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Teaching research skills with electronic reference tools: a study of curriculum development and articulation

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TEACHING RESEARCH SKILLS WITH ELECTRONIC REFERENCE TOOLS: A STUDY OF CURRICULUM DEVELOPMENT AND ARTICULATION

by
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ABSTRACT

Johanne D. Milnes. Teaching Research Skills with Electronic Reference Tools: A Study of Curriculum Development and Articulation. 2000. (Under the direction of Dr. Holly G. Willett, Program in School and Public Librarianship).

Elementary teachers and elementary school library media specialists are expected to prepare students to be able to complete independent research using a variety of print and electronic reference tools. The purpose of this study was to examine what programs are available in elementary schools that prepare students to do independent research. The subjects were library media specialists who taught grades three, four, five, and six in schools in New Jersey. The schools were part of the FG group of the New Jersey District Factor Grouping System. Using a self-administered questionnaire the subjects described the essentials of their library programs, responded to questions about curriculum articulation and integration, and expressed opinions concerning faculty involvement and student preparedness. Librarians listed a variety of print and electronic reference tools they used for instruction, reporting electronic reference tools were taught more to fifth and sixth grade. Most librarians were only involved in supporting subject content units, though many agree they should be involved in planning cross-curricular units. Many librarians agreed their students were prepared to do research at the next grade level. A list of activities librarians believed were successful was also compiled.

MINI-ABSTRACT

Johanne D. Milnes. Teaching Research Skills with Electronic Reference Tools: A Study of Curriculum Development and Articulation. 2000. (Under the direction of Dr. Holly G. Willett, Program in School and Public Librarianship).

Library media specialists are expected to prepare students to become information literate. This project identified the reference tools that are taught to elementary students. Concerns about curriculum articulation and integration were explored. A list of successful activities was compiled.

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Chapter 1
The Problem

Introduction

Teaching reference skills has been in the language arts curriculum and library curriculum for a number of years. The New Jersey Core Content Curriculum Standards addresses the fact that many of the skills which are taught in the library curriculum are in the Cross-Content Work Place Skills. In April 1999, the Educational Media Association of New Jersey (EMAnj) prepared a document that aligns the Information Literacy Standards for Student Learning, developed by the American Association of School Librarians (AASL), with the N. J. Core Curriculum Content Standards. Considering the explosion of information and its availability through electronic resources, it is imperative for elementary and middle school teachers and media specialists to prepare students to meet the challenge of mastering and using the wide variety of electronic resources that will become available to them in high school.

From kindergarten through second grade the focus of instruction is on learning to read, and from third grade on, students focus on reading to learn. Though this statement stresses the need for children to develop strong reading skills, it also stresses the fact the much of our learning comes from reading printed material. As children reach the middle elementary grades, they are required to gather information from a variety of resources and synthesize it into new formats to exhibit what they have learned. Reports and projects

have fallen victim to cut and paste plagiarism as discussed by Dr. Jamie McKenzie at the Educational Media Association's fall 1999 conference. Educators need to reinvent their concepts of research and prepare students to become information literate.

Information literacy "equips individuals to take advantage of the opportunities inherent in the global information society" (American Association of School Librarians, 1995, p. 20). In 1991 the Association of Supervision and Curriculum Development (ASCD) was one of the 60 educational associations that formed the National Forum on Information Literacy (NFIL). The ASCD urged schools to integrate information literacy programs into the learning programs for all students. "To become effective information users, students must have frequent opportunities to handle all kinds of information" (AASL, 1995, p. 21). School library media resource programs that are integrated into the school's curriculum can be an important part of a program to help students master information literacy skills (ASCD, 1995).

The ASCD explained this ability to access and use information is important for an individual's success in school, work and personal life. They listed 6 basic elements that should be in an information-literacy curriculum:

1. Defining the need for information.
2. Initiating the search strategy.
3. Locating the resources.
4. Assessing and comprehending the information.
5. Interpreting the information.
6. Evaluating the product and process.

Students must have frequent opportunities to handle all kinds of information. The teacher librarian can facilitate activities that offer relevant practice, using a variety of information resources. To foster information literacy the teacher librarian should work with the classroom teacher to plan, provide leadership, and assist in managing programs and

activities that will ensure students become effective users of ideas and information (ASCD, 1995).

The level of cognitive development of students has an impact on their personal success in learning research skills and the attitudes that are formulated as they develop their cognitive abilities. Library media specialists know a lot about student ability. They can " see it when students cannot write or when they take out books they cannot read." (McGuire, 1998, p. 22). Library media specialists are involved in developing vehicles for sharing resources, integrated thematic units and project approach components. They become well-acquainted in subject areas and content requirements. The challenge is to articulate what the library media specialists already do and document their instructional successes (McGuire, 1998).

Carol Kuhlthau developed a process for teaching library research skills based on the concept that people form and are continually reforming their ideas through their personal experiences (Kuhlthau, 1994). Her program is designed in correlation with cognitive development according to Piaget. Jamie McKenzie suggests instruction also depends on the cognitive level of the students and suggests the level will determine the type of research that can be successfully conducted (1995). Michael Eisenberg and Robert Berkowitz have developed the Big 6 Skills approach, which is an information literacy curriculum. This program also presents an information problem solving process and a set of skills that provide a strategy for effectively meeting information needs (Eisenberg, 1997).

Statement of the Problem

In the past ten years there have been major changes in the manner and speed at which information is made available. Library information services and library curricula are at a critical period of defining and implementing the changes that are needed to prepare students to be effective in information gathering. Selection and interpretation of data are skills that must be incorporated in any curriculum that teaches research skills. School librarians are expected to teach basic research skills. Many state education departments have developed action plans or issued directives recommending an interdisciplinary approach to education. The problem is when and how to integrate disciplines (Krapp, 1988).

The problem of "when" is a scheduling issue. The problem of "how" is a content and skills development issue. Identifying materials that can be used at particular levels, that match students' cognitive level, is a concern. Is there a common sequence that enables students to move from print to electronic reference tools? How do teacher librarians connect the use of the research tools to the information literacy skills that must be taught? Finally, how does the library curriculum integrate into the content taught in the academic disciplines? These are questions that library media specialists must answer as they develop their programs and provide materials for their schools

Purpose

Elementary school programs are the building blocks of successful high school and college experiences. Much of the responsibility for preparing information literate students falls on the shoulders of the elementary teacher and the elementary school library media specialist. The purpose of this study was to define what programs are available in

elementary schools that prepare students to do independent research. Library media specialists currently working in libraries that include grades three, four, five, and six were surveyed. These grades were selected because they include students who are at the concrete operational stage and the formal operational stage of development according to Piaget. The school districts that were included in the survey were classified in the FG grouping of the New Jersey district factor groups. The schools found in this category are one level above the middle of the range of districts in New Jersey. The population of the districts has a higher rate of adults who have a college education and a higher median family income than lower DFG schools. The students who attend schools in this grouping have a greater possibility of access to electronic references outside of the school. This higher socio-economic setting is more likely to have integrated resources available to the students and the staff than schools at lower DFG schools. Therefore it is likely that the schools have programs that develop information literacy skills that utilize print and electronic reference tools.

Theoretical Framework

The framework of this investigation is based on the role theory and structural functionalism paradigms. The library curriculum functions to provide a structure for the development of students' information literacy skills. Students are introduced to skills and reference tools at levels that match their cognitive development. This survey explored a variety of reference tools to determine if a common pattern in the sequence of presentation could be found. This study also attempted to identify developmentally appropriate activities or units by compiling a collection of ideas that library media specialists recently used in their schools.

As the New Jersey Core Curriculum Content Standards are implemented and technology changes, so to do the roles of the librarian and teacher have to change. The library media specialist has become the teacher, facilitator, information specialist and educational consultant as we move from traditional approaches to more authentic learning (Pappas, 1999). The role theory paradigm provided a framework for inquiry in this study. Library media specialists were asked if they actually participated on the planning of research units. They were asked their opinions about issues involving planning, supporting and integrating curriculum.

Questions to be answered

This study arrived at conclusions about curriculum integration and articulation based on a self-administered questionnaire. School library media specialists identified the equipment that is available in their libraries and the scheduling formats that are used for the four grade levels involved. A list of reference tools and search terms that receive direct instruction as part of the library curriculum was developed.

Library media specialists indicated whether or not they were involved in planning and supporting cross-curricular activities in Science, Social Studies and Language Arts. They expressed their opinions about planning and supporting grade level curricula and the knowledge and support their faculty members and administrators have of their curriculum. They were also asked to express their opinions about their students' readiness to do independent research at the next level of education. Finally, the library media specialists were invited to share a project or unit that is successful in their school.

