Perceptions of Stakeholders in the Pi Beta Phi Elementary School Parks as Classrooms Program.

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Perceptions of Stakeholders in the Pi Beta Phi Elementary School Parks as Classrooms Program

A dissertation presented to the Faculty of the Department Of Educational Leadership and Policy Analysis East Tennessee State University

In partial fulfillment of the requirements for the degree Doctor of Education

by Johnny Henry

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## CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>7</td>
</tr>
<tr>
<td>DEDICATION</td>
<td>8</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>9</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>1. INTRODUCTION</td>
<td>10</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>14</td>
</tr>
<tr>
<td>Research Questions</td>
<td>14</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>15</td>
</tr>
<tr>
<td>Limitations and Delimitations</td>
<td>17</td>
</tr>
<tr>
<td>Definitions</td>
<td>17</td>
</tr>
<tr>
<td>Overview of the Study</td>
<td>19</td>
</tr>
<tr>
<td>2. REVIEW OF LITERATURE</td>
<td>20</td>
</tr>
<tr>
<td>Historical Development</td>
<td>20</td>
</tr>
<tr>
<td>Philosophical Underpinnings</td>
<td>20</td>
</tr>
<tr>
<td>Early Programs</td>
<td>23</td>
</tr>
<tr>
<td>Trends and Movements</td>
<td>30</td>
</tr>
<tr>
<td>History and Descriptors of Environmental Education Programs</td>
<td>36</td>
</tr>
</tbody>
</table>
Partnership……………………………………………………………… 86
Parent Involvement……………………………………………………… 86
Weaknesses of the Program………………………………………………… 87
Replication……………………………………………………………… 87
Communication…………………………………………………………. 88
Buy In…………………………………………………………………… 89
Curriculum Objectives…………………………………………………… 89
Proof Working…………………………………………………………… 90
Changing Staff…………………………………………………………… 90
Teacher Training………………………………………………………… 91
Impacts for the Community, Park, and School…………………………….. 91
  Educational Program…………………………………………………… 91
  Future Benefits………………………………………………………… 92
  Students Achievement……………………………………………… 92
Impacts Student Learning…………………………………………………. 93
  Real Life Experiences……………………………………………….. 93
  Varying Styles………………………………………………………… 94
  Hands-On……………………………………………………………… 94
Most Important…………………………………………………………….. 95
  Expanding the Audience…………………………………………… 95
  Continue Program…………………………………………………… 96
  Type of Educational Experiences………………………………….. 96
Research Question # 3…………………………………………………… 97
5. SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary of Findings…………………………………………………… 103
Research Question # 1………………………………………………… 104
Research Question # 2………………………………………………… 105
Research Question # 3………………………………………………… 106
Conclusions…………………………………………………………... 107
Conclusion #1………………………………………………………… 107
Conclusion #2………………………………………………………… 108
Conclusion #3………………………………………………………… 108
Conclusion #4………………………………………………………… 108
Conclusion #5………………………………………………………… 108
Conclusion #6………………………………………………………… 109
Recommendations for Practice……………………………………... 109
Recommendations for the Pi Beta Phi Project……………………… 110
Recommendations for Further Research…………………………… 111
REFERENCES…………………………………………………………… 112
APPENDICES…………………………………………………………… 120
APPENDIX A: Parks As Classrooms Teacher Survey……………… 120
APPENDIX B: Parks As Classrooms Parent Survey………………… 123
APPENDIX C: Founder Interview Guide…………………………… 126
APPENDIX D: Parks Staff Interview Guide………………………… 127
ABSTRACT

Perceptions of Stakeholders in the Pi Beta Phi Elementary School Parks as Classrooms Program

by

Johnny Henry

In the fall of 1991, Pi Beta Phi Elementary School in Gatlinburg, Tennessee, in partnership with the Great Smoky Mountains National Park, began development and implementation of a Parks As Classrooms curriculum that encompassed all nine grade levels of the K-8 school. The purpose of this case study was to evaluate the Parks As Classrooms program and how it impacts the students and the community.

