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The potential for support of Gardner's Theory of the Naturalist Intelligence in selected elementary school library media centers

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THE POTENTIAL FOR SUPPORT OF GARDNER'S THEORY OF THE NATURALIST INTELLIGENCE IN SELECTED ELEMENTARY SCHOOL LIBRARY MEDIA CENTERS

By
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ABSTRACT

Traci L.Haines. The Potential for Support of Gardner's Theory of the Naturalist Intelligence in Selected Elementary School Library Media Centers. 2001. (Under the direction of Dr. Marilyn Shontz, Program in School and Public Librarianship).

The concept of teaching to the ability of the child is complex. Each child absorbs, analyzes and processes information differently. Howard Gardner developed a series of eight intelligences describing the variety of ways in which children learn. This study focused on the Naturalist Intelligence, an ability to recognize and discriminate different concepts in nature. A naturalist learner has strong observational skills and is good at sorting and classifying (Checkley, 1997). This evaluation compares randomly selected samples of the collections of two elementary school library media centers in order to determine whether the books in the 500s support Gardner's Theory of Naturalist Intelligence. The results indicated that many of the books, although factual and inviting to the eye, need to use more charts, diagrams, websites, addresses, indexes and bibliographies to expand the knowledge of the naturalist learner.

MINI ABSTRACT

Traci L.Haines. The Potential for Support in Gardner's Theory of the Naturalist Intelligence in Selected Elementary School Library Media Centers. 2001. (Under the direction of Dr. Marilyn Shontz, Program in School and Public Librarianship).

This study looked at books in the 500s sections of two elementary school library media centers in Burlington County in order to determine if there was support for Gardner's theory of the naturalist intelligence. The results indicated that majority of the books did not meet the needs of the naturalist learner adequately.

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TABLES OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

STATEMENT OF THE PROBLEM

Introduction and Background

The concept of teaching to the ability of a child is complex. Each child absorbs, analyzes and processes information differently. Considering a child's learning style is very important when developing lifelong skills. Teachers need to be trained to teach to every child's style of learning, and materials should be available to foster the growth of all students' intelligence.

In 1985 Howard Gardner wrote *Frames of Mind* in which he described seven forms of intelligence. The seven were: linguistic intelligence, spatial intelligence, logical-mathematical intelligence, bodily-kinesthetic intelligence, musical intelligence, interpersonal intelligence, and intrapersonal intelligence. Gardner defined intelligence as the ability to solve problems or to make something that is valued by one or more cultures (Gray and Viens, 1994). Each type of intelligence had to meet a set of eight criteria:

1.) Medical studies should be able to identify actual physiological locations for specific functions.

2.) Highly developed examples of true intelligence are recorded such as people who are prodigies or idiot savants.

3.) There is a clear set of procedures and practices that are unique to each intelligence.

4.) Psychologists are able to study the developmental stages of each intelligence and document growth to the mastery level.

5.) Anthropologists are able to study the history of human evolution and trace the developed intelligence over time.

6.) The intelligence can be identified by specific tasks that are observed and measured.

7.) Psychometric instruments such as I.Q. tests can be used to identify specific intelligences.

8.) The intelligence has a clear set of images it uses that are important in completing tasks (McKenzie,1999).

Within the last few years, Gardner described an eighth ability that he called the naturalist intelligence. The naturalist intelligence refers to an individuals ability to recognize and discriminate different concepts in nature. People with the naturalist intelligence have strong observational skills and are good at sorting and classifying. They enjoy keeping logs or journals as well as caring for plants, animals and the environment around them. They understand natural phenomena. Gardner believes these abilities can be traced back through the history of evolution when there were hunters and gatherers. For hunters and gatherers, it was important to know the environment. They had to differentiate between good and poisonous berries and plants and to have a keen sense of awareness of the animals around them. Today, although some of us are not as aware of our surroundings and nature as in the past, we still use our sorting and classifying skills as well as our observational skills. Students who do not have access to nature may classify cars, baseball cards or even types of sneakers. Darwin is considered a classic example of a person with naturalist

intelligence due to his unique understanding of natural phenomena and evolution (Checkley, 1997).

Today, technology contributes to the teaching of students with naturalist intelligence. Telecommunication systems offer the students the ability to observe the world outside their environment. Students are able to see how they, as productive human beings, can affect their world (Dickinson, 1999).

Statement of the Problem

When considering the types of intelligence, particularly the naturalist intelligence, the question arises, "Do elementary school media centers' collections support Gardner's concept of the naturalist intelligence?" This topic has practical significance due to the variety of learning styles of children. As educators, our responsibility is to identify and meet the needs of each child in order for him/her to become a productive and successful adult.

Purpose of the Study

The purpose of this study is to investigate whether selected elementary school media center print collections are sufficient to assist the naturalist learner in expanding his or her knowledge and skills. The concept of naturalist intelligence is new, and although elementary media centers usually have resources that deal with nature, the media specialist needs to be able to identify these materials and be aware of reasons why these resources are important and how they can be utilized to best serve the students. For the school media center with few books to serve the naturalist learner, this study will have a positive effect in that it will make the media specialist

aware of the naturalist learner and the way the children learn. The media specialist can then incorporate this awareness into the collection development process.

Conceptual Framework

Teaching to the multiple intelligence of students can help to provide an optimum education for all students. Allowing students to use their approach to learning may help achievement, increase enthusiasm, and assist in the growth of the other intelligences. For classroom teachers, knowing the student's environment and the resources he or she has access to, will help in teaching to the intelligences. Students may be strong in one area of the intelligences but are not limited to one. The concepts of contextualization and distribution distinguish Gardner's ideas from other learning theories. Contextualization is the notion that intelligence can only be understood in terms of the environment. Students understand concepts because of their environment. The concept of distribution means that intelligence can only be appreciated in terms of access to information (Schmidt,1994). This is why having resources available to meet needs of the various intelligences is important. It gives students the opportunity to expand their intelligence to areas that may not be as strong.

Research Questions

Once the data are collected the following research questions need to be answered regarding the collection of each of the schools.

1.) What percentage of books in the 500s reflect criteria identified as facilitating and expanding the development of the naturalist learner?

2.) What percent support the naturalist learner with illustrations and/or photographs?

3.) What percent support the naturalist learner with charts and diagrams that facilitate categorizing?

4.) What percent are published within the last year; five years; ten years?

5.) What percent support the naturalist learner with a glossary?

6.) What percent support the naturalist learner with an index?

7.) What percent have a bibliography available to further expand the student's knowledge?

8.) What percent have text appearance (font, arrangement, white space and type) that allows the student to gather information easily and facilitate further learning?

Definitions of Terms

Book. A printed work on sheets of paper bound together between two covers.

Content Analysis. The examination of written documents (Babbie, 1998).

Contextualization. Intelligence can only be understood in terms of the environment or context in which the student lives (Schmidt,1994).

Distribution. Intelligence can only be appreciated in terms of the individual's access to all other kinds of human and non-human resources (Schmidt, 1994).

Elementary School. For the purpose of this study an elementary school is one designed to teach younger students, usually preschool age to fourth grade.