Definitions

The following definitions are used for terms used throughout this thesis.

Boolean search is a method to complete a key word search. The words "OR" (A or B), "AND" (A and B), and "NOT" (A not B) can expand or limit the search.

CD-ROM is a compact disc with Read Only Memory that is used for data storage.

Cross-curricular units are units of study that involve information literacy skills integrated with content knowledge in another academic discipline such as social studies, science, or language arts. An example is a research project in a science unit that requires the students to use print encyclopedias, periodical databases and Internet sites.

Electronic database is a collection of data that is stored electronically, not in the print version.

Elementary school is defined as any school that includes kindergarten through eighth grade. The grade levels on which this study focused were third through sixth. These grade levels can be found in a number of building configurations, i.e. in a K-4 primary, 3-5 intermediate school, a 4-8 intermediate school or a 5-8 or 6-8 middle school.

Fixed-scheduling is defined as a schedule where classes visit the library on regularly set periods of the week.

Flexible scheduling is defined as library scheduling where teachers sign up for specific class periods in an "as needed" basis.

Information literacy is the ability to find and use information for lifelong learning. "Information literacy equips individuals to take advantage of the opportunities inherent in the global information society." (AASL, 1995).

Key word search is a method used in searching catalogs, indexes, databases, or in a reference interview to help the searcher determine exactly what is being sought. For example: What are the products of Peru? The keyword is Peru.

World Wide Web search is a search for information that is found on the Internet.

Organization of the Remainder of the Study

Chapter 2 of this thesis examines literature written on the subject of information literacy and the development of the student learner. The design of the study and the methodology are explained in Chapter 3. The results of the data collection are presented and analyzed in Chapter 4. Conclusions and recommendations are presented in Chapter 5.

Chapter 2

Literature Review

Introduction

As the century comes to a close, educators have some time to reflect on the advances in technology and the effects it has had on the focus and approach they take to preparing students for the next millennium. They have seen classes move from one room schoolhouses to schools without walls, from answers being recorded on hand-held slate boards to discussions by students on cyberspace bulletin boards. The role of the librarian has also taken a dramatic shift from keeper of the books to information and media specialist and educational consultant. The meaning of the word "literate" extends far beyond the need to be able to decode and read words to comprehend the writers meaning. Literacy extends beyond the printed word to cyberspace.

Information literacy has been defined as the ability to recognize when information is needed, and the ability to locate, evaluate, and effectively use the needed information. Information literacy has been the focus of the American Association of School Librarians (AASL) and the American Library Association (ALA) committees, the subject of books, themes of conferences, and material for numerous journal articles. Information literacy is essential to the quality of individuals' lives, to business and to our American way of life as discussed at the 1989 ALA Presidential Committee on Information Literacy (Pitkin, 1995). The pre-electronic information environment could be compared to a child's puzzle of the United States with each piece representing a different state in a different color all connected in its overall purpose but separate and distinct in its own form and function.

The present electronic information age could then be described as that same view of the child's puzzle as seen from space with the overall form and function the same but the state boundaries blended into the geographic formations of the land. This present electronic information age may provide us with vastly more information but it is less valuable without the ability to locate, evaluate and effectively use the information. This is why we teach.

History

Committees of the American Library Association (ALA) and the National Education Association (NEA) have worked together since 1920 to establish standards for students to develop information literacy skills. The Committee on Library Organization and Equipment established standards for junior high schools and senior high schools of varying sizes. In 1925 the joint committees of ALA and NEA published *Elementary School Standards.* Twenty years later the first set of national K-12 school standards were published which served as the precedent for today's school library media programs. These standards differentiated between the school librarian and the public librarian and services they provided. The American Association of School Librarians (AASL) prepared *Standards for School Library Programs* that shifted the emphasis to serving students and teachers. School librarians were urged to work closely with teachers in both selection of materials and skill development of the students in the first integrated programs. Over the next ten years, ALA and AASL worked with the Department of Audiovisual Education of the National Educational Association (now the Association for Educational Communications and Technology) to develop standards and programs to address the needs of students and teachers which incorporated the rapidly increasing

amounts and varieties of audiovisual materials and media. Development of guidelines in media programs emphasizing a systems approach to media services continued through 1975 with the publication of *Media Programs: District and School* by AASL and AECT. In 1988 the publication *Information power: Guidelines for school library media programs* provided guidelines and vision for school library media programs to develop programs that would better serve the school and community in the emerging information age (AASL & AECT, 1988).

The mission statement "to ensure that students and staff are effective users of ideas and information" (AASL & AECT, 1988) remained the same in the latest revision in 1998. The profound changes in society and technology in the past ten years have also produced massive changes in education and the school library media programs of the nation. There is a new emphasis to create a community of life long learners. Information literacy, as described in the 1998 edition of *Information Power,* is the understanding how to access and use information. This becomes the core of lifelong learning. Nine standards were developed and indicators were provided to assist program developers when applying these standards to content areas of their curricula (AASL & AECT, 1998).

The constitution of New Jersey guarantees that, regardless of residency, all children will have a thorough and efficient education. With six hundred independent school districts, each exercising considerable local control, each district determines its own curriculum challenges to ensure this thorough and efficient education for the children of its individual community. The New Jersey Core Curriculum Standards were developed in 1996 to describe what students should know and be able to do in specific academic area and across disciplines. Knowledge and skills are assessed at three benchmark grades (4^{th}, 8^{th}, 11^{th}). Performance tasks and levels of competencies will be

attached, as the standards are integrated into school curricula and the state assessment tests. The standards address the skills in language arts, mathematics, science, social studies, world languages and comprehensive health and physical education. The standards serve as a guide for curriculum framework, which will be developed to meet the specific curricular needs of the community.

Eighty-five standards comprising 1,195 indicators were extracted from the eight content areas. They were regrouped to define five cross content workplace readiness standards, which apply to all areas of instruction. They are:

1. All students will develop career planning and workplace readiness skills.
2. All students will use technology, information, and other tools.
3. All students will use critical thinking, decision-making, and problem solving skills.
4. All students will demonstrate self-management skills.
5. All students will apply safety principles. (New Jersey Department of Education, 1996).

The Education Media Association of New Jersey (EMAnj) worked with the Department of Education to develop the cross content standards so they aligned with the standards that were developed by the AASL as described in *Information Power.* This important link will assist library media specialists as they develop and defend the importance of their existence in school curriculum and budgets.

Theoretical background

The functionalist paradigm "has us regard society as a system, made of components, each of which serves as a function for the whole (Babbie, 1998, pg. 3). The example of the symphony illustrates this explanation. Each instrument creates its own sound, which can stand independently, but when combined with the other orchestral components together they create a work that is totally unique and different from the

component pieces. The library media program is an integral component of the whole school curriculum. Library skills are taught at students' developmental levels. Skills can be taught in isolation or in close coordination with the other academic disciplines as suggested by the core curriculum content standards.

According to Piaget, a child through his interaction between his mental structures and his environment is constructing knowledge. Intellectual development is the process of restructuring this knowledge (Labinowicz, 1980). Piaget describes children's characteristic thinking in four stages; sensory-motor stage, pre-operational stage, concrete operational stage and formal operational stage. The succession of the stages is constant but the levels of attainment vary based on the aspects of heredity and environment among individuals (Ornstein, 1998). For a child to begin his growth in information literacy, that is to be able to access and use information, he would have to be in the concrete operational stage of development. This stage, which normally occurs between the ages of 7 and 11, has the characteristic capabilities of classifying and ordering concrete information. As the child proceeds to the formal operational stage, his ability to think begins to extend beyond concrete reality. At this stage, normally ages 11 to 15, the child is capable of better understanding abstract concepts and can make application of the information he gathers to products he produces.

The constructivist approach to learning incorporates a cycle of acting and reflecting, feeling and formulating, predicting and choosing, and interpreting and creating. This approach views learning as an active, engaging process in which all aspects of experiences are called into play (Kuhlthau, 1994). The constructivist classroom works on the premise that school learning should be like the rich natural forms of learning that children experience before they enter school. In "real life" situations students learn

through practical problem solving. They inquire, explore, and discover information in a variety of formats. They are challenged to reason, question, and draw connections, communicate, and evaluate viewpoints. Then students are expected to create products that give evidence of their new understanding of the concepts and their relationships to one another (McLaughlin, 1996).