Multiple means of data collection were necessary in order for valid assessment to take place. First, interviews were conducted with principle stakeholders. Observations of field trips were done. These data were imported into NUD*IST (Non-Numerical Unstructured Data Indexing Searching and Theorizing) for evaluation purposes. Second, a survey instrument was developed and administered to parents, teachers, and administrators to assess the impact of the program on various groups. Finally, pretest and posttest measures for each unit were developed by teachers at each grade level to assess the impact the program has on students. An item analysis was done to evaluate these measures along with descriptive and inferential statistics to evaluate the impact of the program. To conclude this assessment, student data on the Terra Nova exam were evaluated.

The findings suggest the reasons for the development of the Parks As Classrooms program at Pi Beta Phi Elementary School. It also presents a picture of what the program looks like today and suggests that students benefit from the program both academically and attitudinally.
DEDICATION

I dedicate my degree to my family.

My wife, Lisa, and daughter, Rylee, have sacrificed countless hours of my being away from home.

Without their continued support, this degree would not have been possible.

Lisa, I admire your servant qualities and willingness to put others before yourself, regardless of the situation.

Rylee, I want to thank you for trying to understand When I was busy and unable to play With you or had to miss games.

I love you both dearly.

I also credit my parents Johnny T. and Barbara Ann Henry For raising me with the belief That I could do anything I wanted to do And an understanding that education is the key to success.

I can only hope I am as successful with my daughter.
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I express my sincere thanks to you for your patience, guidance, and constructive criticism throughout this endeavor. You are truly one of a kind, and I will always be indebted to you.

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I express thanks for you expertise in the field of outdoor education. This expertise enhanced my confidence that I was going in the right direction with my research.

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I must acknowledge the staffs of GSMNP and Pi Beta Phi Elementary School-

Their willingness to be participants in the study and their hard work and service will be their legacy. Thank you for never denying assistance in whatever was asked of you.
CHAPTER 1
INTRODUCTION

Pestalozzi advised teachers:

Lead your child out into nature, teach him on the hilltops and in the valleys. There he will listen better, and the sense of freedom will give him more strength to overcome difficulties. But in these hours of freedom let him be taught by nature rather than by you. Let him fully realize that she is the real teacher and that you, with your art, do nothing more than walk quietly at her side. Should a bird sing or an insect hum on a leaf, at once stop your walk. Bird and insect are teaching him; you may be silent. (As cited in Mayer, 1964, p.49)

The National Park Service was not formally established as an agency of the federal government until Congress passed its enabling act of August 1916, but even before this there was an interest in developing educational resources to help teach visitors about the natural and cultural features of the national parks (Smith, 2002). By the 1960s, the National Park Service started experiencing a new phenomenon in many of its national parks as visitation soared. This, in turn, caused several problems. Campgrounds were packed. Meadows were trampled. Regeneration could not occur. Traffic jammed roads, blocked entrances into parks and with more people and traffic came crime. Equally as important as the technological needs were the environmental needs of the park sites. Therefore, in 1968, environmental education was introduced into the National Park Service. It grew simultaneously with a national concern for environmental quality (Ford, 1981). In the National Park Organic Act of 1916, the National Park's purpose was set:

...to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (U.S.C., Title 16, sec. 1).
National Park Service personnel have used this general statement in their rationale for carrying out environmental education within the agency. However, there are important laws that gave the agency a legal basis for carrying out environmental education within the park. These included the following:

1) The National Park Service Act of August 7, 1946, which granted the National Park Service legislative authority for interpretive activities and legislation that has specific regard to environmental education.

2) The National Environmental Policy Act of 1969, which required federal agencies to disseminate environmental information.

3) The Environmental Education Act of 1990, which authorized the cooperation of all federal agencies with the Secretary of Health, Education and Welfare, whose department was selected for the primary responsibility for environmental education in our nation.