Intelligence. The ability to solve problems or to make something that is valued by one or more cultures. These intelligences are not merely the hereditary

traits of lone individuals; rather, they represent the individual and the cultural factors that the individual encounters (Gray and Viens,1994).

Learning Styles. The general approach an individual can apply equally to an infinite range of content (Gardner,1999).

Multiple Intelligence. The eight forms of intelligence described by Gardner offer a pluralistic view to the understanding of intelligence and inspire the question "In what ways is the person intelligent?" rather than the unitary perspective, such as I.Q., which leads to the question, "Is the person intelligent?" (Gray and Viens, 1994).

Naturalist Learner. The ability to discriminate among living things (plant, animals) as well as sensitivity to other features of the natural world (clouds, rock configurations). This ability was clearly of value in our evolutionary past as hunters, gatherers, and farmers; it continues to be central in such roles as botanist or chef. Naturalist intelligence is also apparent in the discrimination among manmade objects such as sneakers, and types of makeup. The kind of pattern recognition valued in certain sciences also draws upon the naturalist intelligence (Checkley, 1997).

Print Collection. Instructional and informational books that all students need to meet their curriculum goals (American Association for School Libraries, 1998).

School Library Media Center. An active technology-rich learning environment with an array of information resources (American Association for School Libraries,1998).

Assumptions and Limitations

There are assumptions and limitations to this research. It is assumed that the criteria created by the researcher are valid for determining the degree to which the

books can assist the naturalist learner in understanding. It is also assumed that the scale will be objectively and consistently applied to the print items.

A limitation of this study is that it is limited to two elementary schools in Burlington County. Also, it is unlikely the collection will be complete due to the use of the books by students and teachers. Finally, there are many other resources available to evaluate, such as materials located in other sections of the Dewey Decimal Classification System, CD-ROMS, and kits. These areas are not part of the study and can be researched in the future.

CHAPTER II

LITERATURE REVIEW

Introduction

The concept of teaching children is complex. Each child absorbs, analyzes and processes information differently. Each child has his or her own unique set of intellectual strengths and weaknesses (Brualdi, 1999). Considering a child's learning style is very important when developing lifelong skills. Teachers need to be trained to teach to every child's style of learning, and materials should be available to foster the growth of all students' intelligences.

In the traditional view, intelligence is defined operationally as the ability to answer items on tests of intelligence. The inference from the test scores to some underlying ability is supported by statistical techniques that compare responses of subjects of different ages; the apparent correlation of these test scores across ages and across different tests corroborates the notion that the general faculty of intelligence, does not change much with age or with training or experience. It is an attribute or faculty of the individual (Gardner, 1993, p.15).

Multiple intelligences theory, on the other hand, pluralizes the traditional concept. An intelligence entails the ability to solve problems or fashion products that are of consequence in a particular cultural setting or community. The creation of a cultural product is crucial in such functions as capturing and transmitting knowledge or expressing one's own feelings or views (Gardner, 1993, p.15).

Gardner's Theory of Multiple Intelligence

The multiple intelligence theory distinguishes among eight dimensions of human intellectual functioning. Whereas traditional, unitary perspectives on intelligences, such as I.Q., lead naturally to the question "Is the person intelligent?" multiple intelligence theory offers a pluralistic view that inspires the question "In what ways in this person intelligent?" (Gray and Viens, 1994, p.4). Some characteristics of the dimensions of intelligence are:

1.) *Verbal-linguistic intelligence:* People with highly developed verbal skills often enjoy learning new words, taking part in debates and public speaking, and tend to be precise in expressing themselves. They do well on written assignments, and their reading comprehension is high.

2.) *Logical-mathematical intelligence:* This is associated with "scientific thinking". People with this intelligence often think conceptually and are able to see relationships that other people often miss. They like to experiment, solve puzzles, and ask cosmic questions. They enjoy working with numbers, and mathematical formulas. They tend to be systematic and analytical.

3.) *Visual-spatial intelligence:* People who are aware of objects, shapes, colors, and patterns. They like to draw, paint, and make designs. They have strong opinions about decorating, and enjoy performing tasks that require seeing with the mind's eye, tasks such as forming mental images or visualizing.

4.) *Bodily-kinesthetic intelligence:* People who enjoy physical movement, and communicate well through body language. They also like to invent things with their hands. This type of person is easily bored when not involved and has problems sitting still for long periods of time.

5.) *Musical-rhythmic intelligence:* This intelligence involves a love of music

and rhythmic patterns. People with this ability are very sensitive to sounds in the environment. They can often reproduce a melody after hearing it only one time. They are very interested in identifying musical instruments in compositions.

6.) *Interpersonal intelligence:* People with this intelligence seem to like interaction. They have a lot of friends and are sensitive to people's needs. They enjoy team activities and are good team members. Often they do more than their share of the work.

7.) *Intrapersonal intelligence:* People who tend to be shy and tend to work alone. They are self reflectors, and are often bearers of creative insight. They are inwardly motivated rather than needing external rewards.

8.) *Naturalist intelligence:* Those who readily notice characteristics and patterns that relate to nature. They like to collect, categorize, and study items of nature. They understand natural phenomena (Lazear, 1994).

Each type of intelligence must meet a set of eight criteria in order to be considered an intelligence. Gardner's eight criteria for identifying an intelligence are:

1.) Medical studies should be able to identify actual physiological locations in the brain for specific functions.

2.) Highly developed examples of true intelligence are recorded such as people who are prodigies, geniuses, or idiot savants.

3.) There is a clear set of procedures and practices that are unique to each intelligence.

4.) Psychologists are able to study the developmental stages of each intelligence and document growth to the mastery level.

5.) Anthropologists are able to study the history of human evolution and

trace the developing intelligence over time.

6.) The intelligence can be identified by specific tasks that are observed and measured.

7.) Psychometric instruments such as I.Q. tests *can* be used to identify specific intelligences.

8.) The intelligence has a clear set of images it uses that are important in completing tasks (McKenzie, 1999).

The theory of multiple intelligence is being adopted and practiced in schools through the country. Districts are looking for ways to teach to the individual so that all students are successful in school and have the desire to learn. No single specific intelligence is chosen for a curriculum. The curriculum has to be well rounded to cover all areas of intelligence in order for the curriculum to be successful.

The Naturalist Intelligence

As mentioned previously, naturalist intelligence is the ability to classify and categorize. Often people with this ability are in tune with nature and can recognize flora and fauna. They have an interest in animals, plants, and the environment around them.

Gardner first began thinking about classifying nature as a separate intelligence when someone asked him to explain the achievements of great biologists, people who had mastered taxonomy, understood different species, and could recognize patterns of nature (Checkley, 1997). When he used his eight criteria for identifying an intelligence, the concept of naturalist intelligence met all eight. One reason behind this acceptance is that it is an ability that we need to survive as human beings. We need to know which animals to hunt and from which to stay away.

Secondly, other animals also need the naturalist intelligence to survive. Finally, and most importantly, there are certain parts of the brain dedicated to recognition and the naming of what we call "natural" things. The naturalist intelligence designates the human ability to discriminate among living things such as plants and animals as well as a sensitivity to other features of the world; i.e.: clouds and rock configurations. This ability is beneficial in our evolutionary past as hunters, gatherers and farmers. Naturalist intelligence continues to be central in such roles as botanist and chef. Gardner speculates that much of our consumer society exploits the naturalist intelligence which can be mobilized in discrimination of cars, sneakers and types of make-up, to name a few examples. (Checkley, 1997).