Children of all ages can benefit from this process approach but a critical element is that the person forms a focused point of view from the information gathered on the topic. This formulation requires a considerable amount of abstraction that might be beyond children who have not reached the formal operational stage of cognitive development and may require formal schooling to achieve. Jerome Bruner took Piaget's stages of cognitive development to encompass all learners depending on their point in the learning process. He described his stages as enactive, iconic and symbolic (Bruner, 1963). Learning moves through these stages as knowledge and the level of understanding deepen (Kuhlthau, 1993).

The Information Search Process developed by Carol Kuhlthau describes information seeking as a process comprised of stages of discovery. These stages match the phases in the process of construction and incorporate three realms: the affective, cognitive, and the physical. Briefly, the stages are identified as the tasks of initiation, topic selection, pre-focus exploration, focus formulation, information collection, and search closure. As the student proceeds through each task, he also moves through a progression of emotions. These are identified as uncertainty and apprehension, optimism, confusion, frustration and doubt, clarity, sense of direction, confidence, relief, satisfaction or dissatisfaction. The tasks move the student from seeking relevant information to seeking pertinent information (Kuhlthau, 1993).

As it takes a village to raise a child, it takes the blend of paradigms, theories, guidelines, and program applications to develop a student into an independent learner. The New Jersey Core Curriculum Content Standards and the AASL and AECT guidelines provide a structure for library media programs to integrate the cognitive development of the child with the academic curriculum of the district. The process of information literacy can be achieved by a construction approach to developing information retrieval skills.

Background Studies

Historically, teachers in the upper elementary and high schools grades taught reference skills. With the explosion of technology and increased demand for the development of information literacy, school library media programs have adapted and become even more important in achieving the school's goals. The quality of a school media program is directly linked to the quality of education offered in the schools.

As early as 1980 programs to teach information retrieval skills were being conducted. Most studies involve secondary or post secondary students, but the conclusions may provide insight and understanding to the development of sound programs at the elementary level, which will be the focus of this study.

Bette L. George conducted a study to identify promising methods for teaching library reference skills to heterogeneously grouped fifth and sixth graders. Using teacher-directed and self-paced independent instruction kits, the effectiveness of each of these methods was observed. Self-paced instruction proved to be effective, but due to variables in the student population during the testing, significant differences were not

observed. The addition of a student-centered approach was, however, noted to be valuable as another approach to teaching reference skills (George, 1981).

Carol Kuhlthau conducted studies while developing the Information Search Process. One of these longitudinal studies addressed how the students' perceptions of the information seeking process changed after four years of college. The changes the students identified showed the model held over time for a select group of students. Case studies were also conducted of four students while compiling the information in developing the search process. The affective reactions to the search process revealed the students moved through the range of emotions as described in the model (Kuhlthau, 1994).

In 1993, Carol Kuhlthau again studied implementing the process approach to information skills at Rutgers. Primary inhibitors and basic enablers were the focus. Three primary inhibitors were revealed in the study: lack of time, confusion of roles, and poorly designed assignments. It was more difficult to identify the enablers as they are not necessarily the opposite of the inhibitors, and removing the inhibitors did not necessarily guarantee success of the program. The study did indicate that successful information gathering process depends on the development of an instructional team and that a break from the traditional concept of one teacher one classroom is essential. The study also indicates those library media programs that stress enablers and address inhibitors are more likely to meet with success in integrating ideas, information and curriculum (Kuhlthau, 1993).

Information literacy in undergraduate education and faculty attitudes revealed students are still arriving at the tertiary level without the information literacy skills that are expected. A study completed in two large Canadian universities was designed to enhance the understanding of cross-disciplinary needs of bibliographic instruction. The

attitudes and perceptions of the faculty were explored, as were the pedagogical practices in teaching information literacy skills in the health sciences and engineering. Some of the findings were that timing and tailoring of library instruction are essential. Flexibility of the librarians and instructors is critical. Articulation between librarians and staff must exist. Hands-on sessions and activities that develop self- sufficient users are essential. Faculty perceptions of students needs and what the students actually use may be completely different. Finally, faculty could use assistance, and academic librarians could become very involved in creating opportunities for valuable contributions to the life of the academy (Leckie, 1999).

Present Research

In the past ten years, the advances in technology, the availability of electronic resources in the home, school, and media center, and the global connection that has been created by the use of the Internet, have again changed the focus of instruction in the media center. To be information literate the user must also be able to make sense of the extensive amount of information provided through electronic resources. As this constantly increasing database of information cascades down upon us, the media specialist can be compared to a surfer riding the crest of a wave of information ready to crash down him or staying just in front of the crest gathering momentum as skills and proficiencies are developed. The need to develop quality programs is immediate. Teachers are teaching, using emerging technologies, and sharing their successes and failures. The literature concerning this aspect has been anecdotal in nature. Presently research studies have been found that explain which type of program works or what formula of instruction should be followed. A search through current journals and

periodicals revealed that there are many suggestions of approaches, projects that are being conducted, and concerns that are being brought to the surface as educators struggle to create quality programs and procedures that will help our students become information literate in this information age.

An important component used to create quality programs is the essential teacher training in emerging technology. Whether the program is designed to incorporate the critical thinking approach (Krapp, 1988), multimedia program approach (Cornelio, 1994), web-searching instruction practices (Kafai, 1997) or curricula with catchy names (Johnson, 1999), it is imperative that teachers have time to learn and experiment as a learner themselves. Teachers have expressed a need and a desire to explore and practice using new materials before they apply them to their curricular units, but many relate that time is rarely available (Anderson, 1997).

Another concern library media specialists have, as they work to define and develop cross-curricular units, is the problem of scheduling. Schools that provide flexible or mixed scheduling found they had a greater integration of information retrieval skills instruction applied to the curriculum than schools that only provided fixed schedules (Van Deusen and Tallman, 1994). Finally, a concern for student assessment is addressed in many of the articles reviewed. As the type of search techniques are developed to include electronic resources, so too will the methods of evaluation or assessment of skills be realigned with the objectives of the research (Farmer, 1997).

Conclusion

Chapter 3 will demonstrate how the ideas presented in the review of past literature contributed to the design of the study.

Chapter 3

Methodology

Introduction

Library information services and curriculum development are at a critical period of defining and implementing the changes that are needed to prepare students to be effective at information gathering. Many factors impact on the successful development of programs within individual schools. This thesis explored the use of electronic resources to teach reference skills.

Library media specialists were asked to describe the types of electronic resources that are available in their schools. They identified the electronic resources for which they are responsible to give instruction and described their involvement in planning of cross-curricular units. They were also asked to express their opinions about cross-curricular units and their involvement with the planning and support of these units. Finally, the library media specialists were asked to share an activity or unit idea to be used as examples of successful projects.

Methodology and Study Design

Data for this thesis was collected through the use of a self-administered questionnaire (see Appendix). Surveys were mailed to 100 elementary schools in the FG group of the statewide District Factor Grouping System. As Babbie states, "Survey research is probably the best method available to the social scientist interested in

collecting original data for describing a population too large to observe directly" (1998, p. 256). He continues, "Surveys are also excellent vehicles for measuring attitudes and orientations in a large population" (1998, p. 256).

Included in the mailing was a letter of explanation, a consent form, the survey, and a self addressed stamped envelope for the respondent to return the survey. Follow-up surveys were sent after two weeks to non-respondents.

Technology is an expensive line item in any school budget. The New Jersey Core Curriculum Standards have become a driving force in curriculum development. The need to teach students to become information literate at levels that are appropriate to their individual developmental stage is important to the library media specialist. The amount and level of technology in any particular school library may have an impact on the research skills that are taught in the library class. The researcher was particularly interested in finding if there is a common pattern in the sequence of resources that are taught.

Cross-curricular units are used to integrate several academic disciplines in "real life" scenarios. Planning and execution of these units often require a great deal of team-work, with teachers, as well as students. This survey asked the respondents to indicate their level of involvement in the planning and support of these cross-curricular units. The opinion of the library media specialist was also of interest to the researcher. Librarians were asked to share their opinions about the level of involvement and support they feel their program experiences. Finally, with the hope of collecting a selection of good ideas, there was an open-ended question about a particularly successful program.

