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# Programmatic assessment of nonformal environmental education programs in southern New Jersey

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# PROGRAMMATIC ASSESSMENT OF NONFORMAL ENVIRONMENTAL EDUCATION PROGRAMS IN SOUTHERN NEW JERSEY

by
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ABSTRACT

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PROGRAMMATIC ASSESSMENT OF NONFORMAL ENVIRONMENTAL EDUCATION PROGRAMS IN SOUTHERN NEW JERSEY
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Nonformal environmental education experiences can be useful tools for teachers when the programs are connected to state standards and national guidelines. This study examined how well fieldtrip programs at nonformal environmental education centers in southern New Jersey met the New Jersey Core Curriculum Content Standards for environmental education and the North American Association for Environmental Education's Nonformal Environmental Education Programs Guidelines for Excellence. Fourteen centers from the six southern most counties were sent questionnaires. Of the fourteen centers, eight responded to the questionnaire. The programs offered at these centers were then evaluated using a checklist for the state standards and a checklist for the guidelines. The extent to which each variable was met varied. The results indicated that all of the centers met both the standards and the guidelines to a degree. The affect of the standards movement on visitation rates at the responding centers was also under examination, but the results were inconclusive. The information gathered can be used by local school districts to plan useful fieldtrips and by the respondent centers to improve current fieldtrip programs.

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# CHAPTER ONE

# INTRODUCTION

## Nonformal Education

Formal learning is classically seen as taking place in the school setting with a teacher, classroom, desks, books, and students. Nonformal education on the other hand takes place outside of the classroom setting and is often termed informal learning. "In essence, informal learning can be defined as the sum of activities that comprise the time individuals are not in the formal classroom in the presence of a teacher" (Gerber, Marek, & Cavallo, 2001 June, p. 70). Things learned during this time can be highly beneficial to the over all learning of a student. Fieldtrips, lab exercises, field experiments, and other activities all help to build upon a student's formal learning experience and reinforce lessons taught in the classroom. "Historically, Aristotle and Socrates incorporated travel as a valued part of their teaching" (Rudmann, 1994. p 139).

Environmental education programs, nature centers, parks, museums, zoos, and aquariums are all valuable nonformal education resources. Topic areas range from general subjects to specific on site information. The formal teaching lecture is often replaced with ranger led discussions, facilitated exploration, and nature games. Nonformal education not only changes the learning environment but also often changes students' outlook and perceptions on subject areas. (Knapp & Proff, 2001)

## Importance of the Topic

Most children spend approximately seven hours a day in school, for five days a week and thirty-six weeks out of the year. That is a grand total of about 1,260 hours a

year. Over the past 25 years, researchers and teachers have been looking for a way to change the atmosphere of student learning and to find more ways of incorporating nonformal education into the curriculum. Fieldtrips and other forms of nonformal education have been highly successful in science and environmental education. (Gerber, Cavallo, & Marek, May 2001) "Collaboration between schools and informal science centers would enable both to contribute more effectively to science literacy" (Ramey-Gassert, 1997, p. 448). Yet, it appears that these resources are still overlooked, "whether it is because teachers are unaware of how to incorporate museum materials into their science curricula or because they are unfamiliar with science education resources, many teachers seldom use out-of-school science learning environments" (Ramey-Gassert, 1997, p. 434). It would be helpful for teachers to know how a particular out of classroom experience might help enhance what is being taught in the classroom and how these programs may be readily integrated into science curriculum (Rudmann, 1994).

"Environmental education enhances critical-thinking, problem solving, and effective decision making skills. It also teaches individuals to weigh various sides of an environmental issue to make informed and responsible decisions" (p. 56). Nonformal environmental education helps students decide for themselves what viewpoint or course of action to take by allowing them to explore (Knapp & Proff, 2001). In a 1986 study by Jordan, Hungerford and Tomera results indicated that environmental education fieldtrips may supplement class work and foster a high level of involvement.

## The Standards Movement

In 1994, Cathryn Rudmann's study found that fieldtrips could be incorporated into the broader curriculum, but this idea would be challenged as the push for standards

increased. On May 1, 1996, the New Jersey State Board of Education formally adopted a set of Core Content Curriculum Standards for seven subject areas. It was, and still is, understood that these standards were and are to serve as a framework for curriculum design but not as a teacher's guide for lesson plans. Teachers now had a frame work with which to base each year's lessons. This was the very beginning of the standards movement that would sweep the nation in the up coming years (New Jersey MSC, 2004). Shortly following the publication of the New Jersey Core Curriculum Standards, another study reinforced the fact that "informal science learning environments such as science centers, museums, and zoos provide students with captivating science experiences that can be related closely to curriculum objectives" (Ramey-Gassert, 1997, p. 433).

In January of 2002, the No Child Left Behind Act became law, and a new era in the standards movement swept New Jersey and the nation. Nonformal environmental education's place within this new law seemed to be in question (Paige, 2003). "With emphasis on fulfilling the curricular goals, the formal setting tends to implement a set agenda with little, if any, importance ascribed to children's prior knowledge, memories, and experiences outside the classroom" (Gerber, Cavallo, & Marek, 2001 May, p. 535). In this new era of tests and high stake standards, there is an increased focus on certain subject areas. Reading, math, and science are all held highly accountable and monitored closely. Annual tests are now in place to measure progress. All third grade and eighth grade students are measured based on how well they meet state standards at their level. Only those states that have standards for improving school test scores will be able to receive taxpayer funding. (US Department of Education, The Facts About...State Standards)

New Jersey Core Curriculum Standards for Environmental Education

Environmental Education can be found in both the standards for science and social studies in the New Jersey set of core curriculum standards. There are ten strands for the science subject area. The major emphasis for environmental education falls under strand 5.10; although there is also an emphasis that it has many connections to other subjects. The New Jersey Core Curriculum Content Standards in general reflect the belief that students should learn enough science to be active concerned citizens, with reliable information and decision making skills. The two strands under the main standard call for the study of natural systems and their interactions along with a look at human interactions and impacts on the environment.

> "Creating an awareness of the need to protect, conserve, and preserve natural resources is a goal of science education. The standard calls for students to develop knowledge of environmental issues, including management of natural resources, production and use of energy waste management, and the interdependence of ecosystems" (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Science, 5.10, p. 29).

Standard 6.6 of the social studies standards has the Environment and Society listed as strand E. By incorporating social studies into environmental education lessons the action goal that is so often discussed in environmental education becomes a strong focal point (Hungerford, Peyton, & Wilke, 1980). Strand E of standard 6.6 stresses the importance of understanding how human behavior relates to the physical and cultural environment. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, 6.6E) "The purpose of social studies education is

to provide students with the knowledge, skills and attitudes needed to be active, informed, responsible citizens and contributing members of their communities" (New Jersey Core Curriculum Content Standards, Social Studies Introduction, p. 1 ).

## Goals and Guidelines for Environmental Education

In 1977, the Tbilisi Intergovernment Conference on Environmental Education was held to establish the major objectives of Environmental Education. The major objectives were determined to be environmental awareness, sensitivity, attitudes, skills, and participation. It was hoped that environmental education would give groups and individuals the skills and knowledge needed to become actively involved in solving all levels of environmental problems. (Emmons, 1997; Hungerford & Volk, 1990; Sivek & Hungerford, 1989) The objectives accented the importance of providing students with basic ecological knowledge, awareness and concern about environmental interactions in both urban and rural systems. "To be effective, the processes used to meet these goals should take many forms, including the exposure of children to direct purposeful experiences in diverse natural settings" (Simmons, 1998, p. 23). A set of goals were also created in the 1980s that outline these previous objectives and covered the ownership and empowerment variables that are important for the establishment of an environmentally responsible citizen. Hungerford and Volk (1990) reported on the superordinate goal that included aiding citizens in becoming environmentally knowledgeable and, above all skilled and dedicated citizens. These citizens would be willing to work, individually and/or collectively, toward creating a dynamic equilibrium between the quality of life and the quality of the environment. The sub goals, level I through IV, covered the following

areas: ecological foundations, conceptual awareness, investigation and evaluation, and action skills. (Hungerford & Volk, 1990)

In addition to these goals and as a further tool for evaluating the many aspects of environmental education, the North American Association for Environmental Education created the Nonformal Environmental Education Programs: Guidelines for Excellence. "The overall goal of these guidelines is to facilitate a superior educational process leading to the environmental quality that people desire" (p. 1). These guidelines have six key points in determining the quality of a nonformal environmental education program. The six key characteristics are as follows: needs assessment; organizational needs and capacities; program scope and structure; program delivery resources; program quality and appropriateness; and evaluation. Although each is highly important, all programs are not expected to meet each and every characteristic. Those that do fall short in some areas may still be very useful tools. In this case the guidelines serve as an indicator on where a center may need to improve. (North American Association for Environmental Education Nonformal Environmental Education Programs: Guidelines for Excellence, Introduction & Summary, 2001)

## The Value of Nonformal Environmental Education

Swiss psychologist, Jean Piaget, discovered that a great deal of learning took place through interaction with particular objects (Rudmann, 1994). Nonformal environmental education allows for these types of hands on activities. Nonformal environmental education centers are places where students can interact with one another, choose what they like to do, be creative and have fun, all while opening up new realms of learning by directly involving the student in the environment they are studying.

"According to the experts, then, informal science learning environments can engage and excite students to experience science in ways uncommon to the classroom" (p. 438). Nonformal environments give students the opportunity to investigate, examine and explore live specimens and natural ecosystems in ways that text cannot. Kids are immersed into three dimensional learning. "Science centers are envisioned to entice learners to go beyond their present knowledge and to construct a newer, larger vista of scientific thinking" (Ramey-Gassert, 1997, p. 436). As nonformal learning experiences gain favor as being beneficial to a student's learning, many more students from across the globe will participate in these types of fieldtrips. Researchers have found a initial gain of knowledge and improved attitudes toward the environment during these activities (Knapp, 2000; Gerber, Cavallo & Marek, May 2001).

## Problem Statement

Nonformal environmental education centers can be a very useful addition to in-class science curriculum and lessons (Ramey-Gassert, 1997; Hungerford & Volk 1990; Knapp, 2000). In some cases teachers are unwilling to take the time, effort, and funding to organize a class trip to an environmental based learning center. In other cases they may be unsure of the benefits of such trips to their students. This compounds with a lack of knowledge on what programs are offered at a particular site. It appears that these resources are not being used to their full potential. (Ramey-Gassert, 1997) It is hoped that that by making information on the many different programs in South Jersey more available, these tools could become highly useful in reinforcing classroom lessons. Although many of these places do have web sites with a great deal of information, there

is no single source for the centers located in South Jersey. (Are we there yet?-- New Jersey Index)

## Research Questions

1. To what extent do existing programs of nonformal environmental education centers in South Jersey report using the New Jersey Core Curriculum Content Standards for Environmental Education when creating programs or lesson plans?
2. To what extent do goals, mission statements, and/or lessons of nonformal environmental education centers in South Jersey meet the Nonformal Environmental Education Programs: Guidelines for Excellence developed by the North American Association for Environmental Education (NAAEE)?
3. To what extent are New Jersey environmental education science and social studies core curriculum content standards met in lessons or fieldtrip programs regardless of intention?
4. To what extent has the attendance at nonformal environmental education centers been effected by the state implementation of core curriculum content standards over the past ten years?

## Research Hypotheses

1. Curriculum content standards for environmental education can be found in existing lesson plans at nonformal environmental education centers in South Jersey.
2. Due to the recent increase in concern over state standards and standardized test scores, attendance at nonformal environmental education centers over the past ten years has declined.

## Purpose of the Study

1. The purpose of this study is to determine if there is a connection between New Jersey's Core Curriculum Standards and environmental education centers current lessons and programs.
2. This study will examine how well these programs meet the Nonformal Environmental Education Programs: Guidelines for Excellence developed by the North American Association for Environmental Education.
3. This study will determine whether or not the standards movements have affected class visitation rates in the past ten years.
4. This study will compile the results and provide a single resource for both teachers in the surrounding districts and coordinators at their respectable establishments.

## Significance of the Study

Environmental education centers can be extremely helpful in breaking the boundaries of the classroom into the natural world. Lessons taught in outdoor settings can enhance existing knowledge, build new skills, and connect students to the world around them. (Ramey-Gassert, 1997; Hungerford & Volk 1990; Knapp, 2000) There are a number of different locations in South Jersey that hold programs for classes of all ages. This study will serve as a guide for teachers to choose the best places or programs that meet their needs. At this point there is no complete list of the centers and what they offer. The data from this study will help to eliminate this gap in communication.

## Delimitations

This study looked at environmental education and nature centers in the South Jersey area. These centers fall under the realm of nonformal education. Six of the lower

most counties in the state were included in the research area. In these six counties, fifteen different centers were identified for the study. All educational programs under examination were held outside of the classroom. Although traveling programs are also considered a form of nonformal education, this study looked at those courses located at the facility.

## Limitations and Assumption

1. Not every program, class, or lesson could be examined individually. In some cases the information received by the center had to be accepted as valid.
2. The South Jersey area was convenient for this study and traveling time was kept to a minimum. Therefore these results cannot be generalized for any other particular area.
3. This study did not look at the interdisciplinary nature of environmental education lessons. Although the lessons may have crossed into a number of different curricula areas, only those standards related to environmental science and social studies were under examination.
4. It is hoped that the most knowledgeable person at the facility completed the questionnaire.
5. This study assumes that the particular lessons under evaluation were standard and not heightened for the purpose of this study.

## Research Design

Surveys were sent to each of the fifteen environmental education centers by mail. Accompanying each survey was a letter explaining the purpose of this study. Each center was also asked if they would be willing to be identified by name in this report or if they

preferred to remain anonymous. A request was made to each facility coordinator or education director that a copy of one or two lesson plans currently being used at the center be mailed back with the completed survey. If this was applicable, the lessons served as examples of the center's different programs and could be examined to determine whether or not they met state core curriculum standards and/or the nonformal guidelines for environmental education. If the center listed many programs currently in use that site was chosen for further evaluation. The survey asked each institute what New Jersey Core Curriculum Content Standards that it thought it covered, for its mission statement, goals, or objectives at the center, the attendance records over the last ten years, and also used a Likert scale to measure how much it felt it was meeting the guidelines for excellence.

As a second measure of evaluation, those centers with a large number of programs were asked if they would agree to be observed by the researcher. In this case the researcher sat in on different sessions or lessons and examined lesson plans or materials at the facility. New Jersey Core Curriculum Standards and compliance with the nonformal guidelines for excellence in were the main objectives for this portion of the study. A checklist was used to record when an area of the curriculum standards was covered. A similar method was used to assess the guidelines covered.

## Operational Definitions

The following definitions are all found in the "Glossary of Key Terms" portion of the North American Association for Environmental Education's Nonformal Environmental Education Programs: Guidelines for Excellence (2001).

Educational Objective: A statement of a specific measurable or observable result desired from an activity.

Environmental Education: A process that enables people to acquire knowledge, skills, and positive environmental experiences in order to analyze issues, assess benefits and risks, make informed decisions, and take responsible actions to achieve and sustain environmental quality.

Environmental Literacy: Possessing knowledge about the environment and issues related to it; capable of, and inclined to, further self-directed environmental learning and/or action.

Goal: A desired result from an activity, lesson, or course of study.

Nonformal or Informal Environmental Education: Education about the environment that takes place at nonformal settings such as parks, zoos, nature centers, community centers, youth camps, etc., rather than in a classroom or school. Any organized educational activity about the environment that takes place outside the formal educational system.

Program: An integrated sequence of planned educational experiences and materials intended to produce a particular set of outcomes.

Standard: A clear and specific statement of what a learner should know or be able to achieve.

It is also important to understand this term for the context of this study.

Fieldtrip: "A trip arranged by the school and undertaken for educational purposes, in which students go to places where the materials of instruction may be observed and studied directly in their functional settings" (Rudmann, 1994, p. 139).

# CHAPTER TWO

# LITERATURE REVIEW

## The Importance of Nonformal Environmental Education

"Nonformal education is defined by the Human Sciences Research Council as planned but flexible education that takes place outside the sphere of formal education" (Rudmann, 1994, p. 138). Piaget's studies indicated that direct experience, cognitive conflict, and social interaction are important factors that help learners construct their own knowledge base through both informal and formal learning experiences. "Interest in informal learning research, and acknowledgement of its importance to formal education, has risen over the past 25 years" (Gerber, Cavallo, Marek, 2001 May, p. 537). Looking back even further, for the last seventy-five years, fieldtrips have been a major part of the American education system. When these trips are used properly they can be a valuable hands-on method of teaching science. "In science, as in all learning, students must be engaged, attentive, and interested in an activity in order for learning to occur" (p. 434). Reform movements are moving away from solely teaching from a textbook, to a more practical hands-on approach where students engage in investigating issues directly. (Ramey-Gassert, 1997)

"Millions of students participate in nonformal science fieldtrips. Research has shown that participants of these programs have initially gained knowledge and improved attitudes" (Knapp, 2000, p. 73). A number of different venues can be used for nonformal environmental education. Nature centers, environmental education centers, parks, museums, zoos, and aquariums all give students a chance to explore and interpret

information on their own. Topic areas can range from local issues of resource management to large global wildlife issues. The ability to physically interact with a system helps students learn. "An experience that has students catching, looking, searching, chasing, acting, etc. will be more successful in its retention than a program that is didactic and passive." (Knapp & Poff, 2001, p. 59) Rudmann's (1994) study found increasing support for the periodic use of nonformal learning with the belief that it has affective benefits and possible cognitive gains. In this study there was a positive change in the scientific attitude of those students who were able to participate in fieldtrips. "The instructional methods on a fieldtrip can improve cognitive achievement and scientific attitudes when the exhibit and the docent lead participatory and interactive learning" (p. 141). It was also suggested that repeated visits would help improve the level of learning. (Rudmann, 1994) Nature study provides students with direct experience with the world around them. "You can't build a relationship with nature unless you have contact with the natural world" (Simmons, 1991, p. 19).

Even if all of the content of a particular program is not retained the connection and problem solving skills learned through exploration at centers is carried on, some students learn best while playing (Ramey-Gassert, 1997). "With emphasis on fulfilling the curricular goals, the formal setting tends to implement a set agenda with little, if any, importance ascribed to children's prior knowledge, memories, and experiences outside the classroom" (Gerber, Cavallo, Marek, 2001 May, p. 535). Environmental education programs and fieldtrips offer an alternative to class work and begin fostering higher levels of involvement which can lead to environmental action (Jordan, Hungerford & Tomera, 1986). Programs like Parks as Classrooms attempt to link interpretation with the

formal classroom to integrate the programs offered with the school's curricula. In programs like these there is a strong connection with the teacher and the resources are used more frequently. Teachers should understand that "the most successful tactic to achieve behavior change may lie in the establishment of partnerships with the longer term process of environmental education." Fieldtrips are an important sector of environmental education. (Knapp, 1998, p. 328)

## Goals and Guidelines for Environmental Education

### *Background*

In 1997, the Tiblisi Intergovernment Conference on Environmental Education was held to determine the major objectives of Environmental Education. It was determined that awareness, sensitivity, attitudes, skills, and participation were the most important areas to cover in environmental education. (Hungerford & Volk, 1990) The conference concluded that "environmental education should provide social groups and individuals with an opportunity to be actively involved at all levels working toward the resolution of environmental problems" (Emmons, 1997, p. 34). That same year, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) created a report that focused on:

> The importance of providing students with basic ecological knowledge, awareness and concern about environmental interactions within urban and rural systems, and a variety of experiences in the environment is clearly described. To be effective, the processes used to meet these goals and objectives should take many forms, including the exposure of children to direct purposeful experiences in diverse natural settings (Simmons, 1998, p. 23).