Research on Naturalist Intelligence

One example of a successful practice of multiple intelligence was in a Washington State school system. In 1992 approximately 1,300 students in the fourth through the tenth grades were involved in ecological studies, and water quality monitoring throughout the Budd/Deschutes Watershed in south Puget Sound. This was part of a larger national effort, the Global Rivers Environmental Education Network (GREEN). Although it was a project that was focused mainly on naturalists' interests, it still incorporated the use of multiple intelligence throughout the curriculum. The six grades were guided through the imagery of the ripian zone, the forested area adjacent to most rivers. This lesson emphasized visual-spatial intelligence. Students reflected on how it felt to do chemical monitoring tests or to plant a tree-- the intrapersonal intelligence. They walked through simulations of what happens to water when it goes down a storm drain, an example of bodily-kinesthetic intelligence. They worked in pairs or groups to

present information in the community forum. This exercised the interpersonal intelligence. Their linguistic intelligence was developed by writing paragraphs and creating illustrations that were printed on grocery bags, and also by expanding their reading skills when they worked through the technical vocabulary in Mark Mitchell and Bill Stapp's *Water Quality Handbook* (1992). At the end of the curriculum unit the students took part in evaluation projects. These projects were presented to the class and gave the students the opportunity to demonstrate their understanding of the material learned, both in the field and in the classroom. The projects offered choices geared to the eight intelligences. The students were able to make their own choices and design their own assessments. As a result, they created projects that were valuable to them. Some assessments created by the students were creative stories, poems, written research reports, a learning board game that demonstrates where the water went, a simple computer program that demonstrated how water evaporates and a rap song about the stages of the water cycle. Through these projects teachers at Lakes Elementary School had the opportunity to see how the multiple intelligence approach provided all students with successful learning experiences, especially for those students who were not successful with traditional methods. (Meyer, 1997).

Another example of multiple intelligence was mentioned in a 1998 article titled *Attitudes Toward a Multiple Intelligence Curriculum.* (Mettetal, 1998). In the study, the research question addressed was: What are the attitudes of teachers, students, and parents toward Multiple Intelligence in general, and toward this curriculum in particular? The school studied was called Farmington Elementary (a pseudonym). It was a K-5 elementary school with 520 students located in north central Indiana. The population was primarily Caucasian and was economically

diverse. For many years the students had changed classes for each subject. While reading and math classes were grouped by the ability of the students, other subjects were heterogeneously grouped. The gifted and talented students were taken from their regular classrooms for periods of enrichment.

In 1992 Sheryll Harper, a new principal in Farmington Elementary, decided to implement Multiple Intelligence into the curriculum. The process was implemented in the 1994-1995 school year. The classes became self-contained and heterogeneously grouped. A block scheduling plan, called flow time, provided all the children's activities such as music, library, activity room and physical education into two half-day sessions, leaving large blocks of uninterrupted class time on the other days. The activity room contained games and activities that stimulated each of the intelligences. Enrichment clusters brought together students with common interests, regardless of age, for a total of four one hour sessions on topics ranging from folk dancing to storytelling. Within the classrooms, changes took place depending on the teacher's method of teaching. Some teachers chose to have centers available to the students where activities for each intelligence could be implemented. Other teachers incorporated the theory of multiple intelligences into the lessons and allowed the students a choice in how they would demonstrate knowledge of a unit.

The investigators and authors of this study, Mettetal and Jordan, began by interviewing students, teachers, parents and students. The interviews were semistructured. The topics included multiple intelligences, the activity room and enrichment clusters. Each person was asked what the topic was about, how they liked it, why they thought it had been implemented, and if they had any ideas on how to improve it. The investigators also observed classes from each grade level by participating in the classroom and taking notes. A survey was sent home to parents

that asked about their views on the same aspects of the curriculum that the interviews had elicited as well as the general opinion of the school. Finally, the data were organized and analyzed. The results made the researchers aware of positive and negative attitudes toward multiple intelligence theory in the classroom. Many were concerned that traditional standardized testing scores would drop due to the reform of the teaching methods. Surprisingly, students had more self- confidence and achievement scores were higher than those of the previous year. The findings of this study suggest that students gained in self-confidence and teachers learned to appreciate a wider variety of student strengths. Although strategies may vary from school to school due to the needs of the students, the authors concluded that the effects of the multiple intelligence based curriculum should be positive (Mettetal, 1998).

The Involvement of the Library Media Specialist

When considering the topic of multiple intelligence the question arises, "What does the literature say about the involvement of library media specialists?" Few writers or researchers have discussed the media specialists' role in using multiple intelligence theory.

However, most professional literature did state that the library media specialist plays an important role in the teaching of students. Whatever the curriculum may be or the philosophy practiced, the library media specialist needs to have a partnership with the teacher. There has to be an understanding of what is being taught within the classroom and a knowledge of the students' abilities. By working together the teachers and library media specialist can create a positive learning experience for all children. The development of the collection can be based on the

needs of the students and the multiple intelligences. Due to limited budgets and increasing costs it is important to have a strategy when developing a collection.

The article, *Stategy: Collection Development Concerns* (Yucht, 2000), mentioned guidelines for collection development. The author used guidelines she called the four C's: Content, Curricular Correlation, Community, and Cost. The content should be appropriate for the age, emotional development, ability levels, learning styles and social development of the students. The curricular correlation should ensure the enrichment and extension of the educational goals, philosophies and curriculum of the school and district. The materials needed to meet accepted evaluation standards for the genre or format and provide/present diverse points of view as represented in our pluralistic society. Finally, the cost of the materials had to be justified, according to its probable or continued use in the school.

Barron (1996) mentioned workshops that were available for educators such as Association for Supervision and Curriculum Development (ASCD's), "Understanding Multiple Intelligences." It is a series of 30-minute videos that give teachers, students and parents the opportunity to discuss the topic and consider implementation into the curriculum. Also, some recommended books by Howard Gardner and Thomas Armstrong can be located in the library.

The best way to reassure that materials are available for the students of multiple intelligences is to educate the educators, the teachers and media specialists. By preparing the media specialist for this concept of teaching to the intelligences, the media specialist has a better chance of having materials available for the students and can better assist the students in becoming successful learners.

Summary

Each of the original seven intelligence draws upon patterning skills to interpret the sights and sounds of the world. It seems likely that the eighth intelligence, the naturalist intelligence, not only has its own identity but also can be used to enrich the other seven intelligences (Barkman, 1998). It is important for everyone involved with the education of the child to be aware of these intelligences so that every child has the opportunity to learn in his or her ways. It is also important to have training in the topic of multiple intelligences, and to have materials and resources available for the students to expand their knowledge. For this reason, library media specialists play an active part in the teaching process and the curriculum. Library media centers should be equipped with plenty of resources that reflect the interests of the students with each of the intelligences. Since the naturalist intelligence is considerably newer to the list than the other intelligences, a study evaluating the science collections in elementary media centers to find out whether they support Gardner's concept of the naturalist learner is required.