Sample and Population

A sample of 100 school library media specialists, currently working in schools of the FG group, was surveyed. The District Factor Group System includes all counties in New Jersey. Its most recent revision was in 1992 based on the 1990 census. The District Factor Group (DFG) is an indicator of the socioeconomic status of the citizens in a particular school district. It has been useful for comparative reporting of test results in New Jersey's statewide testing program. There are seven indices that are used in a principal component analysis to produce a statistical score, which is used to rank the school districts. School districts are grouped with other districts having scores within an interval of one tenth of the distance from the highest and lowest scores. There have been eight groups developed based on the 1990 census. They range from A (the lowest socioeconomic districts) to J (the highest socioeconomic districts) (Department of Education, 1999). Districts at the low end of the socioeconomic range qualify for more state aid, which might be spent to provide needy students with technology they may not be able to use at home. Districts at the higher end of this socioeconomic range may not receive large amounts of state aid, but the level of education and income in the home would probably provide a greater exposure to technology for these students. The FG group is one of the median groups. It was selected by the researcher to better understand districts with a population that may not receive a great deal of state aid for technology but are required to provide programs for a population that has some exposure from the home, but not as much as districts with higher DFGs.

There are 87 districts in New Jersey that fall into the FG group. There are 38 high schools, 40 middle schools, and 183 elementary schools. The building configurations vary from primary (K-2), intermediate (3-6), and middle (7-8), to elementary (K-6), and

junior high (7-9). For this investigation there were 223 schools that had grades 3, 4, 5, or 6 in the building. The survey was sent to 100 of these schools, after a random number was selected form the Random Numbers Table in Babbie (1998). Though the sampling included the 21 counties of New Jersey, there was some duplication that occurred when examining lists from surveys conducted by previous thesis classes. To eliminate this duplication, the next available district was selected to be added to the sample.

Instrumentation

A self-administered survey questionnaire (see Appendix) was constructed to obtain information from school media specialists that teach students in the third, fourth, fifth, and sixth grades. A cover letter (see Appendix) which states the purpose of the study accompanied the survey. The individuals that were selected were told they need not respond to all the questions in the survey and that the data which was gathered, would be anonymous and confidential. The participants were asked to sign and return the consent form if they chose to volunteer for the study. They were also given the opportunity to receive a copy of the results. The survey was pre-tested by a group of teachers and librarians who are not a part of the study. Suggested changes recommended by the thesis advisor and those that pre- tested the survey were incorporated in the survey.

The survey was printed on both sides of letter-sized paper. Each survey had a number code assigned to it in order to identify those librarians who returned surveys and those who would need reminders sent to them.

The survey consisted of four sections. Section I contained six questions, mostly closed-ended, which asked the participant to make a check in the box of all applicable answers. The questions in this section pertained to the grade levels that attend class in

the library, the type of scheduling that is used, and the equipment available in the library. Two questions asked about the reference tools and the type of searches that receive directed instruction from the library media specialist.

The second section asked the respondents to indicate which grade levels they assist in planning and support for the units in Social Studies, Science, and Language Arts. These questions included "none" as a response for those respondents who do not plan activities with the teachers or supply support for the curricula.

The third section asked participants to indicate their opinion about the role the library media specialist plays, in planning and supporting cross-curricular units. The respondents were also asked their opinion about whether the faculty is knowledgeable about library curriculum and whether they thought there was administrative support for in-service training. Finally, respondents were asked if they thought their students were well prepared to complete research using print and electronic reference tools. The fourth section asked the participants to briefly describe an activity or unit that they believed was particularly successful.

Data Collection

The surveys were mailed on February 28, 2000 to the attention of the library media specialist in each of the 100 schools. The mailing included a cover letter explaining the purpose of the survey and stamped self-addressed envelope for its return. Addresses for the various schools were obtained from *Patterson's Elementary Education* (Moody, 1999).

Participants were asked to respond by March 10, 2000. Follow-up reminders and surveys were sent on March 15, 2000 to encourage additional responses. The dates that the surveys were returned were recorded with a tally sheet.

Data Analysis Plan

As the surveys were returned, the responses were recorded on a data sheet. There was a separate data sheet for each respondent. The data was tabulated on a tally sheet allowing for all possible responses. The collected data was analyzed by using a percentage for each response. This was displayed in a table format and in a descriptive narrative. The collected activities were compiled into a list of suggested activities. The results will be discussed in Chapter 4.

Summary

The data collected for this study was gathered by a self-administered survey. This survey was sent to 100 elementary schools that are ranked in the FG District Factor Group by the New Jersey State Department of Education. As the surveys were returned the information was coded and the results were tallied. The analysis of the data is included in Chapter 4. A collection of activities share the respondents has been compiled and can be found in the appendix.

Chapter 4

Presentation and Analysis of Data

Survey Response Rate

Surveys were sent to 100 public school library media specialists whose schools were grouped in the FG district factor group established by the New Jersey Department of Education. The surveys were sent on February 28, 2000. Eighty-three of the schools were listed as elementary schools and 17 were listed as intermediate or middle schools. Reminder letters and additional copies of the surveys were mailed on March 15, 2000. A total of 51 surveys were received, and 44 of them were usable for a response rate of 44%. Seven surveys could not be used. Five of the surveys were returned blank and two surveys were returned by library media specialists who only taught seventh and eighth grades.

Description of Respondents

Eighty-two percent of the surveys that were returned came from elementary library media specialists and 18% of those returned came from middle school media specialists. The school configurations vary in the elementary schools. There were K-3, K-5, K-6, and K-8 buildings. Intermediate and middle schools were identified as 5-8 or 6-8 buildings. Of the schools responding, the largest percentage (30%) were K-4 schools followed by K-5 schools (18%). Schools that were either K-6 or K-8 represented 16% of the return. The results are displayed in Table 1.

Table 1

Usable Survey Responses by School Level (n=44)

School Levels	K-3	K-4	K-5	K-6	K-8	5-8	6-8	Total
Number of schools	1	13	8	7	7	4	4	44
% of total responses	2	30	18	16	16	9	9	100

Library Operation and Equipment

The respondents were asked to indicate the grade levels that used the library. For this study only grades 3, 4, 5, and 6 were surveyed and are presented in Table 2. In the 44 schools reporting, 35 librarians worked with 3rd and 4th grade. Thirty-six librarians taught 5th grade and 24 taught 6th grade. The other grades that visited the libraries were voluntarily listed and displayed in Table 1.

Table 2

Grade Level Distribution Taught by Respondents Used for This Study (n=44)

Grade Levels	3 rd	4 th	5 th	6 th
Number per grade level	35	35	36	24
% of schools having each grade	80	80	82	55

Note, Percentages will not equal 100 because respondents may teach several levels.

Question 2 asked respondents to describe the type of scheduling that was used for third, fourth, fifth, and sixth grades. Flexible scheduling was defined as times the teachers requested, and fixed scheduling was described as classes attending at a regularly scheduled period. Information was also requested if both types of scheduling were used. Thirty-two librarians (91%) reported the 3rd grades followed a fixed schedule. Of the 35

libraries visited by 4th grade, 31 (89%) also followed a fixed schedule. Slight differences occurred with the 5th and 6th grades. Only 27 of the 36 reporting (75%) followed fixed scheduling in 5th grade and even fewer, 12 of the 24 (50%), did so with 6th graders. Sixth grade actually split evenly between the use of flexible scheduling and a combination of both flexible and standard fixed scheduling. The results can be seen on Table 3.

Table 3

Library Scheduling Formats

Schedule Types	3rd Grade n=35	%	4th Grade n=35	%	5th Grade n=36	%	6th Grade n=24	%
Flexible	2	6	1	3	6	17	10	42
Fixed	32	91	31	89	27	75	12	50
Both	1	3	3	9	3	8	2	8

Note. Percentages may not equal 100 due to rounding.

Question 3 asked what type of equipment was available in the library. Seventy percent of the libraries reported they still had a card catalog; 52% had an OPAC. Librarians reported they used any of the following programs Dynix, Follett, Alexandria, Mandarin, Winnebago, and Athena. Twenty-five percent had a computer lab and 57% had at least one stand-alone computer in the library. The number of stand-alone computers ranged from two to eight in a single library. Asked about networked computers, 77% of the libraries reported they had networked computers. The number of computers also varied, ranging from 1 to 32 in the library. When asked about Internet access, 74% of the libraries reported they had Internet access. Though only 52% stated they used an OPAC, not one school reported there was no technology in the library. Even

the least equipped libraries had at least one stand-alone computer. Table 4 displays the results.

Table 4

Library Equipment and Access (n=44)

Type of Equipment	n=44	%
Card Catalog	31	70
OPAC	23	52
Computer Lab	11	25
Stand Alone Computers	25	57
Networked Computers	34	77
Internet Access	33	75

Note. Percentages will not equal 100% several pieces of equipment could be available in the libraries.