Today, the National Park Service offers some of the richest educational opportunities imaginable. Units of study developed by the National Park Service offer a wide range of activities including ranger-led walks, video presentations, and in some cases formal curriculum based activities. In 1992, the National Park Service and the National Park Foundation launched the Parks As Classrooms (PAC) program. Its objective was to introduce national park resources to students and teachers nation-wide. Today, this program includes approximately 250 units of the NPS, with new additions every year.

According to the National Park Foundation, the major goals of the program are:

1) To promote the parks as learning laboratories to develop a greater awareness, understanding, appreciation, and commitment to the
preservation and restoration of the National Park System and larger environment on which it depends,

2) To promote an improved educational system in this country by assisting teachers in the development of more interactive lessons that incorporated park resources,

3) To integrate research and interpretive programs of the NPS into the broader educational goals of communities and schools through partnerships. (Smith, 2002, p.2)

The Parks As Classrooms program was decentralized with national parks contacting local school districts to determine how their resources could best fit into the educational curriculum. In the fall of 1991, Glenn Bogart, the principal of Pi Beta Phi Elementary School, and W. Eugene Cox, former Chief of Interpretation for the Great Smoky Mountains National Park, discussed the development of a thematic ecosystem curriculum for Pi Beta Phi Elementary School in Gatlinburg, Tennessee. This curriculum was to be developed and implemented in partnership with the Great Smoky Mountains National Park (GSMNP). At the time it was agreed to develop a Parks As Classrooms curriculum that would encompass all nine grade levels of the elementary school, grades kindergarten through eight (Cox, 1996).

Today, the program integrates a natural and cultural curriculum experience with the national park through six thematic units: interactions, culture, patterns, change, order, and structure. The program includes 453 students, 25 homeroom teachers, 11 teaching assistants, 5 special area teachers, and a number of parents. Over the course of nine years, students at Pi Beta Phi have the opportunity to make multiple visits to the Great
Smoky Mountains National Park. The present curriculum includes 37 field experiences into the park over the nine years students attend the school.

The Parks As Classrooms curriculum at Pi Beta Phi Elementary School has three clear, measurable project goals. First, the program seeks to instill in students an appreciation of the unique cultural and natural heritage of the Southern Appalachian region. Second, it provides a variety of rewarding interdisciplinary experiences, which take the students from the classroom to the park setting. Finally, it seeks to increase the awareness and appreciation of the mission and resources of GSMNP. These goals are evaluated on each grade level by pre and posttesting, classroom activities, and teacher assessments (Cox, 1996).

The focus of the primary grades is to introduce students to the basic mission and resources of the NPS. Students in the intermediate grades explore the cultural and natural resources of the park in greater detail. By the time students have progressed throughout the program into the upper grades they have developed a sense of ownership of the park.

It is important to note the demographics of Sevier County, TN, in order to better understand the significance of the PAC program. Sevier County is located in East Tennessee. The community is primarily rural, but the economy is based in tourism, retail, and hospitality within the four main cities: Sevierville, Pigeon Forge, Gatlinburg, and Seymour.

The Sevier County School System is an average sized system for East Tennessee. There are 24 schools that serve 13,356 students. There are six elementary schools, four primary elementary schools, two intermediate schools, four middle schools, four high schools, and four specialty schools. The ethnic ratio consists of white (97%), African
American (0.7%), Hispanic (1.3%), Asian (0.7%), and Native American (0.3%). The school system has 2718 students (21.7%) who are served under Title 1 and 5775 (41.9%) who are considered economically disadvantaged. This number is lower than it might be due to the low numbers of economically disadvantaged reported at the high schools. Twelve of the 14 schools included in this study have student populations over 50% economically disadvantaged.

   The site visits into the GSMNP play an integral part in the curriculum. They allow students to experience biological diversity, unique cultural heritage, critical resource management issues, and the complex relationships that exist between people and their natural environment. These on-site visits also give students an opportunity to better understand the National Park Service's role of resource conservation and stewardship.

   Statement of the Problem

   There is insufficient literature to conclude that interdisciplinary, environmental education programs are, in fact, a valid curriculum for increasing student achievement, knowledge of environmental issues, and knowledge of cultural issues associated with the national parks of our nation. The purpose of this study was to determine how successful the PAC program at Pi Beta Phi was perceived to be based on student achievement, community opinion, parental opinion, and teacher opinion.