CHAPTER III

METHODOLOGY

Overall Design and Justification

The design of this project is content analysis and examined a class of social artifacts, specifically written documents. The units of observation were the books found in two elementary school library media centers, specifically the 500s section. The 500s is a science section according to the Dewey Decimal Classification System. The units of analysis were the libraries in which the books are housed. The study was unobtrusive since it has no direct effect on the subject being studied (Babbie, 1998). The purpose of the study was to find out whether each library media center had books in the 500s section that supported the characteristics of the naturalist learner, according to Gardner's Theory of Multiple Intelligences. Once the data were collected the following research questions were answered regarding the collection of each of the schools.

1.) What percent of books in the 500s reflect criteria identified as facilitating and expanding the development of the naturalist learner?

2.) What percent support the naturalist learner with illustrations and/or photographs?

3.) What percent support the naturalist learner with charts and diagrams that facilitate categorizing?

4.) What percent are published within the last year; five years; ten years?

5.) What percent support the naturalist learner with a glossary?

6.) What percent support the naturalist learner with an index?

7.) What percent have a bibliography available to further expand the student's knowledge?

8.) What percent have text appearance (font, arrangement, white space and type) that allows the student to gather information easily and facilitate further learning?

Population and Sample

Two elementary school media centers in the Burlington County area were chosen for the study. An elementary school in Moorestown and an elementary school in Pemberton were selected due to their different socio-economic backgrounds according to the New Jersey School Report Card. In New Jersey, the schools are assigned letters that state the District Factor Grouping. This grouping system ascends in alphabetical order and parallels the districts' socio-economic status. The Moorestown School District was rated an "I" and the Pemberton School District was rated a "C/D" (New Jersey, 2001). Moorestown's elementary school was grades K-4 and Pemberton's elementary school was Preschool-5. Both media specialists were contacted by phone in order to get permission and both were eager to assist in the study.

When choosing the materials to evaluate, the systematic sampling method was used in order to avoid human bias. A systematic sample is choosing the nth number from the total number in the list (Powell, 1997). Moorestown's library media center had a total of 1594 books in the 500s section. Pemberton's library media center had a total of 1223 books in the 500s section. Using Powell's *Table for*

Determining Sample Size from a Given Population a total of 310 books per library was needed in order to get a sufficient sample. Every fifth book was chosen from a printout of the 500s section in Moorestown's library media center and every fourth book was chosen from Pemberton's printout.

There are many other resources available to evaluate, such as materials located in other sections of the Dewey Decimal Classification System, CD-ROMS, and kits. These areas were not part of this study but may be researched in the future. The 500s section was chosen because most of the pure science books are classed here.

Method of Data Collection

The dependent variable for this study was the extent to which the school library collections, specifically the 500s Dewey section, reflected the learning styles of the naturalist learner. This was measured by applying the following questions to each book.

1.) Does the book allow the naturalist learner to use his/her ability to recognize and categorize?

2.) Does the book attempt to expand the knowledge of the naturalist learner?

3.) Is the book current?

4.) Does the book offer color photographs or illustrations to assist the naturalist learner in understanding?

5.) Does the book offer color charts or diagrams to assist the naturalist learner in understanding?

6.) Is a glossary present?

7.) In an index present?

8.) Is there a bibliography available to further expand the knowledge of the

naturalist learner?

9.) Does the text appearance (font, arrangement, white space and type) allow the naturalist learner to process information easily?

Each question was answered for each book using a rating method of 0-5, zero being not at all and five being very strong in support. Once the data were collected, the schools were compared by applying the research questions and charting the developments. A copy of the form used is found in the appendix.

Reliability and Validity

To ensure reliability a pre-test was completed on ten books chosen randomly from the 500s section. The questions above were used to evaluate the pretest books. The result of the pretest indicated that many of the books did offer the naturalist learner color photographs and charts as well as a glossary, index and bibliography, but they did not attempt to expand the knowledge of the naturalist learner beyond the information of the text. Nor did most of the pretest books allow the naturalist learner to categorize and recognize.

CHAPTER IV

ANALYSIS OF DATA

Procedures/Methods Used

Both schools supplied the researcher with a printed list of all books in the 500s section. Moorestown's elementary school library media center had 1594 books. Every fifth book was chosen on order to sample a total of 310 books. Since Pemberton's elementary school media center had 1223 books in the 500s section, every fourth book was chosen in order to evaluate a total of 310 books.

Due to the fact that books get misplaced on the shelves and checked out by students and teachers, occasionally specific books from the printed list were not available. When this occurred either the book listed before or after the specific numbered book was chosen and evaluated.

This was a descriptive statistical evaluation with the results presented in tables and figures. The following questions were used in ranking evaluating the books.

1.) Does the book offer color photographs or illustrations to assist the naturalist learner in understanding?

2.) Does the book attempt to expand the knowledge of the naturalist learner?

3.) Is the book current?

4.) Does the book offer color photographs or illustrations to assist the

naturalist learner in understanding?

5.) Does the book offer color charts or diagrams to assist the naturalist learner in understanding?

6.) Is a glossary present?

7.) Is an index present?

8.) Is there a bibliography available to further expand the knowledge of the naturalist learner?

9.) Does the text appearance (font, arrangement, white space, and type) allow the naturalist learner to process information easily?

The statistics for Moorestown's elementary school library media center showed that there was a weakness in books to expand the knowledge of the naturalist learner. A total of 39% of the books were very informative, but lacked information to expand learning beyond the book through the use of addresses to which to write, websites, or even experiments. When evaluating the books for a bibliography 85% did not have one. A total of 43% of the evaluated books did not have a glossary leaving 57% with a glossary, although not all ranked highly. When ranking the date in which the book was published the book was ranked by the decade. Any book published in the 1950s was ranked a 0 and any published in the 1960s was ranked a 1...all the way up to 1990s ranked a 4 and 2000+ ranked a 5. The results were that Moorestown's elementary school library media center had 65% of its books in the 500s section published in the 1990s. See Table 1.

When evaluating Pemberton's elementary school library media center collection the results were that 59% of the items did not have a glossary, 50% did not have an index, 87% did not have a bibliography. The naturalist learner's ability to recognize and categorize using the books was average with a rank of 30%. A total of 26% was slightly higher than average and a total of 26% was slightly lower than average. Without having further information such as a bibliography, index or glossary as well as websites, the books limit the naturalist learner to only the information in the book and did not allow the naturalist learner to expand beyond the pages of the book. When considering the publication date of each book, 50% of books in the 500s section were published in the 1980s. See Table 2.