Question 4 asked if there was a curriculum approved by the Board of Education that provided a scope and sequence of skills to be taught to grades 3 through 6. The respondents reported 93% of the schools had an approved curriculum in place and 7% did not have a curriculum approved by the Board of Education. Of the 93% with an approved curriculum, 29% had been revised within the last year, 39% were revised in the last 5 years, and 32% were older than 5 years. The results are shown in Table 5 and Table 6 on page 29.

Question 4 also asked respondents to comment about curriculum that is approved by the board. Fourteen respondents chose to add a comment. Twenty-one percent reported the curriculum that was presently being revised. Another 43% noted their curriculum was outdated because it did not include technology. Still others (21%) added that some of the listed skills and tools as taught as part of basic subjects and the respondents supplied support to the teacher. Four of the respondents commented that the

curriculum written for grades 5-8 was designed for a fixed schedule but it was being taught in a flexible schedule.

Table 5

Library Curriculum Approved by the Board of Education (n=44)

Approved Curriculum	Number	Percent
No	3	7
Yes	41	93

Table 6

Most Recent Curriculum Revision (n=44)

Latest Revision	Number	Percent
Last Year	12	29
0 to 5 Years	16	39
More than 5 years	13	32

Question 5 asked the respondents to indicate what reference tools received direct instruction by the library media specialist in the 3rd through 6th grades. For the purpose of this discussion print reference tools and electronic reference tools are presented separately in Table 7 and Table 8. The print encyclopedia received instruction by the librarians at all four levels with the highest percentage of instruction in 3rd (63%) and 5th (67%) grades. The atlas was taught by the librarians more often in 5th (61%) and 6th grades (54%). The same is true for the almanac, 69% of 5th grade and 75% of 6th grade students received formal instruction in the use of this reference tool by the librarian. Only

3% presented the Reader's Guide to Periodicals to 3rd grade and 38% did this for 6th grade. Though these numbers are very small, by looking at Table 7 one can see the 5th grade received a greater emphasis on instruction in print reference tools.

Table 7

Print Reference Tools Taught by Grade Levels

Reference Tools	3rd Grade		4th Grade		5th Grade		6th Grade	
	n=35	%	n=35	%	n=36	%	n=24	%
Print Encyclopedia	22	63	21	60	24	67	11	46
Atlas	10	29	10	29	22	61	13	54
Almanac	6	17	7	20	25	69	18	35
Reader's Guide To Periodicals	1	3	5	14	7	19	9	38

Note. Percentages will not equal 100 because librarians may select several print reference tools.

Teaching about the use of electronic reference tools also varied among the grade levels. Though some instruction was noted in each grade level, electronic reference tools are more often taught to fifth and sixth grades.

In third grade, the instruction in the use of an online and CD-ROM encyclopedia was lower than the other grades (26% and 11%). Teaching some Internet searching skills, however, did exist in close to 25% of all the grade levels. The library media specialists reported fourth graders received less instruction with the electronic encyclopedia than fifth and sixth grade classes. Internet searching skills were more often taught to fifth and sixth graders, thought some respondents reported they taught younger students how to use world wide web searching and search engines. Teaching students to use online indexes to periodicals and individual addresses (URL) did not show any great importance until 6th grade (38% in each) which was expected.

There were a few responses that indicated there was instruction in other reference tools at these grade levels. Library media specialists reported 10% of 3rd grade, 5% of 4th grade, 4% of 5th grade and 19% of 6th grades used other items such as *Story Weaver*, *Bartlett's Book of Quotations*, biographical dictionaries, the use of the OPAC, and the *Bergen City Co-operative Website*. One respondent commented that the technology teacher covered most of the online work, and one respondent commented that things vary from year to year. Only 2 programs in 3rd grade (10%) reported no instruction occurred with the listed items. Table 8 presents the results.

Table 8

Electronic Reference Tools Taught by Grade Level

Reference Tools	3rd Grade n=35	%	4th Grade n=35	%	5th Grade n=36	%	6th Grade n=24	
CD/ROM Encyclopedia	9	26	17	49	22	61	13	54
Online Encyclopedia	4	11	9	26	12	33	11	46
Full Text Periodical Database	2	6	2	6	5	14	11	46
Online Indexes to Periodicals	1	3	1	3	2	6	9	38
World Wide Web Searching	8	23	16	46	20	56	18	75
Use of Search Engines	6	17	14	40	18	50	19	79
Individual Addresses (URL)s	1	3	3	9	8	22	9	38
Other	2	6	1	3	2	6	4	17
None	2	6	0	0	0	0	0	0

Note. Percentages will not equal 100 because librarians may select several electronic reference tools.

Question 6 asked respondents to indicate which grade levels received instruction using subject, keyword, or Boolean search techniques. Though the total number in each grade level varied, over 70% in each grade level learned how to do a subject search.

Keyword searching dropped in 3rd, 4th, and 5th grades but remained at 79% in the 6th grade. Boolean search logic was taught in 32% of the 5th grades and only 54% of the 6th grades. One respondent reported there was no OPAC in the library and one respondent reported the search techniques were taught in the computer lab. The results are reported in Table 9.

Table 9

Search Techniques Taught in the Library Curriculum

Search Term	3rd Grade		4th Grade		5th Grade		6th Grade	
	n=33	%	n=33	%	n=34	%	n=24	%
Subject Search	24	73	26	79	27	79	19	79
Keyword Search	14	42	19	58	14	41	19	79
Boolean Search	1	3	3	9	11	32	13	54

Note. Two schools did not respond to this question.

Curriculum Planning and Support

The second section of the survey asked respondents to comment about the planning and support they provided for cross-curricular units in social studies, science and language arts. Questions 7, 8, and 9 asked respondents to identify the subject areas where the library media specialist participated in the planning of units. The results indicated a majority of the respondents did not participate in planning social studies (98%) or science (98%) units for any of the 3rd through 6th grades. In only 3% of the 3rd grade and the 5th grade was the library media specialist involved in planning social studies or science units. However, in language arts there was a slight change. Respondents reported being a member of the planning team for language arts units in 6%

of 3rd grade, 3% of 4th grade, 11% of 5th grade and 8% of 6th grade classes. Though the changes are still small, they do indicate a slightly closer link between the library curriculum and the language arts curriculum. The results are presented in Table 10.

Table 10

Library Media Specialists' Involvement in Planning Cross-curricular Units

Discipline	3rd Grade n=35	%	4th Grade n=35	%	5th Grade n=36	%	6th grade n=24	%	None n=44	%
Social Studies	1	3	0	0	1	3	0	0	43	98
Science	1	3	0	0	0	0	0	0	43	98
Language Arts	2	6	1	3	4	11	2	8	40	91

Note. Percentages may not total 100 because librarians gave responses to more than one choice.

Questions 10, 11, and 12 asked respondents if they supplied support to social studies, science and language arts units for grades 3 through 6. More than 60% of the respondents reported they supplied materials to support social studies units for 3rd, 4th and 5th grades but only 54% did so for 6th grade. For the science curriculum the respondents reported they supplied support for more third and fourth grades than fifth and sixth grades. There were 27% of the librarians that supplied no support at all in science units. Finally, respondents reported they supplied support for language arts units over 70% for each of the four grade level units. Surprisingly 20 % responded they did not supply help for language arts units. The results are displayed in Table 11.

Table 11

Library Media Specialists' Involvement on Supporting Social Studies, Science and Language Arts Units

Discipline	3rd Grade n=35	%	4th Grade n=35	%	5th Grade n=36	%	6th grade n=24	%	None n=44	%
Social Studies	21	60	23	66	24	67	13	54	12	27
Science	21	60	22	63	20	56	11	46	14	32
Language Arts	26	74	26	74	26	72	17	71	9	20

Note. Percentages may not total 100 because librarians gave responses to more than one choice.

Opinions Concerning Articulation and Support

The third section of this survey asked respondents to express their opinions about the role the library media specialist should play in planning and supporting curriculum. They were also asked their opinion about the faculty's knowledge of library curriculum, and the administration's support for training personnel in emerging technologies. Finally respondents were asked if they felt their students were well prepared to complete research using print and electronic reference tools. The library media specialists were asked to rate their opinions (S) strongly agree, (A) agree, (D) disagree, (SD) strongly disagree, or (U) undecided. The findings are displayed in Table 12.

Asked if library media specialists should play an important role in planning activities for cross-curricular units, 57% of them agreed but 34% of them disagreed. Seven percent were undecided. Asked if library media specialists should play an important role in supporting science, social studies or language arts units, 88% agreed and 12% disagreed. Respondents were split, 53% agreeing and 43% disagreed, about the question concerning their faculty and the knowledge they have of the library curriculum.