These goals were interpreted a number of different ways by educators but the main focus remained the same. A set of goals was then developed in the 1980s. These goals incorporated the ownership variable that is found to be important in environmental action. There was one superordinate goal and four goal levels. The superordinate goal of environmental education was "to aid citizens in becoming environmentally knowledgeable and, above all skilled and dedicated citizens who are willing to work, individually and collectively, toward achieving and/or maintaining a dynamic equilibrium between quality of life and quality of the environment" (p. 13). The first goal level of environmental education was to develop an ecological foundation. Building upon this foundation students were to develop a conceptual awareness of the environment and its issues. The next goal related to investigation and evaluation of different issues and concepts concerned with environmental education. And the final step was to achieve action skills, or the ability to apply knowledge and training. (Hungerford & Volk, 1990)

"The erroneous assumption is often made that skills evolve naturally from knowledge" (Simmons, 1991, p. 20). In 1986, Jordan, Hungerford, and Tomera published a study that supported the claim that "making people aware of environmental issues is not by itself sufficient to result in increased knowledge of environmental action strategies" (p. 19). Hungerford and Volk's (1990) report reinforced the fact that knowledge and awareness alone do not lead to citizenship action. Positive environmental action is a formative process addressed in some nonformal environmental education programs. For this final goal to be achieved environmentally responsible behaviors must be performed. (Emmons, 1997)

In 1994, Rudmann created a list of suggestions that should be considered before taking part in an environmentally based fieldtrip that would make it more worthwhile and successful in meeting some of these goals. In order to erase some of the problems related to being in a novel setting students should be introduced or oriented to the setting that will be explored. Teachers should also create their own goals and objectives that justify the purpose of the trip. "Select a fieldtrip site that provides hands-on, manipulative, and guides (docents) who will stimulate the interest through questioning, problem solving, exploration, and investigation" (p. 141). In connection students should be given the time to explore and discover things on their own. Post visit materials should also be used to reinforce what is learned on the trip. Ownership of environmental issues and setting can be covered using these suggestions, which support the over all goals of environmental education. (Rudmann, 1994)

### *NAAEE Guidelines for Excellence*

In 1993, the North American Association for Environmental Education (NAAEE) began the National Project for Excellence in Environmental Education. Each section offers a set of recommendations for developing a particular area of environmental education. These tools were made available to the public in February of 2001. (North American Association for Environmental Education, 2001) The Environmental Education Materials: Guidelines for Excellence was created to help developers of activity guides, lesson plans, and other instructional methods produce quality products. It also serves as a way to evaluate existing environmental education materials. The guidelines point out six key characteristics for environmental education materials that provide direction for instruction while at the same time allowing educators the flexibility to shape

content and technique. (North American Association for Environmental Education (NAAEE), Environmental Education Materials: Guidelines for Excellence, 2001)

The first key characteristic deals with the fairness and accuracy of a material. Materials should be accurate in describing environmental problems and issues while explaining the varying perspectives on them. The factual base, differing viewpoints, openness to inquiry, and reflection of diversity are all under evaluation for characteristic one. (Environmental Education Materials: Guidelines for Excellence, Summary, #1, 2001 )

Depth of the material is the focus of the second key characteristic. Excellent environmental education materials should "foster awareness of the natural and built environment, an understanding of environmental concepts, conditions, and issues, and an awareness of the feelings, values, attitudes and perceptions at the heart of environmental issues, as appropriate for different developmental levels" (p. 4). Focus on concepts in context is an important part in this area along with awareness and attention to different scales. This key characteristic makes sure that materials cover all the bases. (NAAEE, Environmental Education Materials: Guidelines for Excellence, Summary, #2, 2001)

The third characteristic emphasizes skill building so that learners have lifelong skills to address environmental issues. Included in the skill building is critical and creative thinking. After using the material learners should be able to apply their skills to environmental issues and have the skill to act responsibly. (NAAEE, Environmental Education Materials: Guidelines for Excellence, Summary, #3, 2001)

Action orientation is again addressed in the fourth key characteristic. Materials should promote civic responsibility that encourages learners to use what they've learned

to assess environmental problems to form a basis in finding solutions. (NAAEE, Environmental Education Materials: Guidelines for Excellence, Summary, #4, 2001)

The fifth key characteristic evaluates the instructional soundness of environmental education materials. The focus points under this characteristic deal with creating an effective learning environment. (NAAEE, Environmental Education Materials: Guidelines for Excellence, Summary, #5, 2001)

The final requirement and key characteristic assesses the usability of materials. An excellent resource will fulfill all of these preceding requirements and be clear, logical, long-lived, adaptable, supported, and fit with national, state, or local requirements. (Environmental Education Materials: Guidelines for Excellence, Summary, #6, 2001)

The NAAEE also developed guidelines for excellence in nonformal environmental education. "The overall goal of these guidelines is to facilitate a superior educational process leading to the environmental quality that people desire" (p. 1). There are also six key characteristics for developing and maintaining excellent nonformal environmental education programs. All programs are not expected to meet all of the guidelines but their use can point out areas for improvement. Environmental education is always meant to be learner-centered with the opportunity to construct hands-on investigations. The context of nonformal environmental education allows skills to be applied directly to the world around a learner. (NAAEE, Nonformal Environmental Education Programs: Guidelines for Excellence, Introduction, 2001)

The first key characteristic is needs assessment. "Nonformal environmental education programs are designed to address identified environmental, educational, and community needs and to produce responsive, responsible benefits that address those

identified needs" (p. 6). There are three sub points under this characteristic including audience needs and the inventory of existing programs and materials. The third sub point simply points out the fact that a program must address an environmental issue or condition. Conditions may range in ecological concepts from food webs to nutrient cycles. These conditions could also address things like acid rain or climate. (NAAEE, Nonformal Environmental Education: Guidelines for Excellence, Summary, #1, 2001)

Organizational needs and capacities are under evaluation in the second key characteristic. Nonformal programs must support their parent organizations. Therefore the mission, purpose, and goals should be consistent with the priorities of the parent organization. The needs and resources of the organization should also be identified. (NAAEE, Nonformal Environmental Education: Guidelines for Excellence, Summary, #2, 2001)

The third characteristic shifts focus to the programs scope and structure. Goals and objectives should be presented that state how a particular program will help form environmental literacy. These goals should also fit with the goals and objectives of environmental education. Program format and delivery are also examined along with program partnership and collaboration. Well-trained staff and facilities are necessary for a program to be considered excellent. (NAAEE, Nonformal Environmental Education: Guidelines for Excellence, Summary, #3, 2001).

Key characteristic four inspects another area of programs and deals with delivery and resources. The quality of the instructional staff, facility management, support materials, and emergency planning all contribute to the over all quality of a nonformal environmental education program. Resource needs are also assessed under this

characteristic. (NAAEE, Nonformal Environmental Education: Guidelines for Excellence, Summary, #4, 2001)

Program quality and appropriateness are officially called into question under key characteristic five. Thorough planning is needed to insure that programs are built on a strong foundation. Four subtopics are listed for this topic. Field-testing, sustainability, instructional techniques, and promotion, marketing, and dissemination are all important factors. (NAAEE, Nonformal Environmental Education: Guidelines for Excellence, Summary, #5, 2001)

The final key characteristic is evaluation. "Nonformal environmental education programs define and measure results in order to improve current programs, ensure accountability, and maximize the effects of future efforts" (p. 6). An excellent program should have determined evaluation strategies, effective evaluation techniques and criteria, and also proper use of evaluation results. An outstanding and excellent program will meet these guidelines. Those that do not can use them as a tool to fix shortcomings. (NAAEE, Nonformal Environmental Education: Guidelines for Excellence, Summary, #6, 2001)

## The Standards Movement

### *The National Movement*

The results of project synthesis were first published in 1982. With funding from the National Institute of Education and the U.S. Department of Education, the report's aim was to identify the major goals for science education in North America. Four goal clusters were developed as guides for curriculum development. Local districts were given the flexibility to use these clusters to form sub goals that fit with a particular area.

The clusters covered personal needs, societal issues, academic preparation, and career education/awareness. Under the guide of the clusters individuals would be prepared to use science to improve their lives by dealing with societal issues and the increasingly technological world. Those who wished to pursue a degree, career, or further education in a science related field would have the resources to do so under the third and fourth cluster. The Project Synthesis authors, "believed that science should excite the child's natural curiosity, foster an interest in the environment and in the human organism itself, and provide opportunities for actually doing science in the classroom" (p. 24). Although Project Synthesis did not gain much publicity politically or even in the classroom, it did influence future movements. (Bluhm, Volk, Wise, Winther, Hungerford, & Saunders, 2003)

In 1983, the National Commission on Excellence in Education published *A Nation at Risk.* This event is seen as the first spark in the modern standards movement. Education was and still is seen as the root to freedom and a good life in the United States. Without it *A Nation at Risk* claimed that our democracy and culture was at stake. (New Jersey Core Curriculum Content Standards Introduction) After *A Nation at Risk* called attention to some of the many issues involved with education, the need for standards was in high demand. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards Introduction)

Science for All Americans was the first portion of Project 2061 released in 1989. Three other phases followed its release with the ultimate goal of determining a way to move the nation to become more scientifically literate. Project 2061 formed a thorough definition of scientific literacy, including such key points as: being familiar with the

natural world; understanding key concepts and principles of science; knowing science, mathematics, and technology's limitations and the important ways it connects with society; and being able to use all of this knowledge for not only personal purposes but also for the greater good of society. Content points were also developed as curriculum guides with these main points: utility, social responsibility, intrinsic value of knowledge, philosophical value, and childhood enrichment. (Bluhm et al., 2003)

Twelve Benchmarks for Science Literacy were then developed in 1993. The broad categories described what all scientifically literate adults should know by the completion of their formal education (K-12). The first three benchmarks covered the nature of science, mathematics, and technology. The human organism and humans in society were also key areas. The designed world and the mathematical world were covered along with common themes, habits of the mind, and historical perspectives. Also included in the benchmarks were physical settings and the living environment. Under these categories a broad range of topic were discussed. The benchmarks included the product realm of science and the scientific processes that are interrelated. (Bluhm, et al., 2003)

"In the early 1990s, a concreted effort was undertaken for the purpose of identifying national standards for science education" (p. 29). Under the leadership of the National Research Council, scientists, teachers, and others interested in science and education published the National Science Education Standards. These standards were developed for science teaching, professional development of teachers of science, assessment in science education, science education content, science education programs, and science education systems. The content areas are divided into grade sections with

each of the following areas included: science as inquiry; physical science; life science, earth and space science; science and technology; science in personal and social perspectives; and history and nature of science. Like the Benchmarks, these standards were only recommendations with no official standing. (Bluhm, et al., 2003)

The first official governmental effort was signed into law in 1994, under the Goals 2000: Educate America Act. The Act called for individual states to develop and implement their own set of standards. "Supporters have argued that standards provide uniformity across a state and help to ensure equality among different school districts" (p. 30). There are both positives and negatives to the standards movements. As some states favor accountability and assessment other are pressured by religious groups to leave certain topic areas out. No matter what issues may have a risen the standards era had taken a strong hold across the nation. (Bluhm, et al., 2003)

### *No Child Left Behind*

"On January 8, 2002, when the No Child Left Behind Act became the law of the land, we began a new era of education in our nation's history" (Paige, 2003, para. 1). Formally, the federal government required each state to establish its own set of standards for reading, math, and science. Standards which had sometimes caused controversy were now a necessity. "Under No Child Left Behind states are required to establish their own annual test aligned with state standards for grades three through eight to measure how successfully students are learning what is expected by the standards" (para. 5). Only those states that have standards for improving schools backed by evidence will receive taxpayer money. (Paige, 2003, No Child Left Behind Accountability, Standards) Accountability became the major mission of achievement tests. The New Jersey

Assessment of Skills and Knowledge tests assess a student's achievement in the knowledge and skills defined by the New Jersey Core Curriculum Content Standards in the following categories: language arts literacy, mathematics, and science (New Jersey Department of Education, Assessment of Skills and Knowledge, 2004). The Grade Eight Proficiency Assessment (GEPA) and the High School Proficiency Assessment (HSPA) for science assesses the knowledge and skills that students should have by the end of eighth and eleventh grade respectively (New Jersey Department of Education, Science Test Specification: Content/Skill Outline Source). "Accountability systems gather specific, objective data through tests aligned with standards" (para. 6). The federal government encouraged new ways to improve achievement including partnerships with businesses, science centers, museums, and other community organizations. Many different areas of the business world and government became more involved with education practices. Standardized testing has become a way of life in New Jersey and on a national level. (US Department of Education, Methods, Science)

*New Jersey's Standards Movement*

On May 1, 1996, the New Jersey State Board of Education adopted an official set of Core Curriculum Content Standards in seven subject areas. The standards were meant to serve as a framework for curriculum planning and design. They were not however intended to be a complete manual on how subjects were to be taught. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards, Introduction) There were also five process related standards (Bluhm, Volk, Wise, Winther, Hungerford, & Saunders, 2003). The standards served as a common set of guidelines so that all teachers would know what was expected of each student. When the standards were first

released they varied in character, scope and detail, but they served as a formal common ground between curriculums in different districts. A frame work was created for each content area and statewide assessment tests were aligned to meet the core standards. "New Jersey's standards were created to improve student achievement by clearly defining what all students should know and be able to do at the end of thirteen years of public education" (New Jersey Department of Education, New Jersey Core Curriculum Content Standards Introduction, p. i).

> The state standards for New Jersey were created for all students regardless of race, sex, socioeconomic status, and a number of other factors.
>
> Each content area focuses on the development of higher order thinking skills and requires students to read, write, think, and create. Although the standards have been organized into separate academic disciplines, this is not meant to imply that each standard can only be met through content-specific courses (p. iii).

School districts were urged to explore creative ways to infuse curriculum standards across different subject areas (New Jersey Core Curriculum Content Standards Introduction). The standards are reviewed every five years and in 2002 they were simplified into 10 standards (Bluhm, Volk, Wise, Winther, Hungerford, & Saunders, 2003). Changes were based on research in each area. The standards are meant to be clear, concise and appropriate for the different grade levels which include high school graduation requirements. To map the progress a student should take Cumulative Progress Indicators (CPI) were created. The CPIs provide specific content and skills that are needed throughout different levels of schooling. Under this system it is believed that new information will build on the foundations already in place. Core Curriculum Content

Standards had become a major topic for school boards across the state. "Collectively, they embody a vision of the skills and understandings all of New Jersey's children need to be successful in their careers and daily lives" (New Jersey Department of Education, New Jersey Core Curriculum Content Standards Introduction, p. iv)

## New Jersey Core Curriculum Content Standards

The initial draft of science standards began to be distributed during the 1994-95 school year and championed the fact that science should be taught at all levels with an awareness of how it could be connected to other subjects. In dealing with environmental subjects, all students would be taught that many interdependent components affect the world around them. These standards were not intended to list out every science subject, but more or less define what was needed for a student to become an environmentally literate citizen. "The New Jersey Core Curriculum Content Standards for Science reflect the belief that all students can and must learn enough science to assume their role as concerned citizens, equipped with necessary information and decision-making skills" (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Science, Introduction Section, p. 1). Within these standards the development of critical thinking skills was considered extremely important. Environmental Education does not have its own subject designation. The curriculum for this subject area is included as part of the science and social studies standards.

### *Environmental Studies*

Standard 5.10 of the science core curriculum content standards was dedicated to Environmental Studies, under which two strands or subtopics were created. The two strands dealt with Natural Systems and Interactions and Human Interactions and Impacts.

(New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Science)

Each detailed standard begins with a descriptive statement. The Environmental Studies statement clearly states its overall purpose in:

> Creating an awareness of the need to protect, conserve, and preserve natural resources is a goal of science education. The standard calls for students to develop knowledge of environmental issues, including management of natural resources, production and use of energy, waste management, and the interdependence of ecosystems (p. 29).

Following the descriptive statement is a break down of the Cumulative Progress Indicators (CPI) for the different grade levels. Each strand of the main standard is studied throughout a student's formal schooling. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Science, Strand 5.10)

There are two different sets of CPIs in science during the elementary school years. The first indicators are for grade two. By the end of second grade students in New Jersey will have already begun their environmental studies background. Both strands of the Environmental Studies standard are touched upon. By the end of Grade 2, students will:

A. Natural Systems and Interactions

1. Associate organisms' basic needs with how they meet those needs within their surroundings.

B. Human Interactions and Impact

1. Identify various needs of humans that are supplied by the natural or constructed environment. (p. 29)

This is the basis for studying the earth's resources and developing the beginnings of ecological knowledge (New Jersey Core Curriculum Content Standards for Science, Grade 2 CPI).

There are again CPIs for fourth grade that build upon the knowledge in preceding grades. By the end of Grade 4, students will:

A. Natural Systems and Interactions

1. Differentiate between natural resources that are renewable and those that are not.

B. Human Interactions and Impact

1. Explain how meeting human requirements affects the environment. (p. 29)

By fourth grade a student should be able to distinguish the difference between renewable and non-renewable resources. They also begin to explore how humans affect the environment. (New Jersey Core Curriculum Content Standards for Science, Grade 4 CPI)

Progress indicators are also listed twice for middle school level curriculum at the end of sixth and eighth grade. In grade six the strands are expanded. By the end of Grade 6, students will:

A. Natural Systems and Interactions

1. Explain how organisms interact with other components of an ecosystem.

2. Describe the natural processes that occur over time in places where direct human impact is minimal.

B. Human Interactions and Impact

1. Describe the effect of human activities on various ecosystems.

2. Evaluate the impact of personal activities on the local environment. (p. 29)

Building upon knowledge and skills gained in preceding grades, by the end of Grade 8, students will:

A. Natural Systems and Interactions

1. Investigate the impact of catastrophic events such as forest fires, floods, and hurricanes on the environment of New Jersey.

B. Human Interactions and Impact

1. Compare and contrast practices that affect the use and management of natural resources. (Jersey Core Curriculum Content Standards for Science, Grade 6 and 8 CPIs, p. 30)

The final set of CPIs is for the end of grade twelve, in other words the end of high school. By the time students graduate they should have a through knowledge of environmental studies through completion of these levels.

By the end of Grade 12, students will:

A. Natural Systems and Interactions

1. Distinguish naturally occurring process from those believed to have been modified by human interaction or activity.

- climate change
- ozone production
- erosion and deposition

- threatened and endangered species

B. Human Interactions and Impact

1. Assess the impact of human activities on the cycling of matter and the flow of energy through ecosystems.

2. Use scientific, economic, and other data to assess environmental risks and benefits associated with societal activity. (p. 30)

Students must look both globally and locally to determine the affects of many different human actions and how they may connect with the seemingly natural environment. The strands also imply that students have a thorough knowledge of the different natural cycles and the scientific laws of thermodynamics and matter. The interdisciplinary nature of environmental studies can be found in the last CPI listed under the 5.10 strand. (New Jersey Core Curriculum Content Standards for Science, Grade 12 CPI)

The assessment tests also have guides as to what should be learned by a particular grade level. The Grade Eight Proficiency Assessment test commonly referred to as GEPA, brakes down the science requirements so that teachers know what is expected of students by this level. The content and skills outline for each subject area begins with a macro statement, followed by knowledge statements, and finally skill statements. The macro statement for the GEPA test is that students should "Recognize the environment as a system of interdependent components affected by human activity and natural phenomena" (section I). (New Jersey Department of Education, Science Test Specifications: The GEPA/Content/Skill Outlines for Macro Statements 5.1 through 5.2)

The knowledge statements for the GEPA cover a number of concepts including the fact that personal and societal activities impact the environment. This takes into

account that humans affect natural systems sometimes to the point of causing extinction through habitat destruction or other means. These affects are long lasting and connect to many aspects of the environment upon which all life depends. The second knowledge statement deals with how human practices affect the use and management of natural resources. This knowledge statement claims that "through increased awareness of ecological interaction, humans have attempted to prevent continued disruption of the environment and to counteract the results of many of their past negative practices" (Section II, B). Environmental issues are the focus of the third knowledge statement. Students should be aware that different groups and individuals may have varying points of views on environmental and ecological issues. The fourth knowledge statement declares that "in an ecosystem, living communities and their physical environment function together as an interdependent and relatively stable system" (Section II, D). Included under this concept is an understanding of the fact that living and nonliving organisms form ecosystems that have complex cycles and that an ecosystem must contain enough energy for all of its inhabitants. This energy moves from one organism to the next. The different forms of succession are listed as examples of how ecosystems are constantly changing. All of these ideas are important for the GEPA test and should have been learned by the eighth grade. (New Jersey Department of Education Science Test Specifications: GEPA/Content/Skill Outlines for Macro Statements 5.1 - 5.2, Knowledge Statements)

Certain skills are also required at this level. These skills are necessary to apply the knowledge learned to real life situations. Students should be able to use their knowledge to predict the affects of different pollutants on various parts of an ecosystem. By grade

eight students should also be able to infer possible causes of environmental damage, which includes knowing and explaining how organisms may be affected by changes in an ecosystem. The GEPA is a way of assessing the cumulative science knowledge gained by students. All of this information is not intended to be covered in one year but over time from kindergarten to eighth grade. The requirements of the test closely follow what is listed in the New Jersey Core Curriculum Standards. (New Jersey Department of Education, Science Test Specifications: GEPA/Content/Skill Outlines for Macro Statements 5.1 - 5.2, Skill Statements)

*Science Standards Connection to Nonformal Environmental Education*

Although there is no standard or strand that requires fieldtrips, they may still be useful tools in teaching science curriculum. "Museums large and small not only are expanding their educational programs but also are beginning to design their guided fieldtrips, traveling exhibits, and other offerings to fit the school curriculum" (Manzo, 1999, p. 3). There are now many ways that an educator can incorporate useful, fun, and worthwhile fieldtrips into the classroom curriculum (Rudmann, 1994). "In many ways it is the classroom teachers' perception of nature and the importance of providing environmental education for children that determines whether students are given the chance to experience natural areas" (p. 155). Infusion into the school curriculum has been one of the central themes of environmental education. There may be no particular subject time allotted to the sole heading of environmental education but there are many ways in which it can be incorporated within other lessons. (Simmons, 1996) The standards do reflect the need to include New Jersey's natural resources into the realm of general science and fieldtrips are a tremendous opportunity to do so within the confines

of the Core Curriculum Content Standards for science (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Science, Introduction).