   Research Questions

Based on the statement of the problem, three encompassing research questions were addressed:

1. What does the PAC program look like today?
2. How satisfied are the stakeholders with the present PAC program?
3. How does the PAC curriculum impact student achievement?
Significance of the Study

Since its inception in the early 1970s, the field of environmental education has dramatically matured, and the number and variety of educational programs has been on the increase. PAC is one of these programs. In 1992, the National Park Service began the development and implementation of the Parks As Classrooms program. Almost simultaneously, Great Smoky Mountains National Park, in partnership with Pi Beta Phi Elementary School in Gatlinburg, Tennessee, began the development and implementation of their Parks As Classrooms curriculum.

With this increase in the number of programs comes the need for extensive evaluation. This is especially critical because of the role of high stakes testing currently being supported by state and federal governments. Evaluation at this time is necessary to ascertain if the educational community, the local community and the National Park Service (NPS) perceive Parks As Classrooms (PAC) is an effective, worthwhile project.

Many different individuals, groups, and organizations should benefit as a result of this research. First, Pi Beta Phi Elementary School should benefit. This would include the administration, students, and teachers. The city of Gatlinburg, Tennessee could also benefit by knowing the moneys allocated to the school by the city are being spent wisely. The Sevier County School System could benefit as other schools in the county might consider using this curriculum if the research results are positive. Finally, Great Smoky Mountains National Park and the National Park Service should also benefit as this evaluation model could be applied to similar PAC programs in the nation and the results could be generalized to similar programs around the country.
Besides being the most visited national park in the United States, GSMNP is in the unfortunate position of being placed on the America’s Ten Most Endangered National Parks list for 2004. The National Parks Conservation Association (NPCA) has distributed this list since 1999. This is the sixth consecutive year GSMNP has been placed on the list. “Air pollution continues to be the biggest threat to the park and its visitors, but other dangers confront the Smokies,” said Greg Kidd, associate director of NPCA’s Southeast regional office. Kidd also cited the high potential for development and continued inadequate funding also places GSMNP at-risk (National Parks Conservation Association, 2004).

However, these threats have not gone unnoticed. In 1999 an Environmental Protection Agency (EPA) ruling mandated that power plants update their systems to reduce pollution emission but gave the power plants until 2070 to comply. This ruling should help restore the air quality in many national parks and wilderness areas to pristine conditions. Similarly, in 2001 former Tennessee Senator Fred Thompson sent a letter to President George W. Bush urging him to support stronger clean air protections for national parks (National Parks Conservation Association, 2001). Likewise, current Senators Bill Frist and Lamar Alexander have continued to support GSMNP and other wildlife areas through increased federal funding. With the Interior Appropriations Bill for fiscal year 2004, they announced over 12 million dollars were allocated for Tennessee forests and national properties. Of the 12 million dollars, 2.36 million went for the GSMNP to rehabilitate comfort stations and picnic facilities throughout the park. Tennessee natural resources and park services must be preserved for future generations,” said Senator Frist. Senator Alexander added, Senator Frist and I will continue our work
to bring conservation dollars to our state to protect its natural beauty” (Frist, Alexander Announce, 2003).

The significance of the study is two-fold. First, with ever increasing numbers of environmental education programs comes the need for evaluation. The state and nation have started school systems, schools, and teachers down a road to high stakes testing in which they are accountable. School curricula must be effective, or they will not be acceptable. Finally, with the current threat to GSMNP and other wildlife area, environmental education programs such as the PAC project at Pi Beta Phi Elementary School could be instrumental in developing a constituency interested in protecting and preserving these areas.

**Limitations and Delimitations**

1. The data collection procedures may have influenced the quality of the data collected.

2. The parents participating in the survey were limited to the parents who had children enrolled in the school at the time of the study.

3. The willingness of the participants to give careful, thoughtful, and truthful responses could have been a determining factor.