Five percent of the respondents had no opinion. When asked if their administration supplied adequate in-service training 59% agreed, and 36% disagreed.

Eighty-four percent of the responding librarians agreed their students were well prepared to complete independent research using print reference tools. Only 11% disagreed, followed by 5% who were uncertain. Asked if their students were well prepared to do research using electronic reference tools, the respondents agreed 59% of the time, but fewer agreed strongly with this statement. Thirty percent of the respondents disagreed with the idea that their students were well prepared to use electronic reference tools. Eleven percent were undecided, which was surprising. These results are presented in Table 12.

Table 12

Library Media Specialists' Opinions on Articulation and Support (n=44)

Topic	SA		A		D		SD		U	
	n	%	n	%	n	%	n	%	n	%
Planning	11	25	14	32	12	27	4	9	3	7
Support	16	36	23	52	3	7	2	5	0	0
Curriculum knowledge	6	14	17	39	14	32	5	11	2	5
Administrative support	10	23	16	36	11	25	5	11	2	5
Print reference preparedness	8	18	29	66	4	9	1	2	2	5
Electronic reference preparedness	6	14	20	45	11	25	2	5	5	11

Note. Percents may not equal 100 due to rounding.

In Question 19, librarians were asked if they had an instrument to evaluate student growth. As seen in Table 13, only 16% of the respondents reported having an evaluation tool, while 80% did not have one at all. Two surveys listed no response to this question. Some library media specialists reported using "interesting worksheets", pre/post tests, rubrics, and self-assessments as methods to evaluate their students.

Table 13

Evaluation Instruments Used to Measure Students' Growth

Instruments	Yes	No	No Response	Total
Number responding	7	35	2	44
Percent	16	80	5	100

Successful Programs

The final question asked the library media specialists to share an activity or unit they felt had been particularly successful in teaching reference skills using electronic resources. Fifty percent of the respondents shared an activity that can be used or adapted in the 3rd through 6th grades. These suggestions are found in the appendix.

Summary

The survey was sent to 100 library media specialists in schools that are in the FG district factor grouping in the state of New Jersey. There were 44 usable surveys. The librarians responded to questions concerning scheduling, availability of technology, and reference tools that receive formal instruction in the library curriculum. They indicated

whether or not they are a part of the planning teams for cross-curricular units or whether they were primarily involved in supporting these units. The respondents expressed their opinions about staff support and articulation and integration of curriculum in their schools. Finally, they were asked to share activities that were successful.

Chapter 5

Summary, Conclusions, and Recommendations

Summary

"Educators have acknowledged the skills that constitute information literacy are crucial to everyday life" (Moore, 2000, p. 7). Electronic resources are second nature in our high schools and middle schools. Even elementary students are becoming technologically literate from the manipulative point of view (Miller, 1997). But do they understand the process of searching, gathering information and synthesizing their new knowledge to create a product that demonstrates what they have learned? How do these technologies match the cognitive development of elementary students? When and how do educators integrate the skills and the disciplines?

For many years, library media specialists have connected their activities to school curriculum by incorporating library media resources in classroom efforts to meet subject-oriented goals. They have become well acquainted with subject area and content requirements. Classroom teachers can't keep up with all the new modes of information access. Library media skill instruction that is developmentally appropriate can help support life long learning.

The New Jersey Department of Education has acknowledged there must be a link between the New Jersey Core Curriculum Content Standards and the Information Literacy Standards for Student Learning that were developed by committees of the

American Association of School Librarians (AASL) and the Association for Education Communication and Technology (AECT). This important step was achieved in April of 1999 by committees of the Education Media Association of New Jersey (EMAnj). It will to help guide educators as they continue to prepare students to become information literate in a rapidly changing technological world.

The purpose of this study was to explore what programs exist for students in grades 3 through 6 in school libraries. The school libraries were in districts that have a common set of standards based on the New Jersey Department of Education. These standards called the District Factor Group (DFG) groups schools by their socioeconomic status (SES) and are used for comparative reporting of test results for the New Jersey statewide testing program. The FG group was selected because it is one of the middle groups. These middle districts do not receive the maximum amount of state aid, nor do they have the highest income level of the population that attends the school. This eliminated the situation of schools with large amounts of state aid for budgets and schools with high-income populations that can support large school budgets.

The researcher had three areas of concern. The grade levels that use the library and the scheduling format was the first concern. The second dealt with the instruction that was given in the use of reference tools and search terms during library classes. The researcher also wanted to learn about the level of articulation and integration that exists between the library media specialist and the rest of the faculty. Finally the researcher hoped to develop a list of activities that are successful at the intermediate elementary level.

Conclusions

The conclusions that have been drawn are based on the data that was collected and presented in Chapter 4 and the literature that was reviewed in Chapter 2. This study did not parallel any other specific research so conclusions cannot be compared to previous studies. There are 228 schools in New Jersey that are in the FG factor group and 100 schools were randomly selected to participate. Only 44% of the schools that received surveys returned usable surveys. This low rate of return was very disappointing. There may be several reasons so many recipients refused to participate. Many of the schools are small, with student populations listed at approximately 200. Some librarians may work in two or more schools schools. This might limit their time available to answer the survey. Personnel who are volunteers, paid aides, or other non-professionals may staff the libraries, as reported in one unusable return. Finally, recipients may have just not been interested. Though the response rate was only 44%, and this actually reflects only 19% of the schools of the FG rated schools, some general patterns did appear.

The use of flexible scheduling as a component for improved curriculum consultation and increased integration of the library curriculum is supported in the study presented by Van Deussen and Tallman in 1994. This survey found a majority of the librarians used a fixed schedule, which would limit consulting with teachers. There was an increase of either flexible or mixed scheduling in the libraries that had sixth grade. This may indicate there is a change in the approach to library skills instruction and unit content integration in the sixth grade. It may also reflect that sixth grades in K-8 or middle schools use flexible scheduling more often than the lower grade levels.

The respondents were asked to explain what equipment was available in their libraries. It was interesting to learn 70% still had card catalogs and only 52% had an

OPAC. The respondents did not indicate whether or not the card catalog was closed but still available, only that they had both in the library. The cost of automating a library can be prohibitive to these schools in the middle groups. Technology is an expensive item in any school budget. Though many did not have an OPAC, 77% of the respondents reported having networked computers and 75% had Internet access. Fifty-seven percent of the respondents reported having between two and eight stand-alone computers. Only 25% of the libraries reported having a computer lab. This would impact negatively on implementing units that integrate research and electronic reference tools. It could limit instruction to only teacher demonstration or small group participation.

Ninety-three percent of the respondents reported that there was a curriculum that was board approved. Sixty-eight percent of these schools had a curriculum that was less than five years old. This seems to indicate that schools in the FG grouping are at least attempting to keep current with the changes required by the New Jersey Standards. It will be interesting to investigate how the curriculum will be revised in the next five years based on the work recently completed by EMAnj.

Library media specialists were asked to indicate which print reference tools received direct instruction in the library curriculum. The results indicated that instruction with print encyclopedia was given to all. The atlas, almanac and Reader's Guide to Periodical literature were included more often in fifth and sixth grade instruction. This corresponds to developmental stages pointed by Piaget and Bruner that was reviewed in Chapter 2. These reference tools require higher order thinking skills (analysis, synthesis, and evaluation) in order to be applied to research.

Similar results were found after studying the responses concerning electronic reference tools. For the third grade, all of the percentages were below 30% of the total

responses and 6% stated they gave no instruction at all in the use of electronic reference tools. The use of the CD/ROM encyclopedia and worldwide web searching received the most instruction, but the percentages were very low. Fourth grade results indicated there was instruction in the use of the CD/ROM encyclopedia, web searching and the use of search engines. At the 5th grade, 33% of the library media specialists added the online encyclopedia to the list of electronic reference tools that are included on the curriculum. Sixth grade seemed to receive a greater emphasis on Internet tools instruction, 75% of the library media specialists taught worldwide web searching, 79% taught how to use search engines and 39% taught the use of specific URLs. Though the numbers were very small the changes from third to sixth grade did correlate to the students' increased ability to work with abstract information.

