and select appropriate Internet resources that provide information related to a selected topic for classroom projects, research, and personal interest. The students will learn information literacy skills and search techniques that can be applied not only to Internet resources but also to their print counterparts. Overall, this study intends to make Internet resources an accessible, user friendly and viable information source for children eight and nine-years-old.

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_____ _____

Child's Name Parent Signature

REGULATIONS

OCEAN CITY PUBLIC SCHOOLS

Student Internet Responsibility Contract

Please read the following carefully before signing this document. This is a legally binding contract and must be signed before you will be given access to the district's electronic network account.

The Ocean City Public Schools has access to the Internet. The Internet is an electronic highway connecting thousands of computers all over the world and millions of individual people. The access allows for the following: (1) electronic mail; (2) information and news from a variety of sources and research institutions; (3) access to many university libraries, the Library of Congress, and more.

With access to computers and people all over the world also comes the availability of some material that may not be considered to be of educational value within the context of the school setting. The Ocean City Public Schools has taken every available precaution to restrict access to inappropriate materials.

However, on a global network, it is impossible to control all materials. The users of the district's access to the Internet firmly believe that the valuable information and interaction available on this worldwide network far outweigh the possibility of users procuring material that is not consistent with the educational mission of this school district.

Following are guidelines provided to establish the responsibility you are about to acquire. If any user violates any of these provisions, his or her access to the school district's account will be denied. The signatures at the end of this document are legally binding and indicate the parties who signed have read the terms and conditions carefully and understand their significance.

REGULATIONS

Terms and Conditions

1. **Acceptable Use:** The purpose of the Internet is to support research and education in and among academic institutions in the opportunity for collaborative work. The use of the school district's account must be in support of education and research and consistent with the educational objectives of the Ocean City Public Schools. Transmission of any material in violation of any U.S. or state regulations is prohibited. This includes, but is not limited to: copyrighted material, threatening or obscene material, or any material protected by trade secret. Use for commercial activities by for-profit institutions is not acceptable. Use for product advertisement or political lobbying is also prohibited.

2. **Privileges:** The use of the school district's Internet access is a privilege, not a right, and inappropriate use will result in cancellation of those privileges. Only those students with prior experience or instruction who have signed this contract shall be authorized to use the Internet.

3. **Network Etiquette:** The use of the school district's account requires that you abide by accepted rules of network etiquette. These include, but are not limited to, the following:

   - Be polite. Do not send abusive messages to anyone.
   - Use appropriate language. In all messages, do not swear or use vulgarities or any other inappropriate language. Anything pertaining to illegal activities is strictly forbidden. (*Note that E-mail is not guaranteed to be private. People who operate the system do have access to all mail. Messages relating to or in support of illegal activities must be reported to appropriate authorities.)
   - Privacy. Do not reveal the personal address or phone numbers of yourself or any other person. All communications and information accessible via the network should be assumed private property.
   - Connectivity. Do not use the network in such a way that

REGULATIONS

would disrupt the use of the network by others.

4. **Services:** The Ocean City Public Schools will not be responsible for any damages you may suffer. This includes loss of data resulting from delays, non-deliveries, or service interruptions caused by your own negligence or your errors or omissions. Use of any information obtained via the school district's account is at your own risk. The Ocean City Public Schools deny any responsibility for the accuracy or quality of information obtained through its services.

5. **Vandalism:** Vandalism will result in cancellation of privileges. This includes, but is not limited to, the uploading of computer viruses.

6. **Updates:** The Ocean City Public Schools may occasionally require new registration and account information from you to continue providing services. All Terms and Conditions as stated in this document are applicable to the Ocean City High School. These Terms and Conditions reflect the entire agreement of the parties and supersedes all prior oral or written agreements and understandings of the parties. These Terms and Conditions shall be governed and interpreted in accordance with the laws of the State of New Jersey, United States of America.

INTERNET USER CONTRACT

I_____understand the policies as outlined in the "Ocean City Public Schools Internet Usage Policies" document and will abide by those rules. I also understand that any inappropriate conduct will be dealt with as deemed appropriate by the administration and this may include, but is not restricted to, immediate revocation of Internet access rights, detention, suspension and legal prosecution. The administrators of the network are <u>not</u> responsible for any misconduct or harm that I commit. I am held fully responsible for all my actions. In using this network, I promise to:

- Be respectful of the rights, the ideas, the information and privacy of others
- Neither send nor receive information that can be hurtful or harmful to others. This includes discrimination by race, religion, ethnic origin, sex and sexual orientation. (I understand that this includes the sending or receiving of sexually explicit material).
- Neither receive nor distribute unauthorized copies of copyrighted software.

Signature of Student_____
Date _____

I_____, being the parent/guardian of the above student understand all the policies outlined in the "Ocean City Public Schools Internet Usage Policies." I also understand that even though my son/daughter's school is providing supervision and guidance during the student's use of the Internet, complete blockage of all unauthorized material is not guaranteed and I will not hold the school responsible for the student's access of unauthorized material. By signing here, I give my son/daughter permission to access the Internet through his/her school.

Signature of Parent/Guardian_____
Date_____

Open the Internet connection and go to the bookmarked site, **Kidsclick**.
Do a keyword search to locate a website which will answer each of the following questions.
Color one circle for each website visited in your search to locate the information.
Write down the address of the website where you found the answer to the question.
If you have not found the answer after visiting three websites, please go on to the next question.

1. What did Eli Whitney invent? ① ② ③

_____

Address http:// _____

2. What is haiku? ① ② ③

_____

Address http:// _____

3. What kind of food do panda bears eat? ① ② ③

_____

Address http:// _____

4. How long is the Mississippi river? ① ② ③

_____

Address http:// _____

5. Cricket is popular sport in which country? ① ② ③

_____

Address http:// _____

Open the Internet connection and go to the bookmarked site, **Yahooligans**.
Do a keyword search to locate a website which will answer each of the following questions.
Color one circle for each website visited in your search to locate the information.
Write down the address of the website where you found the answer to the question.
If you have not found the answer after visiting three websites, please go on to the next question.

1. What did Eli Whitney invent? ① ② ③

_____

Address http:// _____

2. What is haiku? ① ② ③

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Address http:// _____

3. What kind of food do panda bears eat? ① ② ③

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Address http:// _____

4. How long is the Mississippi river? ① ② ③

_____

Address http:// _____

5. Cricket is popular sport in which country? ① ② ③

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Address http:// _____