Table 1

Moorestown Elementary School Media Center

Questions	Rank					
	0	1	2	3	4	5
1	0%	3%	13%	27%	23%	30%
2	0%	19%	39%	16%	12%	14%
3	1%	4%	6%	22%	65%	2%
4	1%	3%	7%	12%	23%	54%
5	40%	9%	10%	11%	18%	11%
6	43%	0%	2%	6%	39%	10%
7	33%	2%	10%	10%	21%	24%
8	85%	0%	0%	1%	3%	12%
9	1%	2%	8%	24%	34%	31%

Table 2

Pemberton Elementary School Media Center

Questions	Rank					
	0	1	2	3	4	5
1	1%	2%	26%	30%	26%	15%
2	2%	28%	33%	19%	12%	7%
3	0%	4%	11%	50%	35%	1%
4	0%	3%	12%	15%	30%	40%
5	52%	4%	6%	15%	17%	7%
6	59%	5%	2%	9%	17%	7%
7	50%	1%	5%	15%	14%	13%
8	87%	0%	4%	5%	0%	5%
9	1%	0%	15%	30%	34%	20%

Figure 1

Does the book allow the naturalist learner to use his / her ability to recognize and categorize?

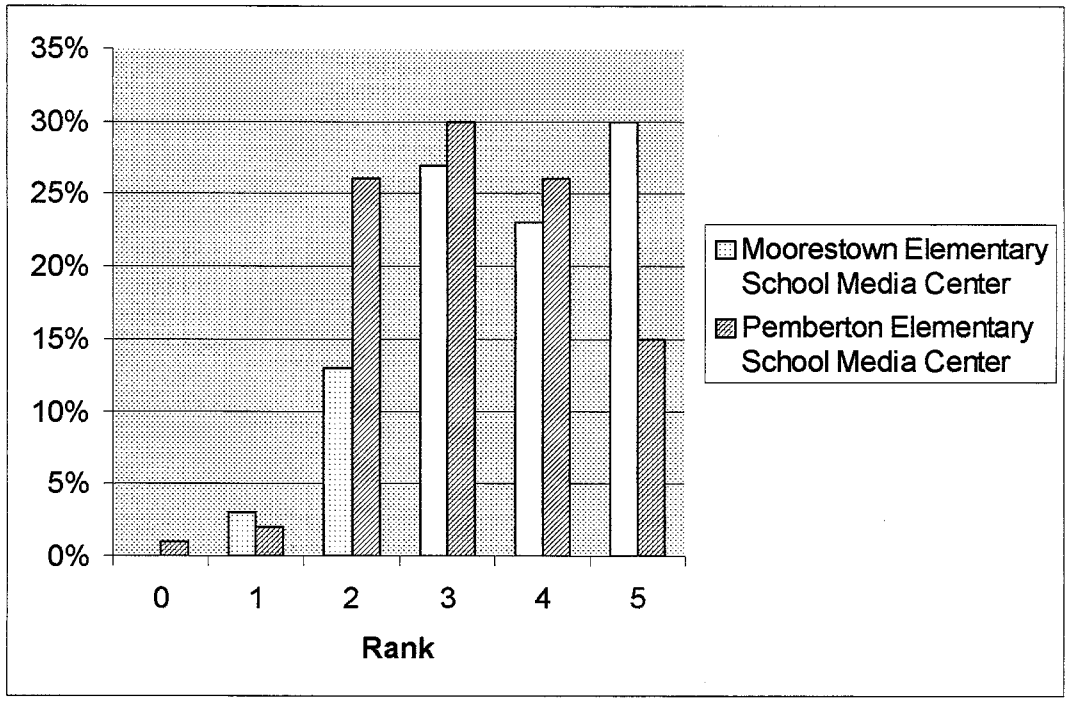

Figure 1 shows that both elementary school media centers had adequate numbers of books that allow the learner to recognize and categorize except Moorestown's media center had its highest percentage of books with a rank of 5 while Pemberton had its highest percentage of books with a rank of 3.

Figure 2

Does the book attempt to expand the knowledge of the naturalist learner?

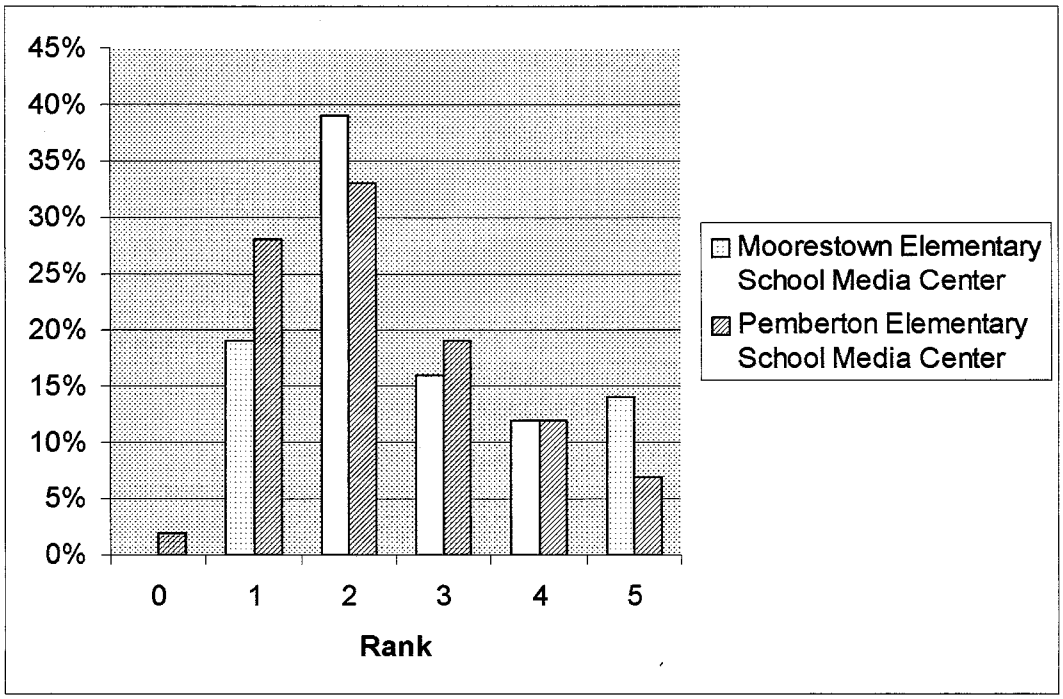

Figure 2 shows that Moorestown's elementary school library media center had 39% of its books rather weak in expanding the knowledge of the naturalist learner and 33% of the collection in Pemberton's elementary school library media center were weak in the same area. Both collections had higher percentages of books which were nonfictional stories that lack factual information, charts and possible expansion of information beyond the book.

Figure 3

Is the book current?