The change in students' ability to work with concrete and abstract information was exemplified in the questions that asked about the search techniques that were taught. In the library, the library media specialists taught 3rd graders how to do subject searches (73%) more often than keyword searches. Similar statistics applied to the instruction in fourth and fifth grades. In 6th grade the library media specialists taught subject and keyword searching in 79% of the responding schools. Boolean search techniques barely existed in third and fourth grade curriculum and only increased slightly in fifth grade. Even for the 6th grade, library media specialists reported using Boolean searching in only 53% of the schools. This low percentage may be the result of the lack of technology in the media center. It may also be included in the computer curriculum of the responding schools.

There is so much we can do to assure our students are using print and electronic resources as a part of a processed, complete product. "It is important for school librarians

to be included in planning" (Milbury, 1997, p. 23). Librarians must keep themselves informed of the curriculum changes. The answers to the questions that dealt with curriculum planning with social studies, science and language arts were very disappointing. Respondents reported they were not involved in 98% of the schools. There were a few who reported some involvement in planning with language arts, but the amount was still less than 10%. This indicates that library media specialists must focus their attention in this area.

Library media specialists were also asked of they provided support to social studies, science and language arts. More than 70% of the respondents reported supplying more support for language arts units than any other subject area in each of the four grade levels. More than 10% of the respondents reported they had no involvement at all, which was surprising and disappointing. The findings in this section of the survey supported some of the results found in a study completed by Eleanor Putnam (1996). Library media specialists do perceive the importance of their role as instructional consultant but acknowledge that the extent to which they perform this role is less that it should be. Library media specialists find themselves more involved in supporting curriculum than in instruction and consulting.

The third part of the survey asked respondents to indicate their opinions about the role the library media specialist plays, the faculty and administrative support, and the students' preparedness for the next level of education. Again there were results that were surprising and disappointing. Only 54% of the respondents felt they should be involved in planning units with teachers, but 90% agreed they should provide support. There may be several reasons why the desire to be involved with planning was so low. Students in third and fourth grade have more teacher-directed instruction. Even though process oriented

and project-oriented learning is going on in the classroom, the respondents may not have a true understanding how important they can be. This is a perfect example of why librarians should be vocal advocates in their school communities and professional organizations. The fact that there is only one library media specialist in a building creates a level of isolation that can perpetuate a "status quo" mentality. This lack of involvement may be further manifested in the fact that only 53% of the respondents agreed their faculty was knowledgeable about the library curriculum and the skills that are taught in the curriculum. If the faculty does not know about the curriculum, how can they seek help or invite collaboration with the library media specialist? If a function of the library is to support curriculum, shouldn't the classroom teacher know where the disciplines intersect so they can integrate activities to provide the most comprehensive instruction to the students? This lack of faculty awareness strongly illustrates the need to inform faculty about the role the library media specialist can play as instructional consultant in addition to providing educational support.

The administration can and should provide the first level of support and training as new technologies are implemented in the district. Time must be provided to explore or even "play" with new technology. Successful technology programs often have informal classes that give teachers opportunities to learn about searching in a non-threatening way with individualized instruction (Anderson, 1997). Only 59% of the library media specialists believed their district provided administrative support of this type. If schools are spending so much money to purchase expensive technology there should be funds or incentives provided to encourage staff to become more proficient and innovative in their instruction. Perhaps the new mandate that requires teachers in New Jersey to seek 100

hours of education to maintain their certificates will encourage administrators to promote staff in-service with technology.

Library media specialists were asked if their students were well prepared to complete research using print and electronic reference tools. Eighty-four percent responding agreed students could use print reference tools but only 59% agreed with the statement concerning electronic reference tools. The drop in percentages was expected given the distribution of instruction that was discussed in Question 5. The lack of networked computers or neighboring labs would also have a negative impact.

It was ironic that the same library media specialists who commented that their students were prepared to complete research at the next grade level were asked if they had an instrument that they used to evaluate student growth. This could have been a pre/post test, worksheet, rubric, etc. Only 16% had something that could be used at some point during the year. Eighty percent said there was no evaluation tool at all! This may be a missing piece of the puzzle that connects the library to the school and academic community. Classroom teachers need to know what information literacy skills are taught and evaluated in the library curriculum. It is imperative that there be articulation and communication between teachers and the library media specialists so that library skills are taught in an appropriate scope and sequence that corresponds to the development of the student learner. The integration of the information literacy skills into the content of the academic disciplines can provide students with a better chance to understand and manipulate information. The more students have the opportunity to search, analyze, apply and synthesize information the greater chance they have in becoming information literate.

Recommendations to Improve the Study

This study could have been more successful if more of the schools in the FG grouping were contacted. If there might have been a higher number returned, this would have provided a better sample. The study could also have included other district factor groups. This might have provided more responses. Another approach could have been to include equal numbers of schools from three groups (high, medium, low) to determine if the DGF would be a factor.

Recommendations to Improve Teaching

The following recommendations are made concerning the teaching of research skills using electronic reference tools. These recommendations are based on the review of literature; the data that was gathered in this study and the New Jersey Core Curriculum Content Standards.

The Educational Media Association of New Jersey completed the document which links the Information Literacy Standards for Student Learning directly to the New Jersey Core Curriculum Content Standards in 1999. This document should be available for every curriculum administrator and faculty member. Every curriculum committee should use it as they align their curricula to match the core content standards.

The library media specialist should be a member of curriculum committees to ensure that library skills are integrated into instruction in the subject disciplines.

The administration should support and promote the library media specialists as an educational consultant. The support should be in the form of time, material resources and personnel. This would increase the amount of time available for teacher consultation and planning and the development of more cross-curricular units.

Library scheduling should be considered. Library studies should be considered more than just a scheduled preparation period. Allowing time for flexible scheduling will increase the level of collaboration between teachers and librarians. If students have ample time to use the library for research, they will become more comfortable using all it has to offer.

The library media specialist should be the library's greatest advocate. To develop the importance of the media center to 1the school community, librarians should present innovative programs and publicize their activities. The library should not be just the place to keep the books but it should be the center of the educational community.

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Appendix

ACTIVITY SUGGESTIONS

The suggestions listed in this section were collected from the survey. General ideas were listed followed by ideas in specific subject areas. Though grade levels are mentioned, it can be noted that any of these ideas can be adapted to suit a particular grade level.

1. In third grade, the use of the library is taught as an individual skill. The goal is to have each child be able to find materials on the OPAC independently.

2. A scan converter can be used, to give group instruction by demonstration. It is used to demonstrate how to conduct searches for the CD/ROM encyclopedia.

3. The *Story Weaver* is a program that helps children write and illustrate their own story. Working with the classroom teacher, classroom stories are created. Then students learn the steps involved to create a story independently.

4. Students learn to access the local county library website. The students search to find particular titles and place a reserve electronically. Fifth graders are assigned the task of teaching a parent or guardian how to do the same.

5. Research projects can be conducted as a specific unit. The following is a combination of ideas from four sources.

a. In an 8-week block of time classes are held in the media center. Specific reference tools are demonstrated and their use is applied to the topic assigned by the teacher.

b. Students are placed in cooperative learning groups. The product of the research must contain information from each of the print and electronic media that was presented.

c. A guideline explaining information resources and skills can be developed, and used as a general hand out for independent research. The NJ Core Proficiencies Introduction can be also listed as objectives so classroom teachers can also identify and document the skills in their planning.

Some of the suggested standards are:

Standard 2.2 - Select appropriate tools and technology for specific activities.
Standard 2.5 – Access technology-based information systems.
Standard 2.6 – Access and assess information on specific topics using technological and print resources available in library media centers.
Standard 2.8 – Use technology and other tools to solve problems, collect data and make decisions.
Standard 3.5 – Use the library media center as a critical source for inquiry and assessment of print and non-print materials

6. Complete a research paper about an animal of personal choice. The use of the encyclopedia and magazine articles is required. This can be both print and electronic. The use of graphic organizers works well for all ability levels.

7. State reports can be completed using a variety of sources. Personal interviews, videos or movies can be sources. Atlases, almanacs, and the Internet can be introduced to provide updated information.

8. Complete research reports about women who have circled the world. This can combined with research about different forms of transportation. The language arts, reading teacher, and social studies teachers can collaborate with the library media specialist to design the project.

9. An individual product that demonstrates information about explorers can be completed with 5th grade. Print and electronic resource tools are used, for example print, CD/ROM, and online encyclopedias, electronic databases such as *Proquest,* and the Internet.

10. Research about the presidents can be completed with general worksheet forms. Students working in pairs find the answers to research questions. A few questions can be designed that require in-depth reading and researching. This would require the use of indexes, subject and keyword searching.

11. The use of one specific search engine (example Yahooligans) can be used to complete a study about a country. Each presentation must include the following: The currency, two chief products, population, places to visit, square miles, language, and several important historical facts.