*Core Curriculum Content Standards for Social Studies*

The New Jersey Core Curriculum Content Standards for social studies also include a strand for environmental education in Standard 6.6 and strand E. This strand helps incorporate some of the action strategy that is often discussed as a goal of environmental education. Strand 6.6 is for geography. Strand E is dedicated to the Environment and Society. The goal of this standard is for students to "understand human behavior in relation to the physical and cultural environment" (p. 38). The purpose of social studies in general is to provide students with knowledge and skills to be active, informed, responsible citizens whom will be important and beneficial members of their community. The major goal of social studies, to increase general welfare, links to the goals of environmental education. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, Introduction)

Under each of the strands in the content standards there is a list of what should be learned by students in New Jersey over the course of their schooling. Again Cumulative Progress Indicators (CPI) are used to show the steps a child should have achieved at the different grade levels. For strand E, by the end of second grade, students are expected to be able to:

1. Describe the role of resources such as air, land, water, and plants in everyday life.
2. Describe the impact of weather on everyday life.

3. Act on small-scale, personalized environmental issues such as littering and recycling, and explain why such actions are important. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, Grade 2 CPI, p. 39)

There are also CPIs for grade four. The study of renewable and non-renewable resources should have been covered, giving student the ability to distinguish between living and nonliving resources. There should also be a knowledge base on the nature, characteristics and distribution of these resources. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, Grade 4 CPI)

The next grade level that is broken down into CPIs is in the eighth grade. For the environment and society strand students should be able to:

1. Discuss the environmental impacts or intended and unintended consequences of major technological changes (e.g., autos and fossil fuels, nuclear power and nuclear waste).

2. Analyze the impact of various human activities and social policies on the natural environment and describe how humans have attempted to solve environmental problems through adaptation and modification.

3. Compare and contrast conservation practices and alternatives for energy resources.

4. Compare and contrast various ecosystems and describe their interrelationship and interdependence.

5. Describe world, national, and local patterns of resource distribution and utilization, and discuss the political and social impact.

6. Analyze the importance of natural and manufactured resources in New Jersey.

7. Delineate and evaluate the issues involved with sprawl, open space, and smart growth in New Jersey. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, Grade 8 CPI, p. 41)

By building upon knowledge and skills learned in previous grades students should be able to fulfill the twelfth grade social studies CPIs before graduation. The following eight detailed goals are important for strand E of the social studies requirements by twelfth grade.

1. Discuss the global impacts of human modification of the physical environment (e.g., the built environment).

2. Discuss the importance of maintaining biodiversity.

3. Analyze examples of changes in the physical environment that have altered the capacity of the environment to support human activity, including pollution, salinization, deforestation, species extinction, population growth, and natural disasters.

4. Compare and contrast the historical movement patterns of people and goods in the world, United States, and New Jersey and analyze the basis for increasing global interdependence.

5. Evaluate policies and programs related to the use of local, national and global resources.

6. Analyze the human need for respect for and informed management of all resources (sustainability), including human populations, energy, air, land, and water to insure that the earth will support future generations.

7. Describe how and why historical and cultural knowledge can help to improve present and future environmental maintenance.

8. Delineate and evaluate the environmental impact of technological change in human history (e.g., printing press, electricity and electronics, automobiles, computer, and medical technology). (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, Grade 12 CPI, p. 42-43)

By the end of a student's high school career a great deal of environmental knowledge and skills should have been learned.

## Benefits of Nonformal Environmental Education

There have been a number of studies conducted to determine what type of positive gains nonformal environmental education programs can have on participants (Emmons, 1997; Falk & Balling, 1982; Ramey-Gassert, 1997; Knapp, 2000; Knapp & Poff, 2001). The data from Falk and Balling's (1982) study indicates that a single visit fieldtrip can in fact promote cognitive learning and retention. For the fifth grade students involved in the study the fieldtrips were not only fun but also extremely educationally worthwhile. "As measured by pre and posttest, field experiences resulted in significant immediate learning and 20 day retention for all groups" (Falk & Balling, 1982, p. 22). Knapp and Poff's (2001) study found that environmental interpretive programs have strong positive impacts on how a student feels about a resource site. Virtually all of the participants in this study viewed the fieldtrip as a positive experience with an immediate gain of knowledge about the site and a lasting outcome of improved attitude toward the site. In another similar study by Knapp (2000) "results showed that participants who

were actively involved in the fieldtrip demonstrated a better understanding of the course materials immediately following the fieldtrip and showed significantly less loss of knowledge over a 12-week period" (p. 65). This study's results support previous research by Falk and Balling (1982) in that fieldtrips are not only enjoyed by teachers and students, but they also form positive lasting memories.

In a 1997 study, Ramey-Gassert concluded that nonformal science learning environments improve students' attitudes toward science and provide teachers with insights into how children understand and learn about the natural world. It also goes on to report on some of the many other benefits associated with nonformal environmental education. Nonformal learning environments allow students to observe and investigate natural objects and live specimens in ways that textbooks cannot. Students in science centers tend to show interest, enthusiasm, motivation, alertness, awareness, and eagerness to learn. These characteristics are lacking or neglected in school science. Learning takes on a greater meaning in nonformal settings when students accomplish a task using real elements. "One primary difference is that learners in an informal setting who are intrinsically motivated gain personal meaning from their learning, which has greater value than memorizing facts or doing well on a test" (p. 435). Students in this study reported that they learned better and retained more if they were prepared, informed, and had control over what they were learning. (Ramey-Gassert, 1997)

Learning in science museums typically is more social and learner directed. This open-ended less planned sequence of learning is inviting to students to the point where they will volunteer to participate in activities. Although some outcomes are difficult to measure, students who spend time with objects and exhibits seem to develop a deeper and

more complex understanding of science than those who are not exposed to this type of hands on setting. Science museums are well equipped to fill some of the inadequacies of formal science learning by providing innovative programs so that teachers may learn how to use hands-on methods as a way to enhance science teaching. "In short, informal settings have the potential to extend classroom science learning by providing students with a range of rich, motivating experiences" (Ramey-Gassert, 1997, p. 438).

Enriched nonformal learning environments heighten reasoning abilities, when combined with inquiry based instruction in the classroom. "Therefore, informal science learning may facilitate the development of reasoning abilities that are prerequisites to learning and understanding science processes and concepts" (Gerber, Cavallo, Marek, 2001 May, p. 537). This understanding can lead to environmental activism. In a study of high school students in Belize the groups participating in the nonformal environmental education programs were given an optional action activity at the end of the program. The idea was introduced to the students with the knowledge that no reward or credit would be given with the completion of the activity. Even so the students initiated the activity without any teacher incentives. "The analysis of the learning opportunities and learning outcomes of the program suggests that the processes and outcomes of the program fit the model of positive environmental action" (Emmons, 1997, p. 41). Sivek and Hungerford (1989/90) also found that variables associated with nonformal science activities served as precursors in forming sensitivity toward the environment. "It also appears that the nonformal sector holds considerable promise for the development of sensitivity if it can capture learners for long periods of time and put them into aesthetically positive situations" (Sivek & Hungerford, 1989/90, p. 39).

It is also possible to connect nonformal education programs to curriculum in order to gain an even greater impact on the students. "Nonformal educational settings also have fewer curricular and other constraints and can provide certain motivational elements – choice, challenge, novelty, and cooperation that can motivate students to learn" (Emmons, 1997, p. 36). By linking nonformal programs with classroom lessons, a student will have multiple exposures to an element or lesson. Those who do not understand a concept in the classroom may be better able to relate to the idea in its natural setting. (Knapp, 2000) "By utilizing more settings, the likelihood of greater infusion is increased" (Simmons, 1996, p. 157). There are many opportunities for classes to participate in these beneficial activities.

## Limitations of Nonformal Environmental Education

The use of nonformal environmental education has some drawbacks and negative aspects. A study by Simmons (1998) found that, "In general, the teachers believed that it was important to provide nature experiences as part of the curriculum, that their students would enjoy these experiences and that participation in programs at natural areas would be educationally worthwhile" (p. 31). But with this support also came a great deal of concern. Teachers in this study listed not being comfortable or well trained among the main concerns about teaching in informal settings. It is still unclear exactly how nonformal learning environments and science teaching procedures can be interfaced to provide the maximum level of benefits to the students involved (Gerber, Cavallo, Marek, 2001 May).

Time is often listed as a major concern and limiting factor of nonformal science education (Falk & Balling, 1982; Knapp, 1998; Knapp & Poff, 2001; Simmons, 1991).

"In many cases, the majority of time is actually spent in transit rather than in direct participation in the lesson" (Falk & Balling, 1982, p.22). This lack of time creates gaps in achieving some of the desired goals of many nonformal environmental education programs. "People need time to attain the sensitivity, knowledge and attitudes necessary for a positive environmental ethic" (Knapp, 1998, p. 326). There are always the potential limitations of time and availability when using natural settings or environmental education programs and nature centers (Simmons, 1996). "It is not even realistic to expect a particular nature center, zoo, or museum to provide a total environmental education program within the context of the typical school visit" (Simmons, 1991, p. 21). As the amount of time away from the experience increases many of the sought after goals dwindle or diminish. Time on task and time away from task are both important variables in the results of science fieldtrips. Long term retention of subject area is often poor, unless reinforced through classroom lessons or further nonformal activities. (Knapp & Poff, 2001)

The time issue is compounded with a number of other variables that limit the amount of knowledge retained by students during nonformal environmental education programs. Although interpretation programs can increase the knowledge base of ecological issues and raise basic awareness they often still lack the formation of a sense of stewardship that is often hoped for in environmental education. Nonformal programs would be more successful if they were better linked to one another or to the in class curriculum. (Knapp, 1998). "We need to start thinking about how comprehensive programs can be built using all of the resources available to the school" (Simmons, 1991, p. 21). In 2001, Knapp and Poff's study concluded that cognitive information linked to

ecological concepts, wilderness facts, or environmental issues was vaguely recalled and often misunderstood by students.

The novelty of a nonformal experience can negatively affect both the students and the teachers (Falk and Balling, 1982; Simmons, 1998). Unique events are remembered easily but often the excitement related to fieldtrips and the new setting make retention of factual information more difficult (Falk and Balling, 1982). This problem is amplified for students with below average intelligence levels (Rudmann, 1994). The impact of novelty settings also creates difficulties for some teachers. Some teachers feel that they cannot manage their classrooms in the new setting. There are a number of new safety details that must be examined before arranging a fieldtrip. Again time becomes a factor in the commitment and preparation needed to organize a successful fieldtrip. In addition to these added precautions many teachers do not feel well trained to teach in new environments. There is a sense of uncertainty over the credibility of a particular nonformal environmental education program. (Simmons, 1998) Too often fieldtrips are used as a diversion from the regular classroom lesson rather than a way to reinforce lessons. For all the time and money it takes to participate in a fieldtrip teachers and administrators must see some sort of worthwhile gain. (Ramey Gassert, 1997) Even the best-planned and calculated fieldtrip can be ruined by uncontrollable factors such as bad weather. Bad weather on a fieldtrip may seem minor but it creates an unfavorable memory toward the program or site. (Knapp & Poff, 2001)

Environmental Education programs and nature centers also run into some problems on their own. Due to funding many programs are forced to skip issues that are heavily connected to politics. Like most issue, environmental issues can be highly

controversial and involve a number of different organizations; therefore certain topics are not taught to students. The goals of environmental education can then be lost in the process as well. Simmons' (1991) study found that "even though 80% of centers stated that they are teaching environmental education, most are not explicitly incorporating the goals of environmental education with the center's goal structure" (p. 21). This lack of connection between stated goals and practices, along with the variables discussed create barriers in the use of nonformal environmental education centers.

## Studies on Nonformal Environmental Education

Nonformal environmental education has been examined in a number of ways. There are still many questions left to be answers, but also many studies that have helped shed light into this area. Many different areas have been researched, all of which help to form a better understanding of environmental education (Emmons, 1997; Falk & Balling, 1982; Knapp, 2000; Knapp & Poff, 2001; Gerber, Cavallo, & Marek, 2001 May & June; Simmons, 1991, 1996 & 1998). "Most research on fieldtrips has focused on a description of either the cognitive outcomes of the experience or on attitude changes as a result of the experience" (Falk & Balling, 1982, p. 22). From Falk and Balling's (1982) study a number of important factors were determined. Eighty-two percent of the students said that they preferred learning about trees on a school fieldtrip rather than just outside of a classroom. In this case the greater novelty of the fieldtrip made the learning experiences more effective but this often depends on the student. The findings suggest that teachers should strive to take students on trips with a moderate amount of novelty to gain the benefits without much disruption. It appeared in this study of third and fifth graders that older students could handle more extreme novelty and longer trips to unfamiliar places.

This study is not over complex or technical, but it serves as a starting point for future research in the field. (Falk & Balling, 1982)

Some research has been conducted on center goals and how well nonformal programs meet the goals of environmental education (Jordan, Hungerford & Tomera, 1986; Simmons, 1991). Jordan, Hungerford & Tomera (1986) found that "if a greater impact on increasing the quality of the environment is to be achieved a change in the traditional goals and objectives of outdoor EE programs and nature centers toward citizenship action must occur" (p. 16). In 1991, Simmons examined nature and environmental education centers to find out their stated major goals. The most frequent response was nature study, with 76.1% of the 1,225 centers listing it as a goal. The second most frequent response was encouraging environmentally sound behavior with 74.4% of the respondents. These stated goals keep with the major goals of environmental education. "Without program evaluations, however, whether a center's goals are being met or not is unknown. Developing an evaluation would allow the center to clarify its goals, identify whether the program provided is consistent with the goals and determine if these goals are being met" (Simmons, 1991, p. 21). The environmental sensitivity variable can also be reinforced through positive direct contact with the natural environment. Sensitivity is seen as an important step in environmental action and helps build positive environmental attitudes about the natural world. (Emmons, 1997)

In 1994, Rudmann's report on nonformal environmental education backed up previous findings that fieldtrips can improve cognitive achievement and attitudes by enriching instructional units in the classroom. "A national survey administered to primary and secondary educators found that almost half of the teachers polled have taken

their students on a nonformal science fieldtrip" (Knapp, 2000, p. 65). Positive points of reference for fieldtrips included the fact that they contribute to the formal class lesson and form a connection to the outside world at the same time. Fieldtrips were even found to be a factor in what career choices a student will make in the future. (Knapp, 2000) Gerber, Cavallo & Marek (2001, May) examined how informal learning experiences outside of the classroom interfaced with lessons already in place in formal classroom instruction. The study questioned if further interfacing would help create more learning opportunities and retention of information. In this case the researchers found that outside activities, organized and unorganized seemed to heighten a students learning experience. A majority of science learning was found to take place outside of the formal classroom. (Gerber, Cavallo & Marek, 2001, May)

A number of studies have looked into the positive gains and obstacles of nonformal environmental education learning experiences (Simmons, 1996 & 1998; Knapp & Poff, 2001). Simmons (1996) study examined whether or not environmental education was seen as just science related in outdoor settings or if other subjects could also be included into the nonformal learning experience. If environmental education program coordinators better understood how teachers perceived nonformal learning experiences, then they could better gear learning opportunities to be infused in to the classroom learning experience. (Simmons, 1996) Further research revealed six benefit and barrier factors including: appropriateness of the teaching setting, teacher confidence, worries, need for training, hazards, and difficulty in teaching environmental education. In the study teachers respond to each of these factors based on different possible nonformal education sites. The results indicated that a teacher's security level in teaching a lesson

did depend on particular surroundings. Teachers seemed less interested and willing to take their students to man made environments, such as cities or towns. Although the impact of humans on the natural environment can be seen in these settings, natural settings in the more traditional sense, such as forests and lakes, were more heavily favored. Parks that fell into the middle of these two categories had some of the safety measures that teachers looked for while still allowing students to act within what is perceived to be a natural environment. (Simmons, 1998) Some of the positive gains found through nonformal environmental education were increased critical thinking, problem solving, and decision making skills. In addition it teaches students to examine various sides of an issue in order to make informed responsible decisions. It does not however, advocate a particular point of view or course of action. (Knapp & Poff, 2001)

As a way to eliminate some of the not fond memories associated with science learning and insecurities about teaching science units, the Liberty Science Center in New Jersey conducted a program for pre-service teachers to serve as interns at the center. The program introduced these new teachers into a hands-on realm of science learning. Through this field experience it was hoped there would be a shift from just reading about science to participating in science related activities. If teachers are enthusiastic and excited about informal science activities and settings then this will be reflected onto their students. Places like the Liberty Science center can act as an extension of the classroom. "The National Research Council's National Science Education Standards recommend that science education undergo a radical change from what most teachers or students currently experience in schools" (p. 249). This is a new trend that is sweeping the nation in support of science and environmental education based programs. By making science

fun and hands on the lessons reach the students and the community better. (Zincola & Devlin-Scherer, 2001) This is just another way that nonformal environmental education has been examined and developed to better serve students and teachers.

# CHAPTER THREE

# METHODOLOGY

## Introduction

The research questions and structure of this study was based on the literature and research examined in the previous chapter along with studying how good educational research is conducted (Best & Kahn, 2003; McMillian, 2004). The New Jersey Core Curriculum Content Standards for Environmental Education (science and social studies) and the North American Association for Environmental Education's (2001) Nonformal Environmental Education Programs: Guidelines for Excellence both played a significant role in how the data collected in this study was examined. The four research questions chosen helpped determine how much of an impact the standards and guidelines have on environmental education centers in New Jersey.

## Research Questions

1. To what extent do existing programs of nonformal environmental education centers in South Jersey report using the New Jersey Core Curriculum Content Standards for Environmental Education when creating programs or lesson plans?
2. To what extent do goals, mission statements, and/or lessons of nonformal environmental education centers in South Jersey meet the Nonformal Environmental Education Programs: Guidelines for Excellence developed by the North American Association for Environmental Education (NAAEE)?

3. To what extent are New Jersey environmental education (science and social studies) core curriculum content standards met in lessons or fieldtrip programs regardless of intention?
4. To what extent has the attendance at nonformal environmental education centers been effected by the state implementation of core curriculum content standards over the past ten years?