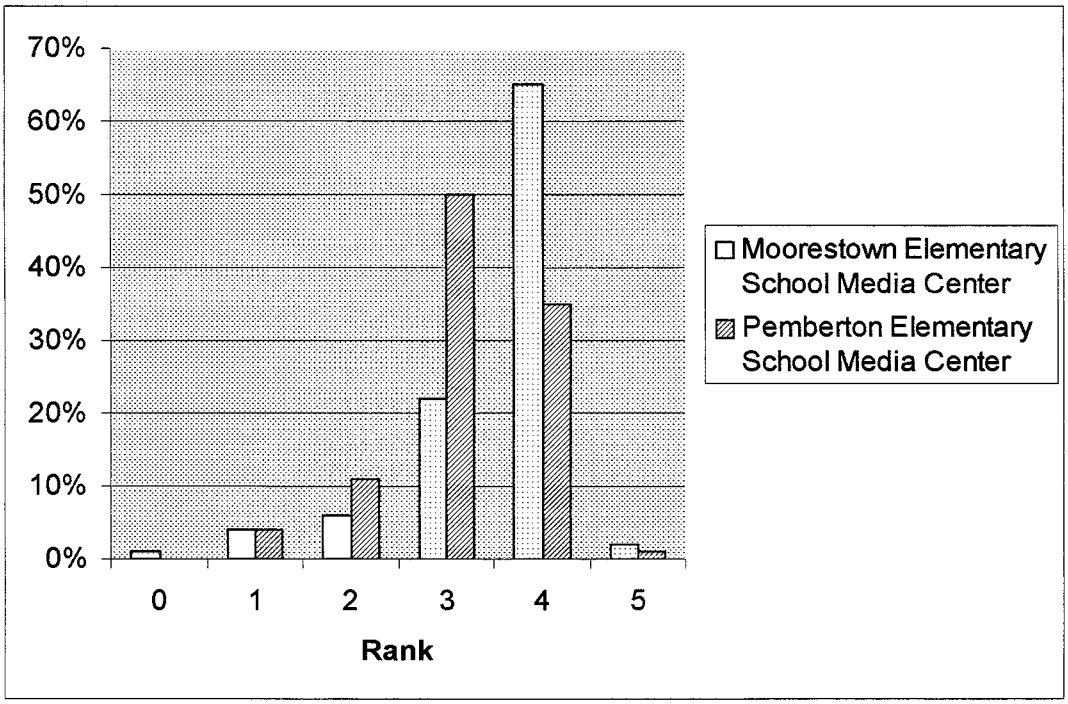

Figure 3 shows that 65% of Moorestown's books in the 500s were published in 1990s while 50% of Pemberton's collection in the 500s section were published in the 1980s.

Figure 4

Does the book offer color photographs or illustrations to assist the naturalist learner in understanding?

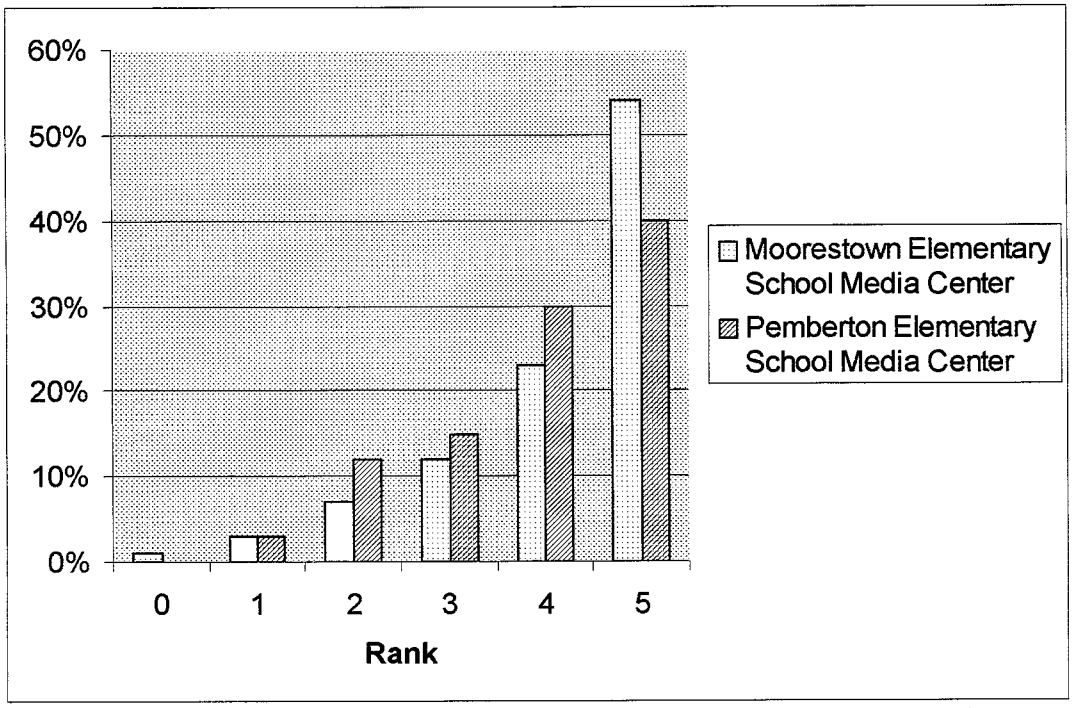

Figure 4 shows that both collections of 500s have a high percentage of books that had photographs and illustrations to assist the naturalist learner in understanding.

Figure 5

Does the book offer color charts or diagrams to assist the naturalist learner in understanding?

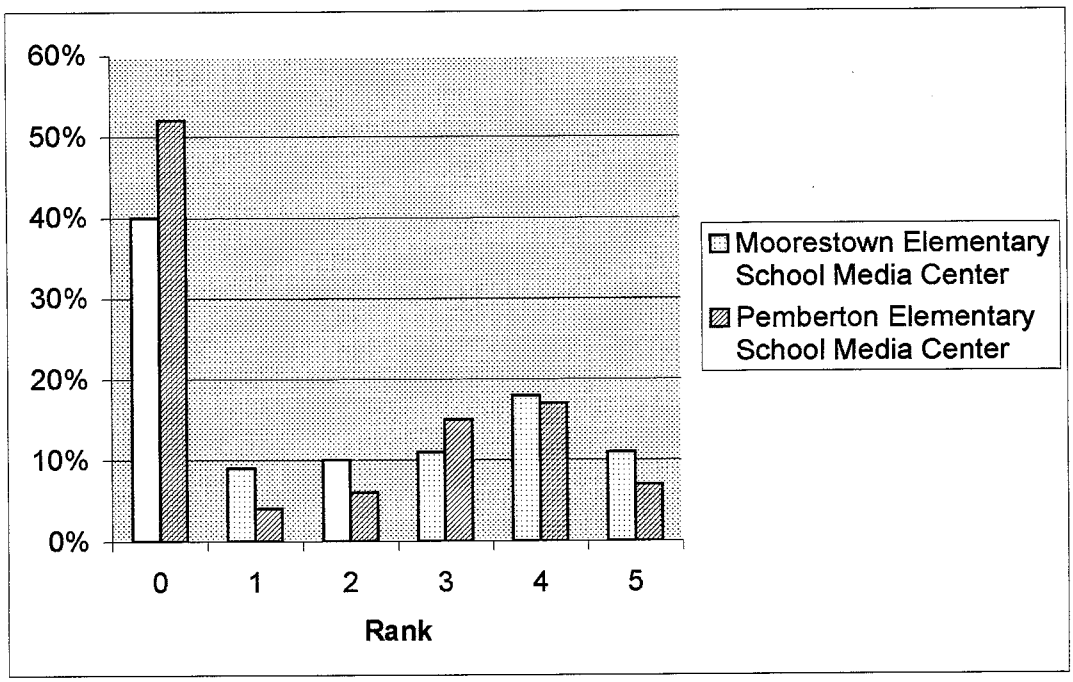

Figure 5 shows that both elementary school library collections in the 500s had high percentages of books that did not have charts and diagrams to assist the naturalist learner in understanding. At Pemberton more than half of the collection of 500s were without appropriate charts and diagrams.