12. Research and create a report using print and electronic resources about "An extraordinary woman" (examples were Eleanor Roosevelt, Maya Angelo, Amelia

Earhart). Students then create a biography about their own lives, their challenges, achievements, or a lifelong journey. This is put into a PowerPoint presentation and presented to the class.

13. Create a Women's Encyclopedia. Working in groups of five, each group selects five women. Students search both print and electronic resources. Each report must contain at least two facts from a print and electronic reference tool. A Power Point presentation can be compiled and placed on the school website.

14. Use the CD/ROM periodical database to create a biography card for a Millennium Timeline.

15. Students grouped in pairs create a short report using print and electronic encyclopedia and periodical databases about African American historical figures. Information can be presented as a part of a school assembly.

16. Sixth grade topics of research can include ancient civilizations, health issues, inventions, famous African Americans, or multicultural topics such as celebrations around the world.

17. In 2nd grade, after learning about the history of the White House the class takes a virtual field trip to the White House. Younger students also enjoy visiting author websites as part of author studies.

Cover Letter

February 24, 2000

Dear Library Media Specialist,

I am a graduate student in the School and Public Librarianship program at Rowan University. For my Master's thesis, I am examining the types of research tools that 3rd, 4th, 5th, and 6th graders are taught to use in school library media centers and how library research skills are integrated into the elementary school curriculum.

Surveys are being mailed to library media specialists currently working in schools that are in the FG group of the Statewide District Factor Grouping System. Participants need not respond to all questions of the survey. Your responses will be anonymous and all the data gathered will be confidential. Participation is voluntary and you are free to withdraw at any time without penalty. If you elect not to participate, please return the survey for my records.

Please sign and return this consent form along with the completed survey by March 9, 2000. If you have any questions or problems concerning your participation in this study you may contact me at Bobby's Run School (609) 702-5555 or e-mail me at johanne749@aol.com. You may also contact my advisor, Dr. Holly Willett, at (856) 256-4759 or willett@rowan.edu.

Thank you for your time and participation in this study.

Sincerely,

Johanne Milnes

Please sign and return this page with your survey if you agree to participate. Thank you.

Signature of Participant School name and address

[___] I am interested in receiving a copy of the results of this study.

Reminder Letter

March 15, 2000

Dear Librarian,

I am a graduate student in the School and Public Librarianship program at Rowan University. I am conducting a research project as part of my Master's thesis. I am examining what types of research tools 3rd, 4th, 5th and 6th graders are taught to use in school library media centers and how library research skills are integrated into the elementary school curriculum.

If you have already returned my survey, please disregard this letter. If however, you have not had the opportunity to do so, or you have misplaced it, I am sending another survey to you.

Participants need not respond to all questions in the survey. Your responses will be anonymous and all the data gathered will be confidential. Participation is voluntary and you are free to withdraw at any time without penalty.

If possible, please sign and return this consent form along with the completed survey by March 27, 2000. If you have any questions concerning your participation in this study you may contact me at Bobby's Run School (609) 702-5555 ext. 3822 or e-mail me at Johanne749@aol.com. You may also contact my advisor, Dr. Holly Willett, at (856) 256- 4759 or willett@rowan.edu.

Thank you for your time and participation in this study.

Sincerely,

Johanne Milnes

I voluntarily agree to participate in the survey about research tools and curriculum articulation.

_____ _____

Signature of Participant Date

[___] I am interested in receiving a copy of the results of this study.

SURVEY

Please mark each answer with an **X** in the appropriate spot. There is space provided for additional information, if required.

1. What grade levels visit the library? [__]3 [__]4 [__]5 [__]6

   OTHER: _____

2. Indicate what type of scheduling is provided: **flexible** - Teachers sign up for specific periods, **fixed** – Classes attend on regular scheduled periods. If both are used, please indicate which grade levels use both on a regular basis.

Flexible	[__] 3	[__] 4	[__] 5	[__] 6
Fixed	[__] 3	[__] 4	[__] 5	[__] 6
Both	[__] 3	[__] 4	[__] 5	[__] 6

3. Is your library equipped with the following:

Card catalog	[__]YES	[__]	NO	
OPAC	[__]YES	[__]	NO	Program? _____
Computer lab	[__]YES	[__]	NO	
Stand alone computers in the library	[__]YES	[__]	NO	How many? _____
Networked computers in the library	[__]YES	[__]	NO	How many? _____
Internet access	[__]YES	[__]NO		

4. Is there a library curriculum approved by the Board of Education that provides a scope and sequence of skills to be taught to grades 3-6?

   [__] YES [__] NO

   COMMENT_____

If you answered YES to question 4:
When was the most recent revision?

[__] Last year [__] Within the past 5 years [__] More than 5 years ago

5. Please check which grade levels receive directed instruction from the library media specialist for using the specific reference tool:

Print Encyclopedia	[___] 3	[___] 4	[___] 5	[___] 6
CD ROM Encyclopedia	[___] 3	[___] 4	[___] 5	[___] 6
Online Encyclopedia	[___] 3	[___] 4	[___] 5	[___] 6
Atlas	[___] 3	[___] 4	[___] 5	[___] 6
Almanac	[___] 3	[___] 4	[___] 5	[___] 6
Reader's guide to periodicals	[___] 3	[___] 4	[___] 5	[___] 6
Full text periodical databases	[___] 3	[___] 4	[___] 5	[___] 6
Online indexes to periodicals	[___] 3	[___] 4	[___] 5	[___] 6
Worldwide Web searching	[___] 3	[___] 4	[___] 5	[___] 6
Use of search engines	[___] 3	[___] 4	[___] 5	[___] 6
Individual address (URL)	[___] 3	[___] 4	[___] 5	[___] 6
Other _____	[___] 3	[___] 4	[___] 5	[___] 6
None of the Above	[___] 3	[___] 4	[___] 5	[___] 6

6.Indicate the grade levels that receive instruction using the following search types:

Subject search	[___] 3	[___] 4	[___] 5	[___] 6
Keyword search	[___] 3	[___] 4	[___] 5	[___] 6
Boolean search	[___] 3	[___] 4	[___] 5	[___] 6

7.For which grades are you on the Social Studies planning team (check grade levels that all that apply)? [___] 3 [___] 4 [___] 5 [___] 6 [___] NONE

8.For which grades are you on the Science planning team (check all grade levels that apply)? [___] 3 [___] 4 [___] 5 [___] 6 [___] NONE

9.For which grades are you on the Language Arts planning team (check all grade levels that apply)? [___] 3 [___] [___] 5 [___] 6 [___] NONE

10. For which grades do teachers come to you only for materials to support social studies units (check all grade levels that apply)? [___] 3 [___] 4 [___] 5 [___] 6 [___]NONE

11.For which grades do teachers come to you only for materials to support science units (check all grade levels that apply)? [___] 3 [___] 4 [___] 5 [___] 6 [___] NONE

12. For which grades to teachers come to you only for materials to support language arts units (check all grade levels that apply)? [__] 3 [__] 4 [__]5 [__]6 [__] NONE

The following statements indicate your opinion about program articulation and integration with academic disciplines in your school. Circle the answer that corresponds to your opinion.

(SA) Strongly Agree
(A) Agree
(D) Disagree
(SD) Strongly Disagree
(U) Undecided

13. The library media specialist plays an important role in the planning of activities for cross-curricular units developed by the faculty.

SA **A** **D** **SD** **U**

14. The library media specialist plays an important role in supporting the activities for cross curricular units developed by the faculty.

SA **A** **D** **SD** **U**

15. The faculty is knowledgeable about the library curriculum and the skills that are taught in the library curriculum.

SA **A** **D** **SD** **U**

16. The administration provides adequate in-service training and other opportunities for the faculty and support staff so new programs using increased technology can be developed.

SA **A** **D** **SD** **U**

17. In general, the students promoted from the school are well prepared to complete research using print references tools.

SA **A** **D** **SD** **U**

18. In general, the students promoted from the school are well prepared to complete research using electronic references tools.

SA **A** **D** **SD** **U**

19. Do you have an instrument (pre/post test, rubric, etc) to evaluate student growth in the use of print and electronic reference tools? YES [___] NO [___]

COMMENT:_____

_____

20. Briefly describe an activity and/or unit that your have successfully used which included any of the electronic reference tools mentioned in question 5. The ideas collected here will be used only to serve as examples of how the teaching of reference skills using print and electronic resources can be implemented in the elementary curriculum._____

_____

_____

_____

_____

_____