## Questionnaire Use

Surveys and questionnaires can be useful tools for evaluation in research (McMillan, 2004; Best & Kahn, 2003). "In a survey, the investigator selects a group of respondents, collects information, and then analyzes the information to answer the research questions" (McMillian, 2004, pg. 194). Forming good questionnaires and choosing a sample is a difficult process. Too often questionnaires are poorly worded and confusing. The best way to get valid results is to administer a survey in person, but due to time and money surveys are often sent in the mail. Those surveys that are not professionally made with careful consideration to detail have given mail questionnaires and their results a reputation for poor reliability. If those being sent the questionnaire have an interest in the results or share a loyalty to the subject then the responses may be conclusive, but too often those questionnaires that were not received back leave gaps in the data that could change the results significantly. (Best & Kahn, 2003).

Certain characteristics can make a questionnaire's results more accurate. There are two main forms of questionnaire the closed-form and open-form. Each has its advantages and disadvantages. Closed-form questionnaires keep the respondents on task and are relatively objective. Open-form questionnaires allow for greater depth in answers

given by respondents. Although the depth of the answers is often an advantage, the effort needed to complete this form of survey often leads to a lower return rate. Adding to the difficulty in making a good questionnaire are the formation of clear, concise, and unambiguous questions. Double negatives, assumptions, and inadequate alternatives are some of the problems that questionnaires may possess. Using a scaled response gives respondents a range of answers to choose from, which in turn leads to more accurate results. When constructing opinion based questions a Likert Method of Summated Ratings gives the respondent a scale on which to pick a response. Each response can correspond with a given value for further analyzing. (Best & Kahn, 2003)

There are a number of important characteristics that make a questionnaire valid and reliable. The respondent should recognize the significance of the topic. Questionnaires should only seek information that cannot be obtained elsewhere. It should be short and concise, but long enough to get the needed data with a convenient order to the questions. The questionnaire should be arranged in a matter that is neat, clear, and appealing to the eye. The directions must be complete and important words may need to be defined. It is extremely important that the wording of the questions remain objective. The questionnaire should also be easy to tabulate. (Best & Kahn, 2003)

The information received must be able to be recorded and analyzed in a systematic and explicable way. A courteous and clear cover letter can help to alleviate many of the problems that questionnaires face. The cover letter should state the purpose of the study and compel its importance. Follow-up procedures such as postcards, e-mails, visits, phone calls and letters help to ensure a better return rate for questionnaires.

Gathering data in questionnaires can be point specific, efficient, and thorough, but the process in creating a good questionnaire can also be very difficult. There are many different variables to keep in mind to ensure that the right data is gathered and that the survey and its results are both reliable and valid. (Best & Kahn, 2003) Although somewhat difficult to construct, the versatility of surveys and questionnaires make them an important tool in research (McMillian, 2004).

Another important part of the research method is deciding how much of a population group to survey. In some cases the population that the researcher is examining is too large to measure each individual of the group. In this case a sample is chosen. (Best & Kahn, 2003) Sampling allows for valid inferences or generalizations about a population to be drawn. "A sample is a small proportion of a population selected for observation and analysis" (Best & Kahn, 2003, p. 12). The degree of reliability and the quality of the information provided by the respondents is based on the type of sampling technique used in a study. "To understand how sampling may affect research, it is essential to know the characteristics of different sampling procedures"(McMillian, 2004, p. 116).

There are many different types of sampling each of which has its own benefits and draw backs. (Best & Kahn, 2003; McMillian, 2004) Samples should be selected at random whether it is through simple random sampling, systematic sampling, or random number sampling. In some cases the population may need to be subdivided to ensure that a certain number from each particular group is picked. This is referred to as a stratified random sample; randomness within the subdivisions can still apply. Non probability samples are those that use whatever subjects are available or convenient. Volunteer

respondents and other methods under this category may skew results so that the data received cannot be generalized for the total population. For the most accurate results it is best to study as much of the total population as possible. Large samples are more accurate but harder to manage. Small samples may be more feasible but the room for error in generalization can be much greater. These points must all be taken into account when creating a questionnaire and conducting research. (Best & Kahn, 2003)

## Instruments

### *The Questionnaire*

For this study much of the data was obtained using a questionnaire created by the researcher. Completion of the questionnaire implies consent for the information obtained to be included in the formal writen report. The first page of the questionnaire asked for demographical and general center practice information. Each center can choose whether or not it would like its name associated with the results and if onsite visits would be acceptable for further examination. Information regarding what age groups each center serves, how many years the center has been in operation, and how many fieldtrip programs or lessons each facility runs are important questions in the general information portion of the first page. Fieldtrip pricing, time frames, and capacity information are also gathered under this category. The centers are also asked how they receive funding. This information along with other portions of the questionnaire will help in achieving the fourth purpose of this study, a compilation of this information in a single resource for teachers.

The second page of the questionnaire covers mission statements, goals, and attendance records. Each center is asked to record or attach a copy of its mission

statement or goals. Goals and missions statements are only listed if they have been formally declared by the center. For the attendance portion, the respondent is asked to record the facilities attendance numbers for the past ten years. In this case estimates were acceptable. This information helped achieve the fourth purpose of the study. By compiling this information in one resource teachers have a tool to use in the decision making process on what trips best suit their classroom activities.

The final page of the questionnaire dealt with the New Jersey Core Curriculum Content Standards and the North American Association for Environmental Education's (2001) Nonformal Environmental Education Programs: Guidelines for Excellence. It is first explained that although there is not an entire designated subject area for environmental education, it is included in the Science Standards under section 5.10 and the Social Studies Standards section 6.6E. The respondent was asked an opinion based questioned using a Likert Scale to determine how strongly each particular program felt it met the New Jersey Core Curriculum Content Standards for environmental education. The scale was a simple five point scale which ranges from not at all, to, to a great extent. The final question was another opinion question based on the Nonformal Environmental Education Programs: Guidelines for Excellence. The question asks how strongly the respondent felt his or her facility met the guidelines included by the North American Association for Environmental Education. Again, a Likert Scale was used with answers ranging from "not at all" to "to a great extent."

As a final request, the researcher asked that copies of lesson plans, that are representative of the fieldtrip programs offered at the facility, be attached to the questionnaire for further examination. The standards checklist was based on the

cumulative progress indicators listed in the New Jersey state standards. The key characteristics listed by the Nonformal Environmental Education Programs: Guidelines for Excellence served as the foundation of these NAAEE checklist. For a complete copy of the questionnaire see Appendix A.

*The Checklists*

*New Jersey Core Curriculum Content Standards Checklist*

The New Jersey Core Curriculum Content Standards Checklist was created using the Cumulative Progress Indicators (CPI) or objectives that were covered for environmental education as a part of the state standards. The CPIs were organized by grade levels as a profile of what students should know or be able to apply at a particular point in their education. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards Introduction) Environmental Education is covered in the science subject area under standard 5.10 and in the social studies subject area standard 6.6 strand E.

For Science, the Environmental Studies standard 5.10 is broken into two strands dealing with "A. Natural Systems and Interactions" and "B. Human Interactions and Impacts" (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Science, Introduction Section, p. 178). Each strand of the main standard is studied throughout a student's formal schooling. There are CPIs for second, fourth, sixth, eighth and twelfth grades for science. (New Jersey Department of Education , New Jersey Core Curriculum Content Standards for Science, Standard 5.10) The checklist for this portion of the study was created using these Environmental Studies Science indicators:

By the end of Grade 2, students will be able to:

A. Natural Systems and Interactions

1. Associate organisms' basic needs with how they meet those needs within their surroundings.

B. Human Interactions and Impact

1. Identify various needs of humans that are supplied by the natural or constructed environment. (p. 29)

By the end of Grade 4, students will be able to:

A. Natural Systems and Interactions

1. Differentiate between natural resources that are renewable and those that are not.

B. Human Interactions and Impact

1. Explain how meeting human requirements affects the environment. (New Jersey Department of Education , New Jersey Core Curriculum Standards for Science, Grade 2 and 4 CPIs, p. 29)

By the end of Grade 6, students will be able to:

A. Natural Systems and Interactions

1. Explain how organisms interact with other components of an ecosystem.
2. Describe the natural processes that occur over time in places where direct human impact is minimal.

B. Human Interactions and Impact

1. Describe the effect of human activities on various ecosystems.
2. Evaluate the impact of personal activities on the local environment. (p. 29)

By the end of Grade 8, students will be able to:

A. Natural Systems and Interactions

1. Investigate the impact of catastrophic events such as forest fires, floods, and hurricanes on the environment of New Jersey.

B. Human Interactions and Impact

1. Compare and contrast practices that affect the use and management of natural resources. (New Jersey Department of Education ,New Jersey Core Curriculum Content Standards for Science, Grade 6 and 8 CPIs, p. 30)

By the end of grade 12, students will be able to:

A. Natural Systems and Interactions

1. Distinguish naturally occurring process from those believed to have been modified by human interaction or activity.
   - climate change
   - ozone production
   - erosion and deposition
   - threatened and endangered species

B. Human Interactions and Impact

1. Assess the impact of human activities on the cycling of matter and the flow of energy through ecosystems.

2. Use scientific, economic, and other data to assess environmental risks and benefits associated with societal activity. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Science, Grade 12 CPIs p. 30)

The second portion of the New Jersey Environmental Education State Standards Checklist is formed off of the social studies standard 6.6. Strand E covers the Environment and Society. For this strand Cumulative Progress Indicators are listed for grades 2, 4, 8, and 12 as follows:

By the end of grade 2, students will be able to:

1. Describe the role of resources such as air, land, water, and plants in everyday life.
2. Describe the impact of weather on everyday life.
3. Act on small-scale, personalized environmental issues such as littering and recycling, and explain why such actions are important. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, Grade 2 CPI, p. 39)

By the end of grade 4, students will be able to:

1. Differentiate between living and non-living natural resources
2. Explain the nature, characteristics and distribution of renewable and non renewable resources. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, Grade 4 CPIs, p. 40)

By the End of grade 8, students will be able to:

1. Discuss the environmental impacts or intended and unintended consequence of major technological changes (e.g. autos, and fossil fuels, nuclear power and nuclear waste).
2. Analyze the impact of various human activities and social policies on the natural environment and describe how humans have attempted to solve environmental problems through adaptation and modification.
3. Compare and contrast conservation practice and alternatives for energy resources.
4. Compare and contrast various ecosystems and describe their interrelationship and interdependence.
5. Describe world, national, and local patterns of resource distribution and utilization , and discuss the political and social impact.
6. Analyze the importance of natural and manufactured resources in New Jersey.
7. Delineate and evaluate the issues with sprawl, open space, and smart growth in New Jersey. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, Grade 8 CPIs, p. 41).

By the end of grade 12, students will be able to:

1. Discuss the global impacts of human modification of the physical environment (e.g., The built environment).
2. Discuss the importance of maintaining biodiversity.

3. Analyze examples of changes in the physical environment that have altered the capacity of the environment to support human activity, including pollution, salinzation, deforestation, species extinction, population growth, and natural disasters.
4. Compare and contrast the historical movement patters of people and goods in the world, United States, and New Jersey and analyze the basis for increasing global interdependence.
5. Evaluate polices and programs related to the use of local, national and global resources.
6. Analyze the human need for, respect for, and informed management of all resources (sustainability), including human populations, energy, air, land, and water to insure that the earth will support future generations.
7. Describe how and why historical and cultural knowledge can help to improve present and future environmental maintenance.
8. Delineate and evaluate the environmental impact of technological changes in human history (e.g., printing press, electricity, and electronics, automobiles, computers, and medical technology). (New Jersey Department of Education, New Jersey Core Curriculum Content Standards for Social Studies, Grade 12 CPIs, p. 42-43)

Each CPI had an area that could be marked beside it if a program or lesson met that particular objective (Figure 1). For the checklist the objectives were kept in the categories and order in which they appear in the state standards. For the complete instrument see Appendix B.

Figure 1. A Portion of the State Standards Checklist

**By the end of grade two, students will be able to:**

_____ Associate organisms' basic needs with how they meet those needs within their surroundings.

_____ Identify various needs of humans that are supplied by the natural or constructed environment.

**By the end of grade four, students will be able to:**

_____ Differentiate between natural resources that are renewable and those that are not.

_____ Explain how meeting human requirements affect the environment.

*NAAEE Nonformal Environmental Education Programs: Guidelines for Excellence Checklist*

The Guidelines for Excellence checklist was arranged similarly to the core curriculum content standards checklist by using the key characteristics listed for the North American Association for Environmental Education Programs: Guidelines for Excellence. "The overall goal of these guidelines is to facilitate a superior educational process leading to the environmental quality that people desire" (p. 1). There are six key characteristics for developing and maintaining excellent nonformal environmental education programs. All programs were not expected to meet all of the guidelines but their use could point out areas for improvement. (NAAEE, Nonformal Environmental Education Programs: Guidelines for Excellence, Introduction, 2001) Each key characteristic has an overview statement and then subtopics listed underneath. A check may be placed next to the statement and/or each of the sub topics.

The first key characteristic is needs assessment. "Nonformal environmental education programs are designed to address identified environmental, educational, and community needs and to produce responsive, responsible benefits that address those identified needs" (p. 6). The three sub points were:

1.1 Environmental issues or conditions

1.2 Inventory or existing programs and materials; and

1.3 Audience needs (NAAEE, Nonformal Environmental Education Programs: Guidelines for Excellence, Summary, #1 p. 6, 2001)

Organizational needs and capacities were under evaluation in the second key characteristic. To fulfill this characteristic a program should "support and complement their parent organization's mission, purpose, and goals" (p. 6). It also has three sub points that ensured that programs were:

2.1 Consistent with organizational priorities;

2.2 Organization's need for the programs are identified; and

2.3 Organization's existing resources inventoried. (NAAEE, Nonformal Environmental Education Programs: Guidelines for Excellence, Summary, #2, p. 6, 2001)

The third characteristic shifted focus to the programs scope and structure. "The programs should be designed with well-articulated goals and objectives that state how the program will contribute to the development of environmental literacy" (p. 6). This key characteristic had four sub points to make certain that:

3.1 Goals and objectives are in place for the programs;

3.2 Fit with goals and objectives of environmental education;

3.3 Program format and delivery; and

3.4 Partnership and collaboration. (NAAEE, Nonformal Environmental Education Programs: Guidelines for Excellence, Summary, #3, p. 6, 2001)

Key characteristic four inspected another area of programs and dealt with delivery and resources. Nonformal environmental education programs should "require careful planning to ensure that well-trained staff, facilities, and support materials are available to accomplish program goals and objectives" (p. 6). Included under this key characteristic were four sub topics dealing with:

4.1 Assessment of resource needs;

4.2 Quality instructional staff;

4.3 Facilities management;

4.4 Provision of support materials; and

4.5 Emergency planning. (NAAEE, Nonformal Environmental Education Programs: Guidelines for Excellence, Summary, #4, p. 6, 2001)

Program quality and appropriateness were officially called into question under key characteristic five. Programs should be "built on a foundation of quality instructional materials and thorough planning. To study a programs quality and appropriateness four sub categories are examined:

5.1 Quality instructional materials and techniques;

5.2 Field testing;

5.3 Promotion, marketing, and dissemination, and

5.4 Sustainability. (NAAEE, Nonformal Environmental Education Programs: Guidelines for Excellence, Summary, #5, p. 6, 2001)

The final key characteristic is evaluation. "Nonformal environmental education programs define and measure results in order to improve current programs, ensure accountability, and maximize the effects of future efforts" (p. 6) There were three major sub points for this characteristic:

6.1 Determination of evaluation strategies;

6.2 Effective evaluation techniques and criteria; and

6.3 Use of evaluation results. (NAAEE, Nonformal Environmental Education Programs: Guidelines for Excellence, Summary #6, p. 6, 2001)

The entire checklist is based on these six key characteristics. If a facility's programs met either the main characteristic goal or the sub categories then a check was placed in the blank beside the corresponding sub point. The checklist was made using the summary page of the Nonformal Environmental Education Programs: Guidelines for Excellence. The whole was used during the evaluation process. It goes into further detail on what should be included in a program for it to have successfully completed a key characteristic. For a complete copy of the NAAEE Nonformal Environmental Education Programs: Guidelines for Excellence Checklist see Appendix C.

## Institutional Review Board

The framework of this study was submitted for examination to the Rowan University Institutional Review Board (IRB) and approved on December 13, 2004. The IRB ensures that the study follows federal, state, and university policies for conducting

research. Consent must be given to do research involving human participants. A note at the beginning of the questionnaire clearly stated that completion of the questionnaire and its return implied consent for the information to be used in the written report. Although this study was examining an entire facility, an employee at the facility had to complete the questionnaire. To make certain that the objectives of this research were clear a letter was sent along with questionnaire with the researcher's information and the objectives of the study (see Appendix D).

## Context of the Study

For the purpose of this study, South Jersey included the six southern most counties in the state of New Jersey: Atlantic, Camden, Cape May, Cumberland, Gloucester, and Salem. The entire area covers 2906 square miles, 714 square miles of which is water. There are numerous ecosystems included in this area including but not limited to: pine forests, wetlands, grassy fields, and beaches. There are both rural and urban areas within the research area. Each county has some form of water border. The Atlantic Ocean covers the east coast while the Delaware River and Bay flank the south and the west. (Wikipedia, 2004)

As of the 2000 census, the population of all six counties combined was 1,329,206. New Jersey as a whole is the most densely populated state. The average population density for the research area is 735.5 people per square mile. Major cities in this region consist of but are not limited to Atlantic City, Camden, Hammonton, Washington Township, Woodbury, Millville, and Vineland. Ten percent of the total population in the entire area lives below the poverty line. Camden County is much more highly populated than the other counties and has a higher population density. The majority of the

population in this area was white but there was a strong representation of other races that vary from county to county. (Wikipedia, 2004)

The majority of students are white; the next highest race percentage was black. The ratio of girls to boys varied from county to county but on the whole it was almost a 50/50 spread. (New Jersey Department of Education, DOE Data 2003-2004). There are 137 school districts in the research area serving 236,509 students in grades K-12. A third of these students receive either free or reduced lunch. Seven Abbott Districts exist in the vicinity of the testing area. "In order to be eligible for an initial Abbott designation and remedies, a school district must be characterized by both low student achievement and concentrated poverty" (Librera, 2003, pg 2). The efforts are court ordered remedies and not meant to be seen as rewards. The decision to designate Abbott districts came about due to the unconstitutional funding that was provided for poorer urban districts. The remedies provided give disadvantaged students better ability to compete with relatively advantaged students, by supplying additional state aid. A plan is adopted for each district and funds are provided to support the activities necessary for improvement. These measure are an attempt to equal out the learning environments throughout the state regardless of demographics. (Librera, 2003)

## Sample

There were fifteen environmental education or nature centers within the context of this study's six counties. One of these fifteen centers did not offer fieldtrip programs for any grade of kindergarten through twelfth grade student. It was therefore eliminated from the study and results. A total of fourteen facilities were mailed the questionnaire. The number of centers per county varied. Atlantic County had the most centers with six.

Only one center was found in Camden County. Cape May County had three different environmental education or nature based centers. There was again only one facility in Cumberland County and in Gloucester County. Two centers were found in Salem County. This represented the entire population of environmental education and nature centers in South Jersey's six southern most counties. (Princeton Public Library, New Jersey Links, Nature Centers, 2002, Personal Correspondence, 2004). In order for a center to be included in the sample population it had to offer fieldtrips for students and have a central base in the one of the following six counties: Atlantic, Cape May, Camden, Cumberland, Gloucester, Salem. Although this area was convenient for the researcher, for the context of this study this is a total population and not a sample. The results cannot be generalized for an area outside of southern New Jersey. The purpose of this study and the information obtained should be used by school districts in this area. The procedure could possibly be used in other regions.

The letter accompanying the questionnaire was addressed to the "Site Administrator" (See Appendix D). The questionnaire could be filled out by the administrator him or herself or any other title that over saw fieldtrip programs and had the required information. The most knowledgeable person on fieldtrip lesson plans and activates was best suited to answer the questions and provide the necessary information. This included but is not limited to education directors, secretaries, naturalists, or program coordinators. The position of the respondent did not affect the results of the study.

## Procedure

On January 6, 2005, the research packet was mailed out to each of the fourteen centers. Each large envelope contained a copy of the opening letter, a copy of the

questionnaire, and a prepaid return envelop. The last paragraph of the opening letter asked that the questionnaire and sample lessons plans be returned by January 28, 2005. If the respondent had any questions the researcher's contact information was also listed.