4. The Likert scale choice of responses to the survey instrument "strongly agree", "agree", "uncertain", "disagree", and "strongly disagree" are interval in nature, thus allowing for interval level statistics to be used in the interpretation of data.

**Definitions**

1. Outdoor Education: - Outdoor education is education "in", "about", and "for" the outdoors (Donaldson & Donaldson, 1958).
2. Environmental Education: - Environmental education refers to the education about the total environment, including population growth, population, resource use and misuse, urban and rural planning, and the demands modern technology has placed upon natural resources (Ford, 1986).

3. Great Smoky Mountains National Park: - The Great Smoky Mountains National Park (GSMNP) became a national park on June 15, 1934. Its lands encompass parts of Eastern Tennessee and Western North Carolina and is the most visited national park in the United States.

4. National Park Service: - In this study the National Park Service refers to staff members in the Great Smoky Mountains National Park.

5. Pi Beta Phi Elementary School: - Pi Beta Phi Elementary School is a K-8 school located in Gatlinburg, Tennessee, at the foot of the Great Smoky Mountains.


7. National Environmental Study Areas (NESA): - A program through which the national park service established environmental study areas within National Parks (Ford, 1981).

8. Parks As Classrooms (PAC): - Educational programs developed by the National Park Service. One of these programs was developed in conjunction with Pi Beta Phi Elementary School (Smith, 2002).

9. Communities: - Communities refer to the people, businesses, political, and civic organizations of Gatlinburg, Tennessee and Sevier County, Tennessee.
Overview of the Study

This case study investigated the Parks As Classrooms curriculum at Pi Beta Phi Elementary School in Gatlingburg, Tennessee based on stakeholder involvement and attitudes as well as student academic achievement. Chapter 1 begins with an introduction to the study and contains the statement of the problem, research questions, definitions, and an overview of the study.

Chapter 2 includes a review of related literature. The historical developments of environmental education and the beginnings of the Parks As Classrooms curriculum at Pi Beta Phi Elementary School are reviewed. Finally, related research findings from similar studies were discussed.

Chapter 3 includes the methodology of the case study, the instruments used, design of the research, and the procedures used in collecting the data.

Chapter 4 is a presentation of data. This includes the data obtained from field trip observations, interviews, survey instrument, pretest-posttest data, and a review of Terra Nova test scores. The research questions and the null hypothesis are reviewed and answered.

Chapter 5 concludes the study with a summary, findings, conclusions, and recommendations.
CHAPTER 2
REVIEW OF LITERATURE

Historical Development

Philosophical Underpinnings

The history of outdoor education is neither clear nor concise. There was no founder, no creator, no first pioneer; it has simply evolved throughout history. The historical roots of outdoor education can easily be linked to the historical roots of humanity because the first learning of human kind took place outdoors. However, several recognized and revered leaders as well as several documented programs deserve mention.

First, two examples from ancient history set the tone. About 3000 B.C., Thomas, an Egyptian king, criticized learning by reading and writing alone as inadequate for true memory and true learning, which he believed occurred through experimentation and experience. Thales, a Greek scientist, is recognized as the first person to apply geometric principles to practical use, by teaching his students to calculate height from shadows and distance by triangulation (Eby & Arrowood, 1934). Similar techniques are implemented today in many outdoor education activities.

In the 1700s Jean Jacques Rousseau wrote the educational novel, *Emile*. Of all his essays and books, *Emile*, is considered by many as the most significant for education. In this novel, Rousseau tells the story of an orphaned boy whose total upbringing or education, from infancy to adulthood, was provided by a tutor. In the novel, several important themes of Rousseau's theory emerge. The one most applicable to outdoor
education is where education took place. For Rousseau, Emile’s prepared environment was a country estate where the growing boy could experience nature directly (Gutek, 1991). For example, Rousseau (1909) stated,

> Call your pupil’s attention to the phenomena of nature, and you will soon render him inquisitive. But, if you would keep his curiosity alive, do not haste to satisfy it. Ask questions that he can comprehend, and let him solve them. Let him know a thing because he has found it out for himself, and not because you have told him of it. Let him not learn science but discover it. If once you substitute authority for reason, he will not reason any more; he will only be the sport of other people’s opinions (p.124).