Figure 6

Is a glossary present?

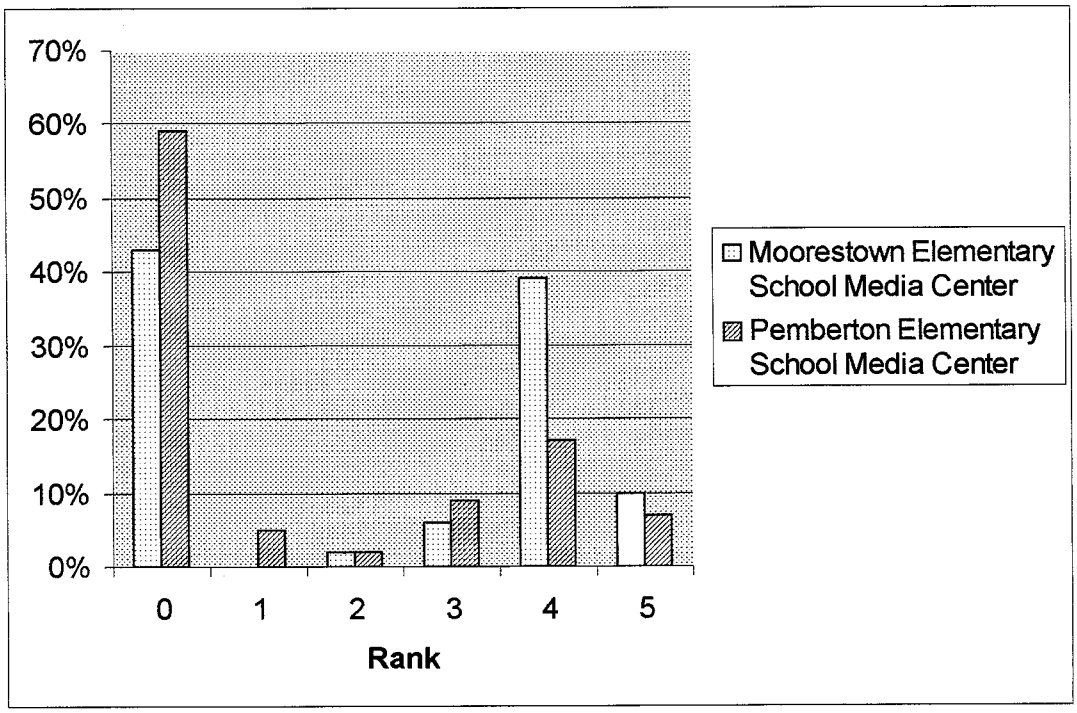

Figure 6 shows that both elementary school library media centers had half or more of their books in the 500s without a glossary. While Moorestown's 500s collection had 49% of its books ranked at either 4 or 5, only about 25% of Pemberton's were similarly ranked.

Figure 7

Is an index present?

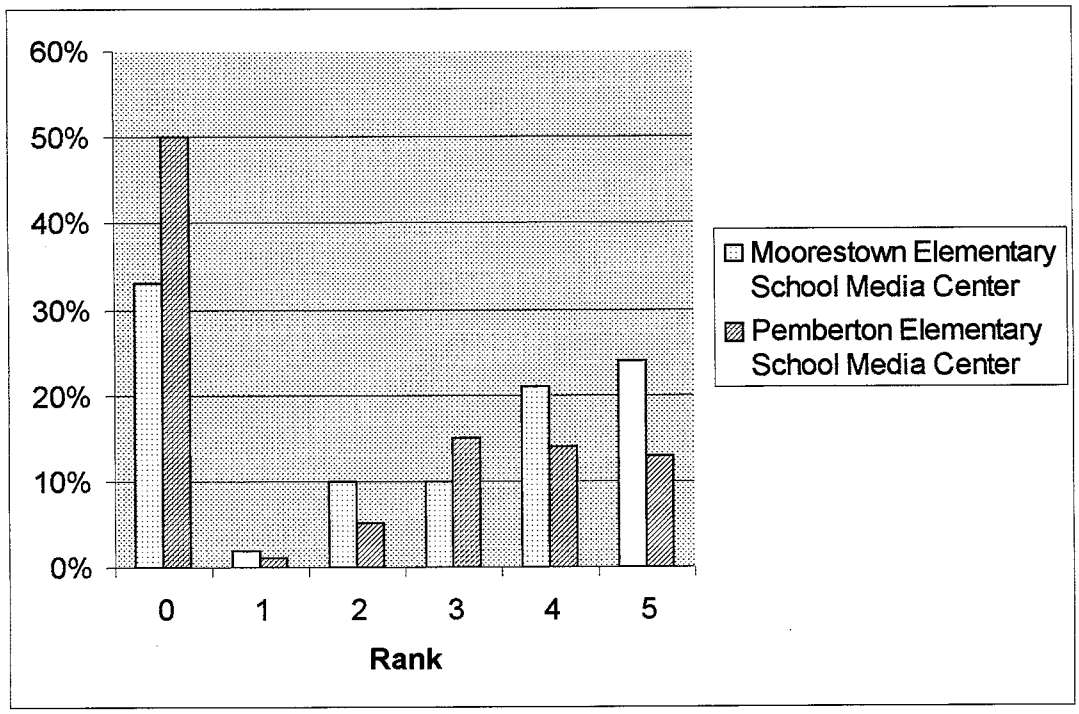

Figure 7 shows that 33% of the books in the 500s in Moorestown's library media center did not have an index, although the 24% of the books that did have an index were very supportive. A total of 50% of the books in Pemberton's library media center did not have an index.

Figure 8

Is there a bibliography available to further expand the knowledge of the naturalist learner?