Reminders were sent out on February 7, 2005. Any center that had not yet returned the questionnaire was either e-mailed or called depending on the contact information available. In some cases centers received both an e-mail and a phone call. Attached to each e-mail was a copy of the letter and questionnaire word documents. The e-mail requested that the information be returned as soon as possible. Any questions could again be directed to the researchers and another hard copy of the documents would be sent upon request.

The checklists were used to evaluate the lessons returned with the completed questionnaire. In some cases the checklist was used to examine lesson plans and materials during an on-site visit to a particular center. The possibility of an on-site visit to a facility was decided based on whether or not the center had more than ten lessons, and if the center gave permission for an on-site visit in the completed questionnaire.

## Data Analysis

### *Questionnaire*

Most of the information gathered from the first page of the questionnaire was recorded as general resource information about each center. Depending on whether or not the facility agreed to have its name used in the study the information was used to describe each center. Those wishing not to have their name revealed would have been assigned a random number as a reference. Each facility's town and demographic location was recorded as the first descriptors. The demographic locations were also be tallied to

see how many of the centers came from a particular setting: urban, sub urban, or rural. A spreadsheet program was used to record information and make calculations. Fieldtrip information gathered in questions five through ten will also be recorded and tallied to find the number, types, time, costs, and sizes of programs offered. Finally the different types of funding received by each facility were listed.

For questions twelve and thirteen, if a respondent answered positively to having a mission statement and or goals this information was also recorded as part of the description for each center. The mission statements and goals were also compared for any major similarities and/or differences. The attendance records also gathered on the second page were used to determine if the implementation of the New Jersey Core Curriculum Content Standards had an affect on the number of students visiting the facility each year. The years following 1996, with the implementation of the standards, and 2002, with the passing of the No Child Left Behind Act were the major two areas beginning used in comparison to the rest. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards: Introduction; Paige, 2003).

The information gathered from the final two questions on the last page of the questionnaire was tallied to determine generally how strongly each center felt they met New Jersey's environmental education state standards and the NAAEE Nonformal Environmental Education Programs: Guidelines for Excellence. This information was used as a descriptor for each individual facility, and as a way to look at all the centers in the study area. It was also used in a comparison of believed achievement and actual achievement based on the lesson plans examined.

*The Checklists*

Lesson plans were examined either at the center or using the samples sent back with the questionnaire. If a center responded that it had more than ten fieldtrip lesson plans and agreed to an on-site visit then the materials were examined at the facility. The checklists were used to determine how well each center as a whole met New Jersey's environmental education state standards and the North American Association for Environmental Education Nonformal Environmental Education Programs: Guidelines for Excellence. The percentage found for each checklist was compared to the answers given for questions fifteen and sixteen on the last page of the questionnaire.

For the standards checklist grade level specifications were taken into account. Depending on what age group a particular lesson was intended for a percentage was taken of how many Cumulative Progress Indicators were met in both the science and social studies standards. The number of CPIs varied for different grade levels and subject area. If none of the CPIs were met for any of the lessons under examination then that particular center could not be recorded as covering that particular standard. Although lesson plans were examined individually, whether or not a standard or strand was met was determined for the entire facility. This information could then be used as a descriptor for each particular center. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards: Introduction)

For the Guidelines for Excellence checklist a total percentage was taken to establish how well a facility met the Key Characteristics and their sub points. If all of the points were covered then the center would receive a score of 28 out of 28. A percentage of the total 28 points was recorded as the method used to analyze this particular area of

information. Each center again received the percentage score as whole as to how well it met the NAAEE Nonformal Environmental Education Guidelines for Excellence. (NAAEE, Nonformal Environmental Education: Guidelines for Excellence, Summary)

# CHAPTER FOUR

# FINDINGS

## Profile of the Sample

### *Introduction*

The return rate for this study was 57 percent. Extensive reminder and follow up calls, e-mails, and personal visits were conducted resulting in eight completed questionnaires from the fourteen centers included in the study. In some cases, a second copy was mailed out or hand delivered to facilities in an attempt to have a higher response rate.

From the list of Atlantic County centers, three questionnaires were returned. The original list of environmental education centers included the Jacques Cousteau National Estuary Education Center as a part of Atlantic County. The returned questionnaire listed the center as a part of Ocean County, which is officially outside of the study area. The center is still included in the research findings due to its location and multiple areas where education programs take place. These programs border Atlantic and Ocean Counties. Two centers returned questionnaires in Cape May County. Cumberland, Gloucester, and Salem counties each had one responding center. The only county that is not represented in the research findings is Camden County. After a personal visit to the Camden County facility it appeared that the environmental education building had not been in use for some time, but the surrounding park was still well maintained. All of the responding centers came from either a suburban or rural area.

*Atlantic County*

The three responding centers for Atlantic County were the Edwin B. Forsythe National Wildlife Refuge, the Jacques Cousteau National Estuarine Education Center, and the Marine Mammal Stranding Center. All of these facilities serve as areas for environmental education based fieldtrips and also have a number or other activities and purposes.

The Edwin B. Forsythe National Wildlife Refuge is located in a suburban area of Oceanville. The facility has less than five programs, yet the subject areas can be adapted for students in grades levels Kindergarten through twelfth. The refuge has been established for more than ten years and receives funding from the Department of Interior and the United States Fish and Wildlife Service. Refuge entrance fees also account for some of the funding, while the environmental education programs are free. All programs generally last for two hours. The capacity for environmental education based programs is 50 students due to the amount of room in the auditorium at the headquarters facility. Groups can also spread out after the initial activity over the 46,000 acres.

The Jacques Cousteau National Estuarine Education Center is actually located in Tuckerton, New Jersey a small coastal town in Ocean County. Personal Correspondences with New Jersey Department of Environmental Protection originally considered this an Atlantic County facility. Interpretative environmental education fieldtrip programs for students have been offered for less than five years, while the center has offered adult exhibits and programs for five to ten years. Now the programs can encompass all

elementary through high school students. An estimated 20 students can participate in a program at a time.

The immediate exhibits and programs are free and last approximately a half hour. An additional $5 per student is added when the trip is combined with activities at the Tuckerton Seaport. The center receives funding from the National Oceanic Atmospheric Administration (NOAA).

The Marine Mammal Stranding Center holds smaller group sessions for one-hour lessons and programs. Thirty students can visit the center at a time to part take in one of the general programs. Again this facility has less than 5 programs in use but the information is made suitable for students of all ages. Donations, fund raising events, and grants help keep the center running. They also charge two dollars per person during fieldtrip visits. The center has been holding environmental education based fieldtrips for five to ten years and can be found in suburban Brigantine near Atlantic City.

*Cape May County*

In Cape May County, one of the two centers that responded to the questionnaire was the New Jersey Audubon Society's Nature Center of Cape May. The facility is the only Audubon run center in the town of Cape May that runs fieldtrip programs. It is located on Delaware Avenue in a suburban area of the town. The facility has been offering more than ten programs for all ages of students for over ten years. The programs run from 45 minutes to an hour and cost $75 per hour per 25 students. The center itself has the capacity for 100 students. More students can also be included if the program is partnering with other local organizations. It is funded through these program fees, membership fees, donations, and also through proceeds from the nature store.

The Wetlands Institute, also located in Cape May County, responded to the questionnaire. The institute can be found in Stone Harbor, one of many suburban shore communities. It services students in grades kindergarten through twelfth. The center was established over ten years ago and offers five to ten fieldtrip programs. It also can accommodate 100 students, kindergarten through twelfth grade, for 90 minute programs. The fee is six dollars per student. The Wetlands Institute receives funding from fieldtrip and general admissions along with donations.

*Cumberland County*

Cumberland County's Bayshore Discovery Project's facility is located in a rural town known as Bivalve, a portion of Commercial Township. The mailing address has the contact facility located in Port Norris, New Jersey, which is also located in Cumberland County. The project is in close conjunction with the A.J. Meerwald Schooner lessons. The schooner shipboard lessons teach students of all ages how a schooner ship works while also addressing the history. These lessons also include environmental education. The Bivalve center focuses more on the environment, and offers five to ten programs for students in grades Kindergarten through twelfth. The center has been operating in the range of five to ten years with sailing as the main fieldtrip activity and history as the main subject area covered. Forty-five students can participate in a sailing expedition at a single time. In recent years more focused environmental education lessons, programs, and activities have been developed for the Bivalve Center. The on-shore activities vary in size and cover a wide range of environmental topics. The shipboard education programs last three hours and cost $725 that includes the sailing fee. Those programs

that take place on shore vary in length. The center is funded through memberships, special events, and earned and contributed income.

*Gloucester County*

The single center located in Gloucester County did respond to the research questionnaire. Scotland Run Park Nature Center is located in an area that encompasses Clayton, Franklinville, and Williamstown. It is in a suburban area of the county. The park has been in operation for more than ten years and offers five to ten fieldtrip programs for all grade levels. There is no fee for the programs that generally last for an hour. Thirty-five students can visit at a time. The county funds the nature center and park.

*Salem County*

Parvin State Park's environmental education program has been established for over 30 years and boasts more than 40 different fieldtrip program activities. Coordinator Paul Taylor conducts most of the lessons that last from 35 minutes to 2 hours. The park is located in Salem County, in rural Pittsgrove. There is no fee for the programs that can accommodate up to 75 students. The park and educational programs receive funding through legislative appropriation. All of the responding facilities offered programs that were either geared to or could be adjusted to fit any level of student. Table 1 shows how the centers responded to the profile based questions on the questionnaire.

Table 1. Profile of the Respondent Centers

| Center Name | Town | County | Location | Ages | Number of Programs | Years of Operation | Capacity | Price | Time Frame | Funding |
|---|---|---|---|---|---|---|---|---|---|---|
| Edwin B Forsythe National Wildlife Refuge | Oceanville | Atlantic | suburban | K-12 | Less than 5 | More than 10 | 50 | free | 2 hours | Department of Interior and US Fish and Wildlife funding, plus general entrance fees |
| Jacques Cousteau National Estuarine Education Center | Tuckerton | Ocean/ Atlantic | rural | K-12 | Less than 5 | Less than 5 | 20 | free | 30 minutes | National Oceanic Atmospheric Administration |
| Marine Mammal Stranding Center | Brigantine | Atlantic | suburban | K-12 | Less than 5 | 5 to 10 | 30 | $2 per person | 1 hour | Donation, fund raising, grants |
| New Jersey Audubon Society Nature Center of Cape May | Cape May, Delaware Ave | Cape May | suburban | K-12 | More than 10 | More than 10 | 100 | $75 per hour per 25 students | 45minutes to 1 hour | program fees, memberships, donations, nature store sales |
| Wetlands Institute | Stone Harbor | Cape May | suburban | K-12 | 5 to 10 | More than 10 | 100 | $6 per student | 90 minutes | Admissions, Donations |
| Bayshore Discovery Project | Bivalve | Cumberland | rural | K-12 | 5 to 10 | 5 to 10 | 45 | $725, (includes sailing) | 3 hours | membership, special events, earned and contributed income |
| Scotland Run Park Nature Center | Clayton, Franklinville, Williamstown | Gloucester | suburban | K-12 | 5 to 10 | More than 10 | 45 | free | 1 hour | County funds |
| Parvin Park | Pittsgrove | Salem | rural | K-12 | More than 10 | More than 10 | 75 or less | free | 35minutes to 2 hours | Legislative appropriation |

## Mission Statements and Goals

Each of the participating centers was also asked whether or not they had a mission statement or set goals created for the facility's environmental education programs in general. If the mission statement or goals were available then they were recorded or attached to the questionnaire.

### *Atlantic County*

The Edwin B. Forsythe National Wildlife Refuge is working on their environmental education plan. The response on the questionnaire indicated that forming a mission statement and goals was the number one priority as part of the Comprehensive Conservation Plan. One objective listed as a part of the plan was for the refuge to continue to provide environmental education on and off the refuge by renovating the auditorium, creating new activities, and increasing the chances for interpretive opportunities. This plan is for the future of the center and includes creating new outdoor classroom sites. All in all the center hoped to increase its involvement within the educational community and would create a mission statement and goals during this process, both of which will be available in up coming brochures that are being made.

The overall mission statement for all of the Jacques Cousteau National Estuarine Research Reserve is to manage coastal resources through research, education, and outreach. It listed three goals under this mission. The first is to improve coastal decision making by generating and transferring knowledge about coastal ecosystems. This goal encompasses the ecological foundation and knowledge that is a part of goal level one for environmental education curriculum materials and programs (Hungerford & Volk, 1990). The second goal is to enhance and expand the national estuarine research reserve system

as a whole. The third goal also meets parts of the overall goal for environmental education through its objective to increase awareness, use, and support of all the reserves, estuarine science fields, education, and stewardship programs (Hungerford & Volk, 1990). The center focuses on professional development of New Jersey's educators. In addition to the three general goals for environmental education, the center also responded that their goal is "to provide New Jersey educators with the scientific content, pedagogy, and curriculum resources to integrate marine/environmental concepts and themes into existing science curricula in accordance with the New Jersey Core Curriculum Content Standards."

The Marine Mammal Stranding Center did list its overall mission statement in response to the questionnaire. "The Marine Mammal Stranding Center is dedicated to the rescue and rehabilitation of stranded or otherwise stressed marine mammals and sea turtles." Environmental education programs and fieldtrips are offered at the site but it is not the focus of the center. There were no declared goals for this location.

*Cape May County*

The Nature Center of Cape May listed both a mission statement and goals on the questionnaire. As a part of the New Jersey Audubon Society the center shares in the focus to "foster environmental awareness and a conservation ethic; protect New Jersey's birds, animals and plants, especially endangered and threatened species, and promote the preservation of New Jersey's valuable natural habitats." Another purpose was also listed for the center itself. The environmental education programs are geared to increase an awareness and understanding of coastal ecology and also how this ecology relates to human behaviors. Hungerford and Volk (1990) discuss ecological knowledge and

conceptual awareness as parts of the goal levels for environmental education. The goal of the education department was also included in the information retrieved from the questionnaire. The nature center's goal was to provide materials and programs for all branches of the educational realm and for the public. It also had an ultimate hope that positive efforts would be taken to preserve New Jersey's natural ecosystems and species diversity. This call for environmental responsibility is also discussed in the goals of environmental education (Hungerford & Volk, 1990).

The Wetlands Institute of Stone Harbor does not have declared goals but a mission statement was included with the information received. The institute's mission is to promote an appreciation and understanding of the important role that wetlands and coastal ecosystem play in the survival of life on the planet. This mission also connects with the goals of environmental education (Hungerford & Volk, 1990)

*Cumberland County*

Cumberland County's Bayshore Discovery Project's recorded mission statement included the areas historic references in its mission to "motivate people to take care of the environment, the history and the culture of New Jersey's Bayshore region through education, preservation and example." The historic richness of the area and the tie to the schooner restoration efforts marks this center with a multipurpose mission that extends outside of just environmental education. Three goals were also listed as tenets or education principles. The first tenet explains the center's goal to create a learning environment that is hands-on. The North American Association for Environmental Education Materials: Guidelines for Excellence (2001) stresses the importance for environmental education to be learner centered and hands-on. The second tenet focuses

on the instructor to student ratio so that programs will have one instructor per ten students. The final goal for the education programs is that they will teach in an inquiry-based manner that encourages students to ask questions and make observations for themselves. This too is a focus of the goals and guidelines for environmental education (Hungerford & Volk, 1990).

*Gloucester County*

Neither mission statement nor goals were provided with the information received from the Scotland Run Park Nature Center. Although no formal mission statement or goals may be declared for the purpose of this study or publication, it is assumed that the centers programs do run on a strong foundation. The programs offered by the center do, in fact, help meet some of the goal levels of environmental education (Hungerford & Volk, 1990).

*Salem County*

Parvin State Park also mentions a historic clause in its mission statement response to the questionnaire. "Our mission is to provide for the administration, operation, maintenance, interpretation and protection of our natural and historic resource for their own sake and for the benefit of the public." It follows this mission statement with three goals. The first deals with the maintenance and interpretation of the park trails. The second focuses on the development and presentation of different programs about the natural and historical heritage of the area. The final goal is geared towards the development and sharing of exhibits and displays that explain the parks resources. It is through these goals that the overall mission could be met.

## Research Questions

Research Question 1: To what extent do existing programs of nonformal environmental education centers in South Jersey report using the New Jersey Core Curriculum Content Standards for Environmental Education when creating programs or lesson plans?

All of the responding centers intentionally thought about the Core Curriculum Content Standards to an extent. Five of the respondent centers felt they covered the content standards to a great extent and one center each to the areas of a moderate extent, some extent and a small extent categories.

The Jacques Cousteau National Estuarine Education Center, the Nature Center of Cape May, the Wetlands Institute, the Bayshore Discovery Project, and Parvin State Park all felt that their programs met the standards to a great extent. The next highest level was to a moderate extent. The Edwin B. Forsythe National Wildlife Refuge fell into this category. Scotland Run Park Nature Center felt that the standards were covered to some extent when developing programs, and the Marine Mammal Stranding Center felt that the standards were only under consideration to a small extent. Table 2 displays each centers response.

Table 2. State Standards Consideration when Forming Programs

| | | Responses | | | | |
|---|---|---|---|---|---|---|
| | | Not at All | To a Small Extent | To Some Extent | To a Moderate Extent | To a Great Extent |
| Centers | Edwin B Forsythe National Wildlife Refuge | | | | x | |
| | Marine Mammal Stranding Center | | x | | | |
| | Jacques Cousteau National Estuarine Education Center | | | | | x |
| | New Jersey Audubon Society Nature Center of Cape May | | | | | x |
| | Wetlands Institute | | | | | x |
| | Bayshore Discovery Project | | | | | x |
| | Scotland Run Park Nature Center | | | x | | |
| | Parvin Park | | | | | x |

Research Question 2: To what extent do goals, mission statements, and/or lessons of nonformal environmental education centers in South Jersey meet the Nonformal Environmental Education Programs: Guidelines for Excellence developed by the North American Association for Environmental Education (NAAEE)?

As a part of the questionnaire the centers were also asked to rate how strongly they felt they met the Nonformal Environmental Education Programs: Guidelines for Excellence on a scale from not at all, to, to a great extent. Again all of the centers felt that they covered the guidelines to a degree. In this case only two of the centers felt they met these guidelines to a great extent, two for a moderate extent, and one each for to

some extent and to a little extent. The Scotland Run Park Nature center did not respond to the question and noted that it was unsure and would like more information on the guidelines. Parvin State Park and the Nature Center of Cape May both felt that they met the guidelines to a great extent. The Bayshore Discovery Project and the Wetlands Institute both felt they met the guidelines to a moderate extent. The Jacques Cousteau National Estuarine Education Center felt that the center met these guidelines to some extent. Both the Marine Mammal Stranding Center and the Edwin B. Forsythe National Wildlife Refuge responded with to a small extent.

The North American Association for Environmental Education Programs: Guidelines for Excellence check list was also used to determine how well each facility actually met the guidelines. There were 28 points over all and the percentage of those points met were calculated for each center.

*Atlantic County*

For the three Atlantic County centers, there was a range from 36% to 75%. The highest percentage went to the Jacques Cousteau National Estuarine Education Center with 75%, followed by the Edwin B. Forsythe National Wildlife Refuge with 57%, and the Marine Mammal Stranding Center covered 36% of the points on the checklist. Two of the centers, The Marine Mammal Stranding Center, and The Edwin B. Forsythe National Wildlife Refuge did not include key characteristic number 6, evaluation. There were four points in this section that could not receive checks and lowered the percentages. Each of the other five key characteristics was covered to some degree.

*Cape May County*

The New Jersey Audubon Society's Nature Center of Cape May covered the highest percentage of checklist points. Twenty-six of the twenty-eight points were included to give the center 93% coverage. The Wetlands Institute also boasted 75% of the points on the guidelines checklist. For both of these facilities key characteristic one, needs assessment, and key characteristic five, program delivery resources, were both completely covered in accordance with the Nonformal Environmental Education Programs: Guidelines for Excellence.

*Cumberland County*

The Bayshore Discovery Project responded with a guessed answer that its programs met the guidelines to a moderate extent. It did, in fact, meet 82% of the points for the guidelines checklist. The facility and its programs met all of the sub-points under key characteristic one through four, but were missing characteristic six since it had not yet determined a way to evaluate the students or itself.

*Gloucester County*

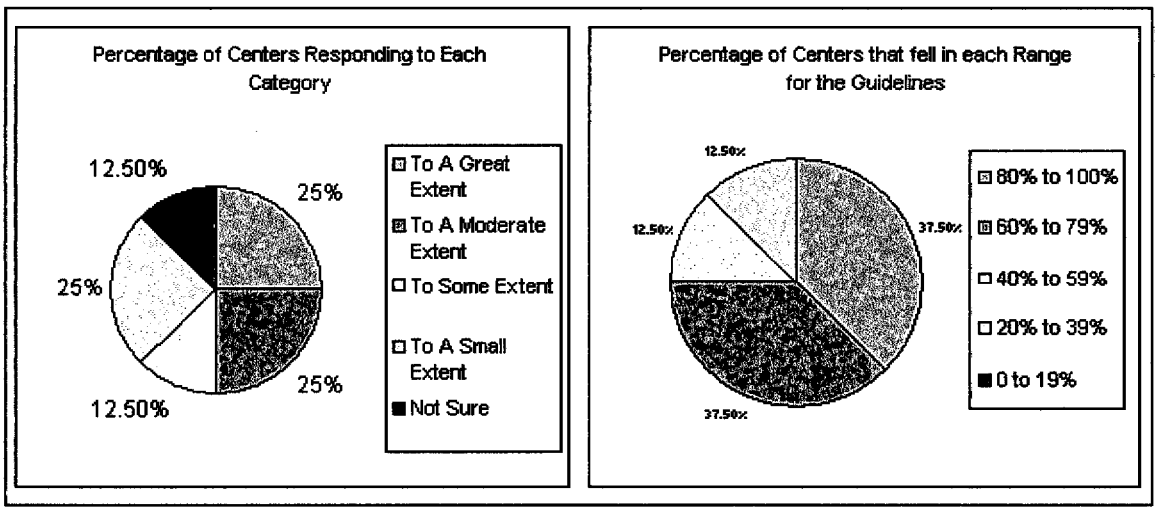
Although covering all of key characteristic one, needs assessment, Scotland Run Park Nature Center was also missing all of key characteristic six, evaluation. The center's percentage for this checklist was 68%.

*Salem County*

Parvin State Park, which also responded that they felt they covered the guidelines to a great extent, also had a very high percentage of the key characteristics covered. The calculated percentage for the programs and facility was 86%. Key characteristic six, as

with the other centers, was the major portion missing. Figure 2 shows a comparison of how the centers responded to the questionnaire and the checklist scores percentiles.

Figure 2. Comparison of each centers response to the how well they met the North American Association for Environmental Education Nonformal Environmental Education Programs: Guidelines for Excellence, to the percentage of centers that fell in each percentile range.




Research Question 3: To what extent are New Jersey environmental education science and social studies core curriculum content standards met in lessons of fieldtrip programs regardless of intention?

Environmental Education is not a stand alone subject area in the New Jersey Core Curriculum Content Standards. It can be found in both the standards for science and social studies. In the science subject area it is included as standard 5.10, Environmental Studies. Standard 6.6 of the social studies standards has Environment and Society listed as strand E. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards, Science 5.10 & Social Studies 6.6E) Each of the responding centers claimed to have programs for all grade levels, elementary, middle, and high school. Therefore, the

findings for this question were calculated as the total percentage of Cumulative Progress Indicators in the environmental education science and social studies portions. A total percentage for all of the CPIs was also tabulated.

There were a total of 17 possible points for the environmental education science standards CPIs. The highest percentage of indicators covered for science was determined to be Parvin State Park with 88% or 15 of the total 17 possible sub-points. The lowest science standards coverage for environmental education was 41% from both the Marine Mammal Stranding Center and the Scotland Run Park Nature Center. To receive a 100% for the environmental education social studies CPIs 20 had to be marked. The range of environmental education social studies requirements percentages was from 20% at the Marine Mammal Stranding Center to 90% at the Bayshore Discovery Project facilities. The highest total environmental education standard coverage was calculated to be 81% from Parvin State Park. The lowest total coverage of all the responding centers was the Marine Mammal Stranding Center with 30%. The average percentage, for all of the centers, of state standard CPIs coverage dealing with environmental education was 57.75%.

*Atlantic County*

The Edwin B Forsythe National Wildlife Refuge total New Jersey State Standards cumulative progress indicator coverage for environmental education was 43%. The refuge met 53% of the science Cumulative Progress Indicators and 35% of those listed under the social studies standards. For science all of the indicators for second and eighth grade were covered. For social studies none of the fourth grade indicators were met.

However, half of the twelfth grade indicators were covered accounting for most of the environmental social studies exposure by this facility.

Fifty-three percent of the environmental based science cumulative progress indicators were also covered by the Jacques Cousteau National Estuarine Education Center. All of the environmental science indicators for sixth and eighth grades were met. In this case, the center had a greater percentage of the social studies standard included with 60% of the indicators met. Many of the twelfth grade environmental based social studies indicators were also met by programs at the facility. The total for this center was 57%.

The Marine Mammal Stranding Center covered 41% of the cumulative progress indicators for science. The two eighth grade environmental science indicators were not included in any of the centers environmental education based programs. Only four indicators were covered for the environmentally based social studies subject matter giving the center a 20% of the total 20 possible indicators. The social studies CPIs are broken down into five grade levels. Although only four indicators were met, the center's programs did cover four of the five levels. Overall the center had 30% of the environmental education state standards incorporated into programs.

*Cape May County*

The New Jersey Audubon Society's Nature Center of Cape May had the second highest percentage of environmental science standards met with 82%. All of the cumulative progress indicators for grades two, six, and eight were covered by one or more of the programs offered at the facility. Seventy percent of the social studies

indicators on the checklist were included in the center's lessons. Of the 37 indicators the center met 76%.

The Wetlands Institute's programs met 59% of the environmental studies CPIs. Many of the programs and lessons were geared toward particular points included in the standards. All four of the sixth grade indicators were covered. For the social studies portion of the checklist the percentage was 45%. The two 4th grade indicators were missing in this case. For the center's programs as a whole 51% of all the indicators that cover environmental education were incorporated into existing programs.

*Cumberland County*

The Bayshore Discovery Project boasted the highest environment and society cumulative progress indicators covered under the social studies standards with 90% of the indicators included in its programs. Only two indicators were not included of the twenty possible. For the science related environmental indicators 65% were integrated into the programs currently in use at the center. The total for the Bayshore Discovery Project's coverage was 78%.

*Gloucester County*

Scotland Run Park Nature Center also had a higher percentage of the social studies based environmental indicators covered than those in the science standards portion. Both of the second grade cumulative progress indicators for environmental studies were included in the center's 41%. The fourth grade indicators in the social studies portion of the checklist were not covered, while each of the other years was touched upon to a degree. The overall percentage for the programs offered at the center for school fieldtrip programs was 46%.

*Salem County*

Parvin State Park not only had the highest percentage of science related environmental studies cumulative progress indicators covered, it also had the highest total percentage for all of the responding centers with 81%. For the science indicator portion only two of the seventeen possible sub-points were missing from the twelth grade indicators giving the center its 88% coverage. Fifteen of the twenty indicators were included for the social studies portion for 75% coverage of the indicators. Figures 3, 4, 5, and 6 show the relationships between the percentages of each responding centers to one another and within their own facility's coverage.

Figure 3. The Percentage of Cumulative Progress Indicators met by each of the respondent centers for Science Standard 5.10.

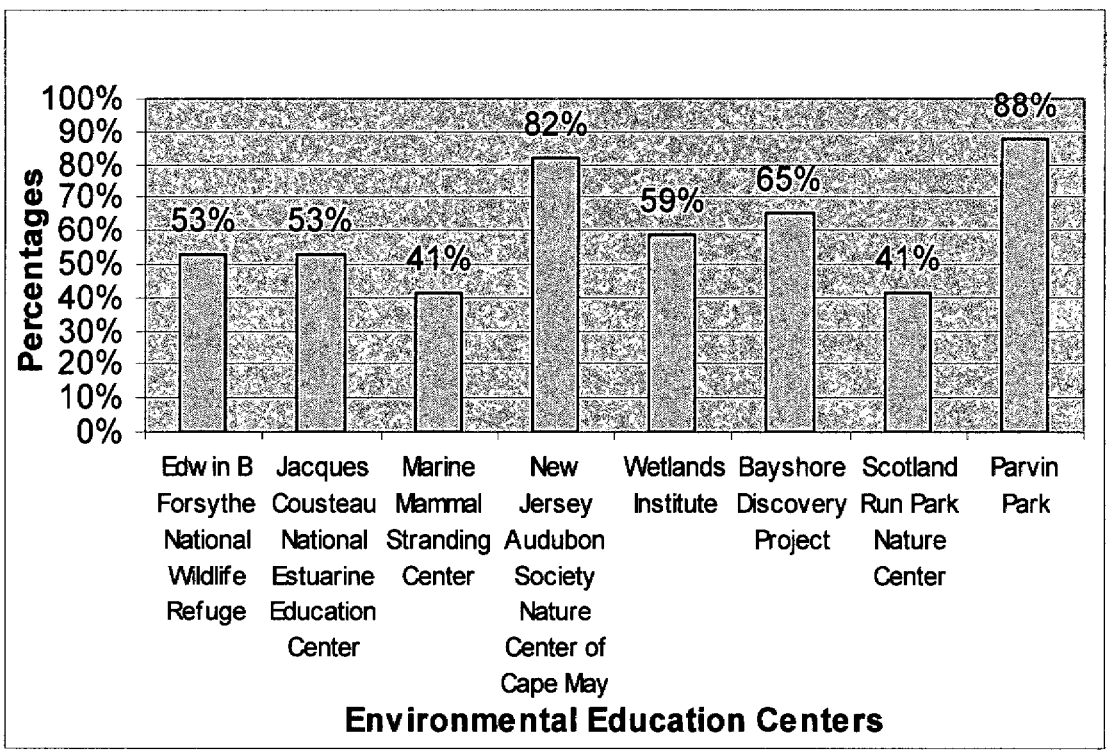


Figure 4. The Percentage of Cumulative Progress Indicators met by each of the respondent centers for Social Studies Standard 6.6E.

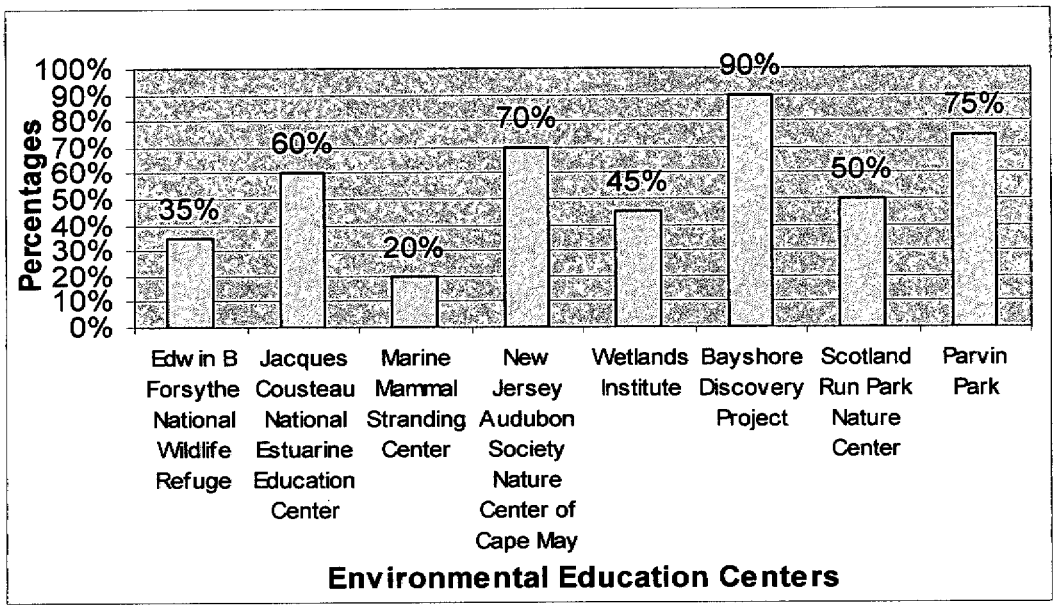



Figure 5. The Total Percentage of Cumulative Progress Indicators met by each of the respondent centers for environmental education.

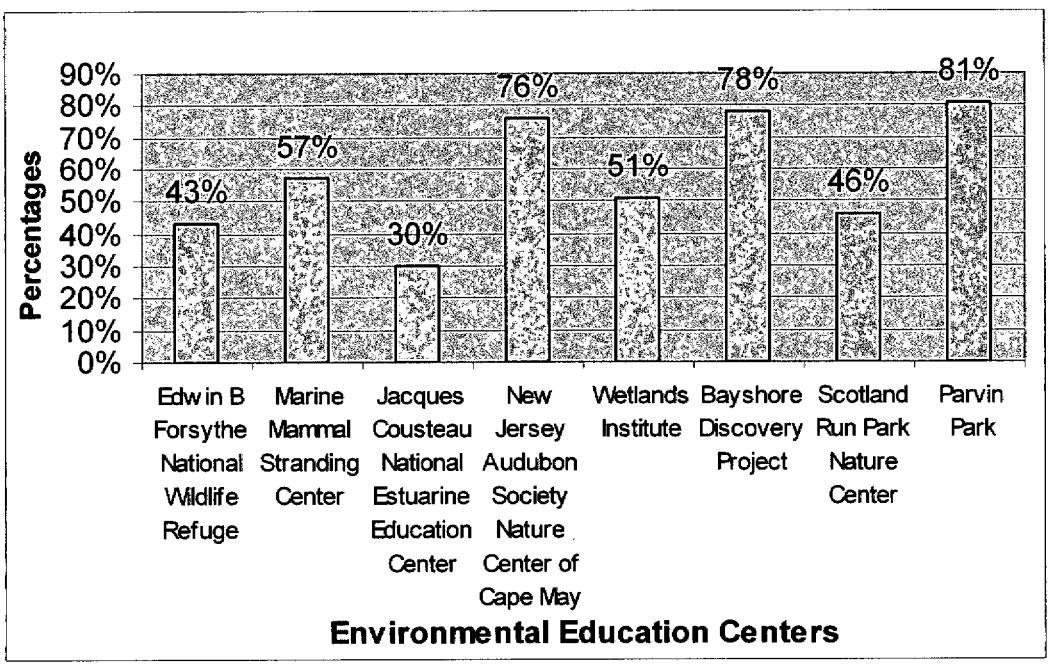
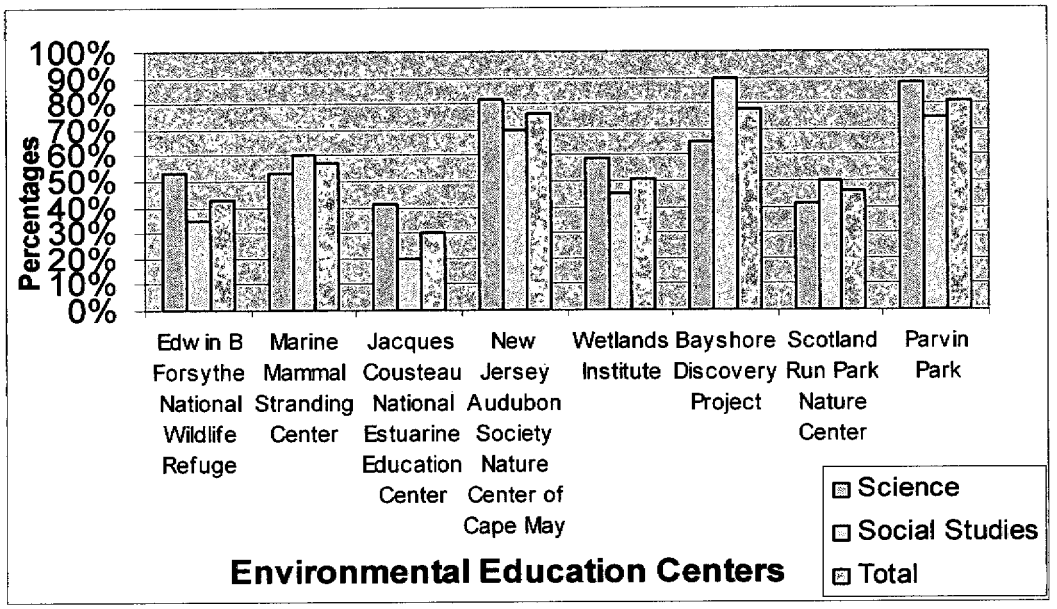


Figure 6. A combination of the percentage scores of each of the respondent centers.




Research Question 4: To what extent has the attendance at nonformal environmental education centers been affected by the state implementation of core curriculum content standards over the past ten years?

Each of the centers was asked to record its attendance records for fieldtrip programs from 1994 to 2003. If exact numbers were not available then estimation would also work. The responses for this data varied greatly. Some centers gave very rough estimates; others only had information for certain years, and one center choose not to give any data due to the fact that its attendance records are kept confidential. Another problem was that many of the centers kept general attendance records that included all of the programs that were run at the center and all of the visitors, not just those dealing with environmental education based fieldtrips for school groups. Due to the varying responses, five of the centers that did not have accurate or usable attendance records were contacted again. These centers were asked whether or not they felt that the state standards movement and/or the establishment of No Child Left Behind Act had affected

the attendance rate for school group visits. If so were the effects positive or negative. New Jersey's Core Curriculum Content Standards were developed in 1996 and the No Child Left Behind Act was passed in January of 2002, the attendance records for the years following 2002 were studied to see if there appeared to be an effect. (New Jersey Department of Education, New Jersey Core Curriculum Content Standards Introduction; Paige, 2003).

*Atlantic County*

The Edwin B. Forsythe National Wildlife Refuge did keep attendance records for the stated years and also kept separate data for on-site environmental education programs. This information could be used to answer the original research question. There was a major change from 1996 to 1997. In 1996, the facility recorded 2,648 visitors for onsite environmental education programs, the following year there were only 1,216. This is a decrease of over 50 percent. By 1998, the center's numbers had risen to a new high of 5,000. Following these fluctuations there were no other major shifts in the attendance records. From 2002 to 2003, its attendance for onsite environmental education decreased by a mere 111 visitors.

The Jacques Cousteau National Estuarine Education Center only listed attendance data for 2002 and 2003. During these years, an estimated 3,000 students visited the "Life on the Edge" exhibit at the center. When prompted with the follow up question a staff member explained that the center's "fieldtrips have been dependent on the Tuckerton Seaport efforts to book school fieldtrips." The Tuckerton Seaport has about 4,000 to 5,000 students visit annually. The attendance rates do not date back far enough to determine if the adoption of the state standards had affected the amount of student

fieldtrips, but it was also pointed out that the center "has on several occasions engaged a consultant from a coastal regional school district to advise on educational programs." Close attention is given to the state standards as educational programs are developed for students and for teachers. Educator training programs are a major focus at the facility. The center also felt that gearing programs towards meeting the goals of No Child Left Behind could also help as a marketing tool. So far, this year the center has seen a drop in the demand for fieldtrip programs. Although unsure of the exact cause, transportation costs and a shift back to city located centers were listed as possible reasons for the change.

The Marine Mammal Stranding Center's numbers were heavily estimated and also applied for all visitors to the center in general. Due to the fact that the main focus of the center is not on environmental education its staff still does not keep track of how many school groups visit the center in a year. It also is not aware of the state standards movement or the No Child Left Behind Act's effects, if any, on visitation. Its general admission numbers have steadily increased for seven of the last ten years and have leveled off recently.

*Cape May County*

Not including summer children's programs, the attendance rate at the Nature Center of Cape May has approximately been between 3,000 and 5,000 students for the past ten years. This facility was also asked the second question, and responded that it doesn't feel that either of the two changes in the formal education environment have affected its attendance rates. The center was aware of the state standards before they were implemented and changed their programs accordingly to meet what was and still is

required to be taught in the formal classroom setting. The local area teachers were also informed of the center's efforts and commitment to meet the state standards. There has also been no major affect on the nature center since the passing of the No Child Left Behind Act.