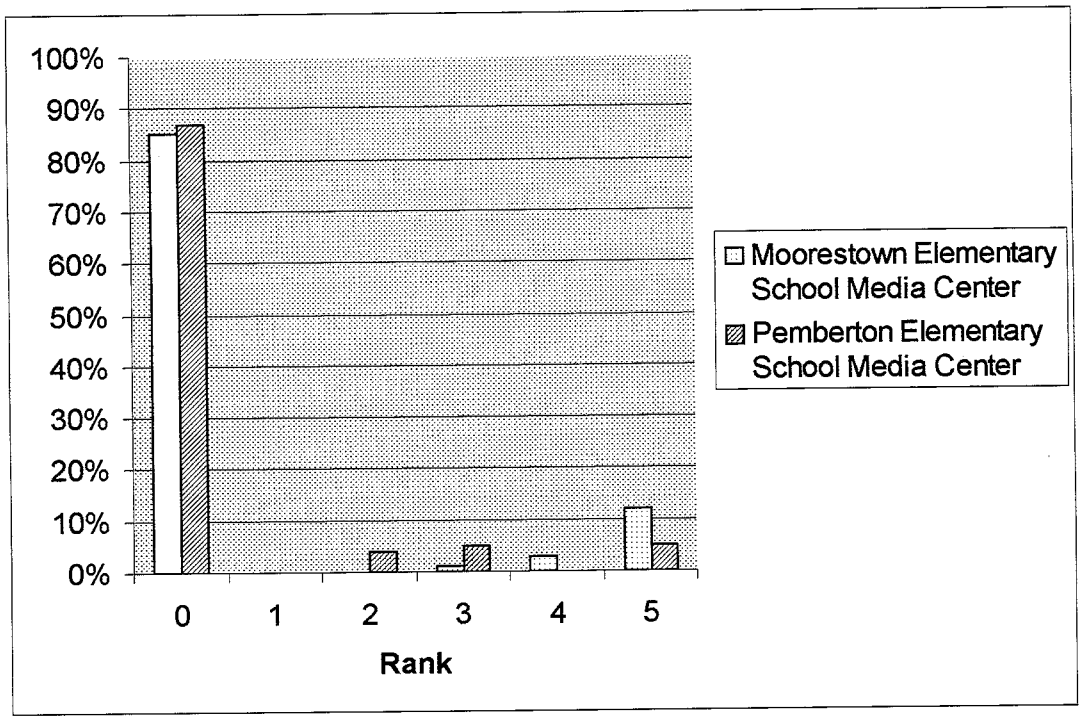

Figure 8 shows that an overwhelming percentage of books in both 500s collections were without a bibliography to further expand the knowledge of the naturalist learner.

Figure 9

Does the text appearance (font, arrangement, white space, and type) allow the naturalist learner to process information easily?

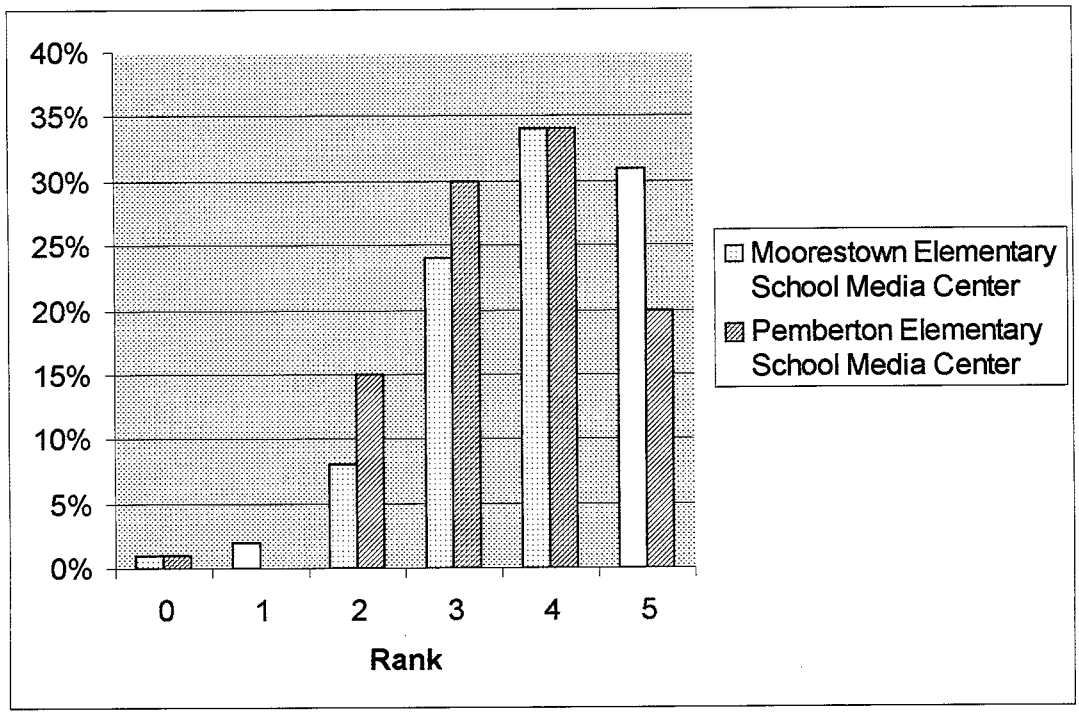

Figure 9 shows that the books in the 500s collections in both library media centers were ranked as either a 4 or 5 in terms of appearance of text and print. The older books seemed to be written in small print and single-spaced. Some of the newer books seemed to have too much information placed randomly on each page making it confusing for the reader.

CHAPTER V

SUMMARY AND CONCLUSIONS

Significance of the Study

The purpose of the study was to determine if selected elementary school library media centers have print collections that were sufficient to assist the naturalist learner in expanding his or her knowledge and skills. In order for the books to properly serve the naturalist learner, the books needed to allow the learner to understand material through recognition and categorization. Also, the books needed to attempt to expand the knowledge of the learner through bibliographies, websites, addresses, and experiments. Charts and diagrams, as well as glossaries, indexes and font arrangement were also assets in attempting to meet to the needs of the naturalist learner. If books in the 500s section in elementary school library media collections did not meet the specific needs of the naturalist learner librarians need to be aware and use this information in selection and weeding.

Conclusions

From this evaluation several conclusions can be drawn. Moorestown's elementary school library media center had a majority of books published in the 1990s and Pemberton's elementary school library media center had a majority of its

books published in the 1980s. This conclusion may or may not be related to funding and their socio-economic backgrounds according to the New Jersey School Report Card.

Secondly, both elementary school library media centers tended to have books in the 500s section that did not expand the knowledge of the naturalist learner. These results had a definite correlation to the fact that a majority of the books in both elementary school library media centers did not have a glossary, index or bibliography, as well as websites, addresses, and experiments.

The inclusion of color photographs and illustrations was ranked highly for both the elementary school library media centers. Text arrangement was also ranked highly. However, with a low percentage of books with color charts and diagrams, and a low percentage of books that did expand the knowledge of the naturalist learner, many of the existing books were just informational picture books that did not meet the needs of the naturalist learner.

Use of Results

This evaluation was exploratory and can be further studied by evaluating the collections of other elementary school library media centers or expanding the evaluation to the 600s section, CD-ROMS and kits. It would also be interesting to study whether or not the copyright date is relevant to whether books meet the needs of the naturalist learner.

Another study could involve looking at the books being published in order to see if they meet the needs of the naturalist learner and bring this to the attention of the publishers.

Finally, there could be more study of the rating scale to determine the relative value of the items. The rating scale could then be refined for further use.

APPENDIX

FORM

AUTHOR:

TITLE:

DATE:

1.) Does the book allow the naturalist learner to use his/her ability to recognize and categorize?

Weak 0 1 2 3 4 5 Strong

2.) Does the book attempt to expand the knowledge of the naturalist learner?

Weak 0 1 2 3 4 5 Strong

3.) Is the book current?

Weak 0 1 2 3 4 5 Strong

4.) Does the book offer color photographs or illustrations to assist the naturalist learner in understanding?

Weak 0 1 2 3 4 5 Strong

5.) Does the book offer color charts or diagrams to assist the naturalist learner in understanding?

Weak 0 1 2 3 4 5 Strong

6.) Is a glossary present?

Weak 0 1 2 3 4 5 Strong

7.) Is an index present?

Weak 0 1 2 3 4 5 Strong

8.) Is there a bibliography available to further expand the knowledge of the naturalist learner?

Weak 0 1 2 3 4 5 Strong

9.) Does the text appearance (font, arrangement, white space, and type) allow the naturalist learner to process information easily?

Weak 0 1 2 3 4 5 Strong

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