The Wetlands Institute keeps its visitation records confidential but did respond to the follow-up question. "It's hard to gauge the effect of curriculum standards on attendance. We've gone through our programs and correlated them to the state curriculum, so I'd hope that gives us a more attractive product to offer teachers" The Education Director, Phil Broder, pointed out that he realized the need for teachers to be able to justify the cost of a trip to their administrations. As for the No Child Left Behind Act, "so far the schools have only had to test reading and math, not science, so we're not feeling a direct impact. That may change next year, when science is tested." The schools in the areas surrounding the Wetlands Institute did not pass the new tests and the public has taken a lot of interest in what is being done to correct the problem. Public opinion is pushing for students to spend more time in the classroom learning the basics of what is being tested. This could lead to cutting fieldtrips out of the budget in the up coming years. Overall budget cuts in general are seen as the major problem for the Wetlands Institute. The most expensive part of most fieldtrips is the transportation. The parents and teachers would rather see transportation expenses being cut rather than the number of teachers or technological equipment. "Lay off teachers and there's public outcry; lay off bus drivers and nobody notices."

*Cumberland County*

The Bay Shore Discovery Project is one of the newer centers in the research area that is taking on environmental education fieldtrips. It reported being in operation for five to ten years. The first year for the shipboard educational sails was 1996. The center has seen a steady increase in its total visitation over the last ten years, but does not distinguish between the types of visitors. In 1994, total visitation was 5,000 by 2003 that number rose to an estimated 50,000 plus. This figure also includes all programs offered and festivals that often take place at the site. When posed with the follow up question, the respondent was uncertain of the effects that the standards movement and No Child Left Behind Act had on the sites fieldtrip visitation numbers. It is possible that those numbers have been going down slightly in recent years. Again budget cuts for transportation were sited. The respondent also felt that these cuts may be in relation to the shift to teach to the test in classrooms and away from nonformal education.

*Gloucester County*

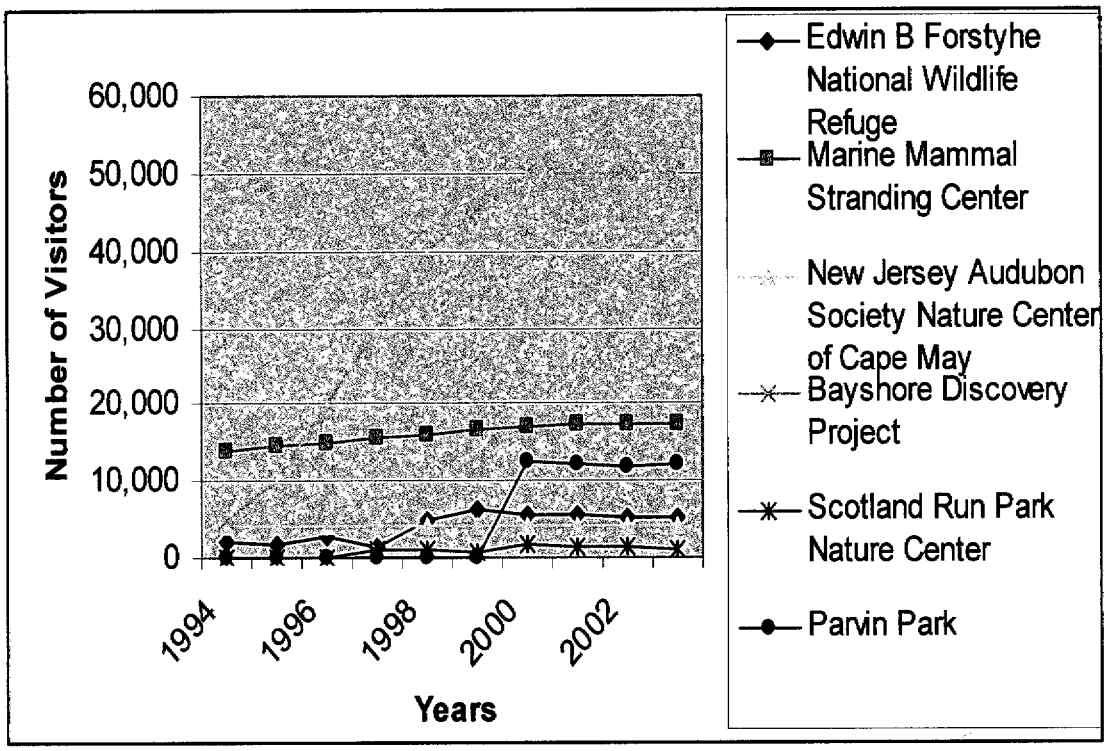
The Scotland Run Nature Center only had attendance records from 1997 to the present. These numbers included scout, day camps, and outreach programs along with on-site environmental education fieldtrip activities. Since 1996 was not included in the information provided that year's impact could not be assessed. There was, however, a drop from 1,507 visitors in 2002 to 1,156 in 2003. The nature center had also just compiled data for 2004 and had again seen a decrease. When asked how the two variables may have affected visitation numbers the respondent again mentioned the budget issue as the main deterrent. The number of public school visits to the facility has

been decreasing while scout groups, private schools, and other organization numbers are increasing. The standards and the act were perceived as part of the problem.

*Salem County*

Parvin State Park had the longest established environmental education programs, but only kept attendance records from the last five years. The turnout for onsite environmental education programs has remained fairly constant. Director of the environmental education programs, Paul Taylor, does not feel that the No Child Left Behind Act or the state standards implementation has affected the number of school visits made to the park. There has only been an increase in attendance since the No Child Left Behind Act was passed. Mr. Taylor feels the reason for the centers steady attendance is personal visits to the schools to show administrators and teachers what the park has to offer and how it can be connected to classroom lessons. After over 30 years of over seeing these programs the relationship with the schools is strong enough to over power the other variables. Figure 7 shows the attendance rates for those centers that listed the information on the questionnaire. Two centers were not included because attendance data was not recorded.

Figure 7. Reported Attendance Rates from 1994-2003.



# CHAPTER FIVE

# CONCLUSIONS AND DISCUSSIONS

## Conclusions

### *Introduction*

Of the four research questions included in this study, three were determined to have conclusive answers. The data received from the returned questionnaires and from the checklists was used for research question one through three. The attendance rate data was not complete. After the follow up questions the final results for research question four were still inconclusive. Each center has a thorough profile created from the data received on the first page of the questionnaire that included location information, technical program information and general facility operations information. Generalizations can be made about the mission statements and goals supplied by each center.

### *Research Questions*

Research Question 1: To what extent do existing programs of nonformal environmental education centers in South Jersey report using the New Jersey Core Curriculum Content Standards for Environmental Education when creating programs or lesson plans?

All of the responding centers were aware of the New Jersey Core Curriculum Content Standards and had these measures in mind when creating their lesson plans and programs. The extent to which each center reported using the standards varied. The majority of the centers reported covering the standards to a great extent. Due to the fact

that many of the centers' lessons were site specific, the degree of standard coverage is limited to what can be taught using the available resources. From these findings it can be concluded that the state standards do play a role in determining what types of information nonformal environmental education centers in Southern New Jersey choose to teach.

Research Question 2: To what extent do goals, mission statements, and/or lessons of nonformal environmental education centers in South Jersey meet the Nonformal Environmental Education Programs: Guidelines for Excellence developed by the North American Association for Environmental Education (NAAEE)?

All of the responding centers felt that they covered the Nonformal Environmental Education Programs: Guidelines for Excellence to an extent. In this case the overall reported usage was less than the responses for the state standards. Only two centers reported covering the guidelines to a great extent, and two more for to a moderate extent. Some of the centers drew a question mark next to the question on the questionnaire, or wrote guessed. In the case of the Scotland Run Park Nature Center, the respondent wrote that he or she was "not sure" of the extent of coverage at the center, but assumed that some of the guidelines were at least touched upon. For this research question, a major limiting factor was knowledge of the guidelines.

In the calculated percentages of key characteristics and their sub-points covered, each of the centers did meet some of the points incorporate in the key characteristics listed in the Nonformal Environmental Education Programs: Guidelines for Excellence. Again the extent to which the key characteristics were covered varied. The mission statements and goals helped determine how many of the characteristics and sub points were included. The extent of actually coverage of the guidelines for all of the centers

was from 35% covered to 93%. Six of the eight respondent centers had percentages over 50%; therefore the majority of the centers met a majority of guideline's key characteristics and sub points. In conclusion most of the respondent centers met the Nonformal Environmental Education Programs: Guidelines for Excellence to a strong extent.

Research Question 3: To what extent are New Jersey environmental education science and social studies core curriculum content standards met in lessons of fieldtrip programs regardless of intention?

This question measured the actual percentage of Cumulative Progress Indicators met by each of the centers for environmental education. In New Jersey, environmental education is included in both the science and social studies subject areas. Due to this and the fact that all of the centers reported offering programs for each grade level, the number of progress indicators covered for each subject area was reported as a whole, and not by grade. The total percentage shows how well each center actually met the state standards for environmental education. A major limiting factor for this portion of the study was the amount and quality of the detailed lesson plans supplied by the respondent centers. Some centers had a few general programs that were adapted for different age groups, while other programs were grade level specific. Therefore if the sample returned with the questionnaire did not included a lesson for a particular age group then it was uncertain if there was another lesson not included in the sample that would have met the indicators. The centers were asked to make sure that they represented all of the programs offered in some way. Brochures with generalizations on the different programs offered for fieldtrips often accompanied the information received back with the questionnaire. To a

similar extent, some centers had general information about what was offered for fieldtrip programs. Many of these programs have the ability to cover different amounts of indicators depending on how they are taught.

The extent of coverage varied. The degree to which each center actually covered all of the standards in its programs ranged from 30% to 81% of the total cumulative progress indicators for environmental education. Five of the eight respondent centers met at least 50% of the total CPIs under examination for this study. This is a majority of the respondent centers with a majority of the indicators covered. Based on the findings for the study area, the extent of total core curriculum content standards covered for environmental education fieldstrips by the respondent centers is high.

In five out of eight cases the percentage of science indicators covered was higher than the percentage of social studies. The range of cumulative progress indicators covered for science was 41% to 88%. The fact that none of the centers had less than 40% of the science related indicators covered indicates that environmental education as it relates to science is a large portion of all of the programs. The extent of environmental education indicators for social studies ranged from 20% to 90%. There was a greater variation between the centers in this category. The varying degrees of social studies indicators covered depended on the focus of the facility. The Bayshore Discovery Project began as a historical fieldtrip site and has branched out into science and environmental education. It boasted the high, 90%, coverage for the social studies indicators included in the study.

Research Question 4: To what extent has the attendance at nonformal environmental education centers been affected by the state's implementation of core curriculum content standards over the past ten years?

Even after the follow up question, the data gathered was still inconclusive for this research question. There are many variables that act upon the fieldtrip attendance rates. These variables impact the facilities in a number of different ways both increasing and decreasing visitation numbers. The impact of the state standards movement over the past ten years does not stand out. There were many limiting factors for the data collected on this question. Some of the centers did not have records dating back ten years or even dating back to the implementation of the standards. In many cases, the number of students visiting the center for fieldtrip programs was included in the general attendance rates for the facility. Although the state standards movement may have affected the number of classes choosing to take fieldtrips to nonformal environmental education centers in Southern New Jersey, the exact impact cannot be determined.

*Center Profiles*

Each of the responding centers reported being open for five or more years and offered programs for students in elementary through high school. Four of the eight responding centers offered environmental education fieldtrip programs for free. The other centers' fees varied. The different programs and facilities had a capacity range from twenty to one hundred students at a time for particular programs. The programs offered ranged anywhere from a half hour long to three hours. In many cases multiple lessons could be combined to fulfill an entire day's worth of activities. The respondent centers were either located in a rural or suburban area and received funding from a

number of different federal, local, and private sources. The number of programs offered also varied. Some centers had five or fewer programs that could be adapted to different age groups, while other facilities offered many different lessons and programs that were specific for certain ages.

### *Mission Statements and Goals*

Mission statements and goals for the responding centers varied a great deal. The mission statements range in focal areas from dealing with how the facility should be managed to what types of outcomes the students should achieve from taking part in a program. Some of the major themes of the mission statements and goals included proper management of the site, generation of knowledge, increasing awareness, promoting preservation, and promoting environmentally responsible behavior. In three cases an environmental education based mission statement was not available. Depending on the focus of the center, the topic areas covered varied along with the mission statements. Many of the goals focused on how each center would achieve its main overall mission through its programs' structures. Hungerford and Volk's goals for environmental education were touched upon in many of the centers' mission statements and goals.

## Hypotheses

Research Hypothesis 1: Curriculum content standards for environmental education can be found in existing lesson plans at nonformal environmental education centers in South Jersey.

Hypothesis 1 for this study was accepted. Each of the respondent centers did cover a degree of the curriculum content standards in their existing lesson plans for fieldtrip programs. The cumulative progress indicators were used to determine whether

or not the curriculum content standards for environmental studies were met to any extent by each center in its existing programs offered. Both the science and social studies indicators were met to some degree by all of the respondent centers.

Research Hypothesis 2: Due to the recent increase in concern over state standards and standardized test scores, attendance at nonformal environmental education centers over the past ten years has declined.

The validity of the second hypothesis could not be determined. The data collected was inconclusive. In some cases the overall attendance records did increase but actual fieldtrip attendance rates could not be determined as either increasing or decreasing. Some of the respondent centers had personal reasons that they felt that the attendance rates had varied that included the increased focus on standardized test scores. Due to the inconsistent nature of the data collected for the center's attendance rates the status of this hypothesis is still questionable.

## Discussion and Interpretation

### *Research Questions*

Research Question 1: To what extent do existing programs of nonformal environmental education centers in South Jersey report using the New Jersey Core Curriculum Content Standards for Environmental Education when creating programs or lesson plans?

Judging by the responses to the questionnaire, Southern New Jersey's nonformal environmental education centers are aware of the state standards and their importance in formal education. Five of the centers reported that they used the standards to a great extent when creating their lesson plans and programs. These programs cover much of the

same subject area that is covered in classroom curriculum. Based on their surroundings, the centers create programs that attempt to connect what students are learning in the formal classroom setting to lessons in the natural world. The extent to which the centers try to cover the standards does depend on the overall mission and goals for the center. For instance, the Marine Mammal Stranding Center's mission is dedicated to the rescue and rehabilitation of marine mammals and sea turtles. Environmental Education, although included, is not the main focus at this center. The Jacque Cousteau National Estuarine Education Center, The New Jersey Audubon Society's Nature Center of Cape May, the Wetlands Institute, the Bayshore Discovery Project, and Parvin State Park all have education as a major focus.

For the most part the centers realize the importance of including the state standards in fieldtrip programs. The inclusion of the standards serve as a way to justify the money spent on fieldtrips to administrators and school budgets. Inclusion of the standards in brochures and pamphlets sent to schools is a marketing tool for many centers in an attempt to persuade more groups to visit the facilities. Whether or not the centers support the standards movement, they are forced to include them in order to make certain that they will continue to have student fieldtrip visitors. Public supporters of the standards movement see them as a way to provide uniform education throughout the states many districts. There are both positives and negatives to the standards movements and the centers are challenged to use them in the best ways possible (Bluhm, Volk, Wise, Winther, Hungerford, & Saunders, 2003).

Research Question 2: To what extent do goals, mission statements, and/or lessons of nonformal environmental education centers in South Jersey meet the Nonformal

Environmental Education Programs: Guidelines for Excellence developed by the North American Association for Environmental Education (NAAEE)?

The respondent centers were not as aware of the North American Association for Environmental Education's Nonformal Environmental Education Programs: Guidelines for Excellence as they were of New Jersey's Core Curriculum Content Standards for Environmental Education. For instance the Scotland Run Park Nature Center was not sure what they guidelines were and asked for more information. The question marks and other comments placed beside the question on the questionnaire were also an indication of how some of the centers were not as familiar with the guidelines. When asked to what extent each center felt it met the guidelines the responses were not as confident as they were with the state standards. Only two of the eight centers felt that they covered the guidelines to a great extent whereas five of the centers felt they had the standards covered to a great extent.

After examining the mission statements, goals, lesson plans, and program structure of each of the respondent centers, the percentage of the guidelines covered was determined. In all cases the respondent centers received a higher percentage for the guidelines than they did for the standards. The range of percentages for the guidelines was 36% to 93% whereas the percentage range for all of the environmental education standards was 30% to 81%. There are a number of different possible reasons for these findings. The guidelines not only measure the content of the programs but also the overall mechanics. Each of the facilities was dedicated to proper management of its resources. There were only 28 points on the Nonformal Environmental Education Programs: Guidelines for Excellence checklist. The standards checklist had a total of 37

points to meet, many of which were very specific. There was more room for interpretation of the programs set up and quality for the guidelines checklist than there was for the standards list.

Key characteristic six, evaluation, was a major portion of the Nonformal Environmental Education Programs: Guidelines for Excellence checklist that was often not included in the centers' mission statements, goals, and/or lesson plans. There were four points in this section that were therefore missed by many centers. Evaluation of what the students learn and the program itself are often over looked.

> "Without program evaluations, however, whether a center's goals are being met or not is unknown. Developing an evaluation would allow the center to clarify its goals, identify whether the program provided is consistent with the goals and determine if these goals are being met" (Simmons, 1991, p. 21).

Key characteristic six stressed the need for determined evaluation strategies, effective evaluation techniques and criteria, and the use of the evaluation results. Nonformal environmental education programs, especially fieldtrip programs, often only encompass a day's worth of activities. Although a fieldtrip is educational, it is also seen as a break from the usual classroom type curriculum that requires assessment and evaluation. Students are often only at the facilities for one school day, in some cases for only a couple of hours. Nonformal environmental education centers should however be continually reviewing the programs they offer and how students respond to the activities. The results of the evaluation should be used to better the center as a whole (NAAEE, Nonformal Environmental Education: Guidelines for Excellence, Key Characteristic 6).

All programs are not expected to meet all of the guidelines but their use can point out areas for improvement. (NAAEE, Nonformal Environmental Education Programs: Guidelines for Excellence, Introduction) Although often missing the sixth key characteristic, the generally high percentages for the respondent centers show the overall quality of the facilities. The centers do, for the most part, cover some degree of the first five key characteristics that include: assessing the needs associated with the facilities; developing meaningful worthwhile goals that fit with the goals of environmental education; increasing the likely hood of achieving environmental literacy; carefully planning programs and activities; hiring quality staff with good supporting materials; and sharing quality programs that are appropriate for many different ages levels of students. Increasing knowledge of the NAAEE's Nonformal Environmental Education Programs: Guidelines for Excellence could help these centers achieve even greater quality of programs.

Research Question 3: To what extent are New Jersey environmental education science and social studies core curriculum content standards met in lessons of fieldtrip programs regardless of intention?

The purpose of this research question was to measure the actual percentage of the core curriculum content standards for environmental studies that the centers covered. These results can be compared to how each center felt it met the standards. Standard coverage may serve as an incentive for teachers to bring students to a particular site. Those programs that coordinate with what is being taught in the schools can serve as an important tool to reinforce what is learned in the formal classroom. The percentages of actual standards covered varied by center and by major subject area of the standards

within the center. The extent to which each individual center covered the standards depended on the major focus points for the programs. The science cumulative progress indicators most commonly met were those for the elementary and middle school years. All of the centers did touch upon at least part of the grade twelve indicators but no single center met all the cumulative progress indicators in this category. Parvin State Park had the highest amount of grade twelve indicators covered.

The Jacques Cousteau National Estuarine Education Center, the Bayshore Discovery Project, and the Scotland Run Park Nature Center all had a higher percentage of the social studies related standards covered, than of the science. Both the science and the social studies environmental related cumulative progress indicators express the need for students to know how the environment relates to humans. The social studies portion of the checklist deals primarily with this topic and also looks at the relationship of the environment to society as a whole. At one point, the Bayshore Discovery Project had a major historical focus on the schooner ships and the oyster industry. Programs have now been developed for environmental education, many of which stem from the history of the area and on how it has developed. The Bayshore Discovery Project received the highest percentage of history indicators covered with 90% included in its fieldtrip programs.

In general each center focuses its programs and activities on the setting in which it is found. Another determining factor is what the mission and/or goals of the center are in each case. The Wetlands Institute focuses on wetlands and coastal ecology in its programs while Parvin State Park draws its activities from the forest and lake. The lower grade levels tend to learn the general ecology and characteristics of the surrounding land. Middle school and high school students explore the area and go into further detail during

fieldtrip programs. Higher-level students are often given more opportunities to apply the knowledge and skills that they are learning during the fieldtrip. Although the lower levels tend to be more basic, important skills are still gathered. Acquiring skills to investigate and act is the major component of goal level three and four for environmental education. These goal levels and the programs offered at the respondent centers coincide with the ultimate goal for environmental education of producing an environmentally responsible citizen (Hungerford, Peyton, Wilke, 1980).

The five centers that reported that they met the standards to a great extent all had at least 50 percent of total cumulative progress indicators from the standards checklist covered. The three highest percentages were 76%, 78%, and 81% to the Nature Center of Cape May, the Bayshore Discovery Project, and Parvin State Park respectively. These centers did meet the standards to a great extent. This is a large portion of the standards covered and a number of different programs could connect with many units being taught in a formal classroom environment.

The results indicate that the New Jersey Core Curriculum Content Standards for environmental education are a significant part of the study area's environmental education centers. Although the extent to which each facility covers the standards varies it is important to note that they are present at each of the respondent centers. Comments included on the returned questionnaire indicate that some of the centers have not been informed about the updated state standards. This is a limiting factor as to how well the standards could be met. The centers do create a connection to the lessons being taught in the formal classroom in an attempt to ensure that nonformal environmental education methods are still a part of science education. Teachers need to be made aware of the

centers' efforts to connect to the curriculum and should understand that "the most successful tactic to achieve behavior change may lie in the establishment of partnerships with the longer term process of environmental education" (Knapp, 1998, p. 328). Fieldtrips help form this long term partnership with the natural world and are an important sector of environmental education.

Research Question 4: To what extent has the attendance at nonformal environmental education centers been affected by the state's implementation of core curriculum content standards over the past ten years?

Although the data was inconclusive, the information gathered did shed some insight into what variables are affecting the visitation rates of the respondent centers. Through the follow up question the centers were able to openly express what was affecting them personally. Budget cuts were reported as the number one reason for any decrease in fieldtrip programs. The Scotland Run Park Nature Center pointed out that its public school visitation numbers have gone down due to transportation expenses to get to the center. However, private schools, scout groups, and other organization are still frequently visiting the center. The Bayshore Discovery Project, the Nature Center of Cape May, and the Wetlands Institute also all mentioned budget cuts as a reason for any decreasing number of fieldtrips being taken to these centers. The main expense in taking a fieldtrip is how to get the students to the center. Transportation costs are high even for relatively close schools.

The Wetlands Institute and the Bayshore Discovery Project both realized the current trend in schools to teach to the standardized tests. In both of these cases they did connect the cut in funds for transportation to the standards movement and the No Child

Left Behind Act. The Wetlands Institute's education director, Phil Broder, pointed out some of the reasons why transportation funds for fieldtrips have been cut. "It's really easy to cut the budget for busses, because the public doesn't see it as cutting education" (Personal Correspondence, 2005). No Child Left Behind was seen as more of a problematic variable than the state standards implementation. All of the centers reacted to the implementation of the standards by including many of them into current programs or by creating new programs. As the Nature Center of Cape May pointed out, they knew what to do about the standards before they even "hit the shelves." However, they were unable to control the subject matter of standardized tests. Only those states that have standards for improving schools backed by evidence such as standardized test scores will receive taxpayer money (US Department of Education, No Child Left Behind State Standards). If area schools score low on these tests there may be a public demand to keep students in the classroom. Many of the other variables related to the topic are also connected to the push for fulfilling the state standards indicated by the No Child Left Behind Act.

The Jacques Cousteau National Estuarine Education Center also listed budget problems and transportation costs but it had one other variable that was not mentioned by the other respondent centers. September 11$^{th}$ was included as a possible cause for the most recent decrease in fieldtrip visitation rates to suburban and rural centers. After 9-11, schools were hesitant to take groups to major cities. Now, after a few years have passed, the schools are again visiting places in major cities where a number of different educational sites and be visited in one trip. This is an important factor because all of the

respondent centers were in suburban or rural areas. All of the centers may also be affected by the shift back to visiting major cities.

Parvin State was the only respondent center that did not feel affected by the standards movement or the No Child Left Behind Act. Like many of the other centers it made an effort to include the standards within its programs. The main reason it does not feel any affect is due to the strong long term positive relationship it has with local schools. It is also willing to bring the park to the school when funding for transportation is not available. Through outreach activities the park's staff hopes that the students will want to come back with their families. Out reach has been an important addition to many of the facilities programs.

The Bayshore Discovery Project still highly values fieldtrip visitors but has also increased other on-site activities like festivals. Festivals offer many different activities. Although a person may come to experience the food or the games they may also take part in environmental education activities.

The attendance records at the Edwin B. Forsythe National Wildlife Refuge fit what was expected for the study. The center did have a large decrease in attendance from 1996 to 1997. Separate attendance records were kept for on-site fieldtrip visits. The affects of the No Child Left Behind Act could not be determined at this point and may be hard to determine in the years ahead due to the reconstruction of the refuges goals and mission. Many other variables will be different so the affect of the act will again not be certain.

With the increasing emphasis on classroom teaching and funding cutbacks, nonformal environmental education centers may begin to see a greater decrease in the

number of students visiting for fieldtrips. Out reach programs may be the future wave on nonformal environmental education programs. The cost of bringing the center to the school is far less than bringing the whole school to the center. As past research has pointed out, it is important to engage students in hands on learning activities so that the experience has longer lasting cognitive gains. Although lack of funding is a problem nonformal environmental education experiences should not be forgotten. To build a relationship with nature and the environment students must have direct contact with the world around them. (Knapp & Poff, 2001; Rudmann 1994; Simmons, 1991)

## Recommendations

### *Programmatic Recommendations*

The results of the study can help improve current environmental education centers' programs in a number of different ways. As indicated, the respondent centers did cover some extent of both the state standards for environmental education and the Nonformal Environmental Education Programs: Guidelines for Excellence. These percentages can be improved.

Schools and nonformal education centers should work together in order to create meaningful worthwhile programs for both the students and the overall good of the environment. In many cases the centers were aware that state standards were implemented but they were not kept up to date on changes and revisions to the original publication. Environmental Studies is currently section 5.12 in the science subject area, some centers are still using the format that has it listed as 5.10. In other cases the centers were unaware that the environment was also included in the social studies subject area. Teachers have more of an incentive to bring their students on fieldtrips that are

interdisciplinary even beyond just environmental subject matter and applications. The centers need to be updated by state or local officials of changes in the state standards that may affect their programs. Centers should also keep track of any changes and make adjustments as soon as possible. The information regarding up to date state standards is easily obtainable.

In a similar manner a connection must be formed between the NAAEE and local environmental education centers. Whether it is through the centers looking up the guidelines or the association teaching the centers, the information must be shared between the two parties or it is useless. Environmental education centers need not only know that the guidelines exist but also how to use them to evaluate current conditions and put them into practice when making future decisions.

In addition centers should also find a way to evaluate themselves and visiting students. The long term cognitive, behavioral, and affective objectives should be monitored to determine the effectiveness of a program. Key characteristic six of the guidelines cannot be left out or forgot. Evaluation ensures that the centers are doing the best job possible at educating students. The results of this study should also be used by the centers to improve their existing programs. The findings show which areas need improvement both in terms of content and structure.

### *Research Recommendations*

This study can serve as a lesson and a stepping-stone for future related research. Although the results cannot be applied outside of the study area the structure and set up of the study may be used elsewhere. If this type of study were conducted outside of the

state of New Jersey, the core curriculum content standards checklist would need to be adapted to fit each state's particular standards.

There are changes that could be made to the research format in order to improve the studies proficiency. Many of the centers did not keep precise attendance records. In order to determine the affect of the standards movement on each center's fieldtrip visitation rates an open-ended question addressing this topic should be included on the questionnaire. The question should have the year that the standards were implemented and the year that the No Child Left Behind Act was passed. Another possible way to address this topic would be to give the centers a list of things that may affect fieldtrip visitation rates and have them check all of the variables that apply. From this information another research question could be developed and answered. Future research in this case would be able to find the major factors that affect visitation rates.

Schools in the study area could also be surveyed in another attempt to find conclusive results on how the standards movement has affected fieldtrip rates. Not only could the number of fieldtrips taken over the years be collected but also the types and destinations. Teachers and/or administrators could be asked why they take fieldtrips, how they pick which subject areas to cover on a fieldtrip, and any funding or other issues that have been occurring within the school system that affect the ability of a class to take fieldtrips.

## Closing

The research conducted in this study could be expanded and built on in many different ways. The results show that the environmental education centers in the six southern most counties in New Jersey do address both the state standards and the

Nonformal Environmental Education Programs: Guidelines for Excellence to some degree. The data from Falk and Balling's (1982) study indicated that a single visit fieldtrip could in fact promote cognitive learning and retention. Those students who do not understand a concept in the classroom may be better able to relate to the idea in its natural setting making fieldtrips an important tool for teachers (Knapp, 2000). The information and results gathered in this study should be made available to both the respondent centers to improve their current programs and to the school districts located in the study area to ensure that quality fieldtrips are taken to places that fit into the classroom curriculum. As noted in past research, fieldtrips to locations like those included in the study are a worthwhile addition to the formal classroom curriculum (Gerber, Cavallo, & Marek, May 2001).

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# APPENDIX A
## Research Questionnaire

**Completion of the following questionnaire implies consent for information to be included in the formal written report.**

1. May the name of the facility be used in the research results?

   Yes No

If yes please indicated center name: _____

**Location**

2. Town: _____
3. County: _____

**General Information** circle the best answer(s) or fill in the blank.

4. Location: urban sub urban rural
5. What age groups does the facility serve?

   Elementary (K-5) Middle School(6-8) High School (9-12)

6. How many years has the facility been available for field trips.

   Less than 5 years 5-10 years More than 10 years

7. How many programs or lessons are currently available for classes to participate in while on field trips.

   Less than 5 5-10 More than 10

   Is an onsite visit to the center possible to examine lesson plans

   Yes No

   If yes, what are the best times for visiting the center?

   _____

   _____

8. How many students can visit the center at single time? _____
9. What is the average price for a class field trip program? _____

   _____

10. What is the average time frame of a program? _____
11. How is the center funded? _____

## Mission Statement and Goals

12. Does the center have a declared mission statement? Yes No
If yes, please record the mission statement below or attach a copy.

_____

_____

_____

_____

13. Does the center have any declared goals? Yes No
If yes, please list the goals below or attach a copy.

_____

_____

_____

_____

_____

## Attendance

14. Please fill in the facilities attendance numbers for fieldtrips in the past ten years. (Estimate if necessary)

- 2003: _____
- 2002: _____
- 2001: _____
- 2000: _____
- 1999: _____
- 1998: _____
- 1997: _____
- 1996: _____
- 1995: _____
- 1994: _____

## Core Curriculum Content Standards and Guidelines for Excellence

**Although New Jersey does not designate an entire subject area to environmental education, it is included in the Science Standards under section 5.10 and the Social Studies Standards section 6.6E. The following questions are based on your opinion of how well you feel the center's programs may cover these standards.**

15. How strongly do center programs coincide with the New Jersey core curriculum standards in environmental education?

| Not at All | To a Small Extent | To Some Extent | To a Moderate Extent | To a Great Extent |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

**The North American Association for Environmental Education has developed the Nonformal Environmental Education Programs: Guidelines for Excellence. The following questions are based on your opinion of how well you feel the center programs may meet these guidelines.**

16. How strongly do center programs meet the NAAEE Nonformal Environmental Education Programs: Guidelines for Excellence?

| Not at All | To a Small Extent | To Some Extent | To a Moderate Extent | To a Great Extent |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

*Note: If neither the standards nor guidelines have ever been addressed by the program developers or coordinators, the respondent should answer to the best of his or her knowledge, or in his or her opinion.*

## A Closer Look

For further examination please attach copies of lesson plans that are a representative sample of the programs offered for field trips at the center. These plans will be examined by the researcher using checklists of both the cumulative progress indicators listed for the state standards and the key characteristics from the guidelines for excellence.

APPENDIX B
New Jersey Environmental Education State Standards Checklist

# New Jersey Environmental Education State Standards Checklist

**The following is a list of the New Jersey Core Curriculum Content Standard's Cumulative Progress Indicators/Objectives that cover Environmental Education divided by grade level. If a program's lesson plans cover an area then the line will be check.**

## Science Standard 5.10: Environmental Studies

**By the end of grade 2, students will be able to:**

_____ Associate organisms' basic needs with how they meet those needs within their surroundings.

_____ Identify various needs of humans that are supplied by the natural or constructed environment.

**By the end of grade 4, students will be able to:**

_____ Differentiate between natural resources that are renewable and those that are not.

_____ Explain how meeting human requirements affect the environment.

**By the end of grade 6, students will be able to:**

_____ Explain how organisms interact with other components of an ecosystem.

_____ Describe the natural processes that occur over time in places where direct human impact is minimal.

_____ Describe the effect of human activities on various ecosystems.

_____ Evaluate the impact of personal activities on the local environment.

**By the end of grade 8, students will be able to:**

_____ Investigate the impact of catastrophic events such as forest fires, floods, and hurricanes on the environment of New Jersey.

_____ Compare and contrast practices that affect the use and management of natural resources

**By the end of grade 12, students will be able to:**

_____ Distinguish naturally occurring process from those believed to have been modified by human interaction or activity.

- _____ Climate change
- _____ Ozone production
- _____ Erosion and deposition
- _____ Threatened and endangered species

_____ Assess the impact of human activities on the cycling of matter and the flow of energy through ecosystems.

_____ Use scientific, economic, and other data to assess environmental risks and benefits associated with societal activity.

**Social Studies Standard 6.6E: Environment and Society**

**By the end of grade 2, students will be able to:**

_____ Describe the role of resources such as air, land, water, and plants in everyday life.

_____ Describe the impact of weather on everyday life.

_____ Act on small-scale, personalized, environmental issues such as littering and recycling, and explain why such actions are important.

**By the end of grade 4, students will be able to:**

_____ Differentiate between living and non-living natural resources.

_____ Explain the nature characteristics, and distribution of renewable and non-renewable resources.

**By the end of grade 8, students will be able to:**

_____ Discuss the environmental impacts or intended and unintended consequences of major technological changes (e.g., autos, and fossil fuels, nuclear power and nuclear waste).

_____ Analyze the impact of various human activities and social policies on the natural environment and describe how humans have attempted to solve environmental problems through adaptation and modification.

_____ Compare and contrast conservation practices and alternatives for energy resources.

_____ Compare and contrast various ecosystems and describe their interrelationship and interdependence.

_____ Describe world, national, and local patterns of resource distribution and utilization, and discuss the political and social impact.

_____ Analyze the importance of natural and manufactured resources in New Jersey.

_____ Delineate and evaluate the issues with sprawl, open space, and smart growth in New Jersey.

**By the end of grade 12, students will be able to:**

_____ Discuss the global impacts of human modification of the physical environment (e.g., the built environment).

_____ Discuss the importance of maintaining biodiversity.

_____ Analyze examples of changes in the physical environment that have altered the capacity of the environment to support human activity, including pollution, salinzation, deforestation, species extinction, population growth, and natural disasters.

_____ Compare and contrast the historical movement patterns of people and goods in the world, United States, and New Jersey and analyze the basis for increasing global interdependence.

_____ Evaluate policies and programs related to the use of local, national and global resources.

_____ Analyze the human need for respect for and informed management of all resources (sustainability), including human populations, energy, air, land, and water to insure that the earth will support future generations.

_____ Describe how and why historical and cultural knowledge can help to improve present and future environmental maintenance.

_____ Delineate and evaluate the environmental impact of technological changes in human history (e.g., printing press, electricity and electronics, automobiles, computer, and medical technology).

APPENDIX C

NAAEE Nonformal Environmental Education Programs: Guidelines for Excellence Checklist

**NAAEE Nonformal Environmental Education Programs: Guidelines for Excellence Checklist**

**The following is summary of the NAAEE Nonformal Environmental Education Programs: Guidelines for Excellence. The guidelines are broken into six key characteristic subsections. Areas covered by the programs and facility will be checked.**

Key Characteristic #1 – Needs Assessment

_____ The programs are designed to address identified environmental, educational, and community needs to produce responsive, responsible benefits that address those identified needs.

_____ 1.1 Environmental issues or condition;

_____ 1.2 Inventory of existing programs and materials; and

_____ 1.3 Audience needs

Key Characteristic #2 – Organizational Needs and Capacities

_____ The programs support and complement their parent organization's mission purpose, and goals.

_____ 2.1 Consistent with organizational priorities;

_____ 2.2 Organization's need for the programs are identified; and

_____ 2.3 Organization's existing resources inventoried.

Key Characteristic #3 – Programs Scope and Structure

_____ The programs should be designed with well-articulated goals and objectives that state how the program will contribute to the development of environmental literacy.

_____ 3.1 Goals and objectives are in place for the programs;

_____ 3.2 Fit with goals and objectives of environmental education;

_____ 3.3 Program format and delivery; and

_____ 3.4 Partnership and collaboration.

Key Characteristic #4 – Program Delivery Resources

_____ The programs require careful planning to ensure that well-trained staff, facilities, and support materials are available to accomplish program goals and objectives.

_____ 4.1 Assessment of resource needs;

_____ 4.2 Quality instructional staff;

_____ 4.3 Facilities management;

_____ 4.4 Provision of support materials; and

_____ 4.5 Emergency planning.

Key Characteristic #5 – Program Quality and Appropriateness

_____ The programs are built on a foundation of quality instructional materials and thorough planning.

_____ 5.1 Quality instructional materials and techniques;

_____ 5.2 Field testing;

_____ 5.3 Promotion, marketing, and dissemination; and

_____ 5.4 Sustainability.

Key Characteristic #6 - Evaluation

_____ The programs define and measure results in order to improve current programs, ensure accountability, and maximize the effects of future efforts.

_____ 6.1 Determination of evaluation strategies;

_____ 6.2 Effective evaluation techniques and criteria; and

_____ 6.3 Use of evaluation results.

APPENDIX D
Site Administrator Introduction Letter

Dear Site Administrator:

My name is Teresa Andres and I am a graduate student at Rowan University. I'm currently pursuing a master's degree in Environmental Education and Conservation. To complete my degree I am conducting a reach project for my thesis under the supervision of Dr. Austin Winther. The project involves local environmental education and nature centers in New Jersey's six southern most counties.

Field trips can be a very useful method to reinforce lessons being taught in the classroom. It is hoped that the information gathered in this study will help area teachers use Environmental Education Centers as important additions to classroom resources. This study is not trying to judge or rate the programs. The four main goals of this study are:

1. To determine if there is a connection between New Jersey's core curriculum standards and environmental education centers current lessons and programs.
2. To examine how well these programs meet the *Nonformal Environmental Education Programs: Guidelines for Excellence* developed by the North American Association for Environmental Education.
3. To determine whether or not the standards movements have affected class visitation rates in the past ten years.
4. And to compile the results and provide a single resource for both teachers in the surrounding districts and coordinators at their respectable establishments.

This study is only examining those programs run for class field trips. I hope that you will take the time to fill out the attached questionnaire, with information regarding these goals. During the questionnaire you may choose whether or not you would like your center's name associated with the information given for the written report. I am also requesting to see some of the lesson plans or program structures of each center. There is also a section asking whether onsite visits would be possible to further look at lesson plans and/or materials.

Please return the questionnaire as soon as possible. If you have any questions or problems concerning the questionnaire or study please feel free to contact me at 856-582-9168 or by e-mail at tess_andres@yahoo.com. If you'd like to contact Dr. Austin Winther he can also be reached through e-mail at winther@rowan.edu.

Thank you for your time and I hope to here back from you soon.

Sincerely,

Teresa Andres