This idea implied that learning in the outdoors is a process. Here, Rousseau recommended the Socratic method along with the discovery approach.

One of Rousseau's contemporaries, Johann Heinrich Pestalozzi also advocated a natural education. He developed a theory of sensory learning based on the concept of *anschauung*, which is a German word that means forming a concept from sense impressions. He said the way people learn in life is by having experience with the physical objects that make up the world in which they live. Human beings use the senses to convey data to the mind. Then, the mind sorts out the data and arranges them into concepts. Only after this is sorted out is it given a name. Because he suggested people learn this way in life, he maintained that it should be transferred to the school setting (Ornstein & Levine, 1989).

Along with these ideas, Pestalozzi designed his famous object lessons. During these lessons, the children, guided by the teacher, examined the form, shape, quantity, and weight of objects. Only after having direct experience with the objects did they learn the name of the objects. In order to give the students these direct experiences, they met with the environment. Pestalozzi organized nature study field trips into the surrounding
countryside where students collected minerals and plants. They studied and observed the
movements of animals and birds. Geography lessons focused first on the immediate
vicinity, moving from the schoolyard into the neighborhood and on into the countryside
(Gutek, 1991). For instance, Pestalozzi (1938) stated, “The most essential point from
which I start is this: - Sense impression of Nature is the only true foundation of human
knowledge” (p. 200). These are classic examples of what is incorporated into
outdoor/environmental education today.

An examination of the leading innovators in education would not be complete
without looking at some of the principles advocated by John Dewey. As the director of
the University of Chicago's Laboratory School from 1896 to 1904, he tested his
pragmatic educational philosophy by using it as a basis of learning activities (Gutek,
1986). Several of his principles can be directly related to activities incorporated into
ideas of outdoor education. First, his belief that education must engage with and enlarge
experience has continued to be a significant stand in outdoor education practice. Next,
his concern for interaction with environments in order to learn provides a continuing
framework for practice. Four key texts can be cited to show this relationship. First, in
1910, Dewey wrote How We Think in which he explored thinking and its relationship to
learning. In this text Dewey (1910) stated, "Thinking involves (as we have seen) the
suggestion of a conclusion for acceptance, and also search or inquiry to test the value of
the suggestion before finally accepting it (p. 30)” Dewey said this statement involved
three things. First, there is a need for a store of experiences and facts from which
suggestions proceed. Second, promptness, flexibility, fertility of suggestions is necessary,
and orderliness, consecutiveness, and appropriateness of what is suggested is necessary.
Then, in 1916, Dewey wrote *Democracy and Education: An Introduction to the Philosophy of Education*. In this text Dewey wrote about the need for education in a democracy, the sharing of a common life, and the reconceptualization of vocational education. For instance, Dewey (1916) stated, "When a parent or teacher has provided the conditions which stimulate thinking and has taken a sympathetic attitude toward the activities of the learner by entering into a common or conjoint experience, all has been done which a second party can do to instigate learning (p. 188)." Next, in 1929, *Experience and Nature* was published. In this book Dewey explored the relationship of the external world, the mind, and knowledge. Finally, in 1938, *Experience and Education* was written in which Dewey outlined a philosophy of experience and its relationship to education (Field, 2001).

Dewey also outlined three levels of activity that would be effectively used at the school. The first level, prescribed for preschool children, involved exercise of the sensory organs and the development of physical coordination, which is also consistent with the ideas associated with environmental/outdoor education today (Field, 2001).

**Early Programs**

Johan Friedrich GutsMuths taught at the Schnepfenthal Educational Institute, which is located on an estate near Gotha, Germany. He said that most educational institutions of the day were not aware of the importance of what he called gymnastics. He argued that through promoting the health of its people a nation would become stronger. He said exercises should have the purpose of harmonizing the mind and the body. Like Rousseasu, he argued that the body should be developed first, an only after the development of the body can the mind and its processes be developed. Because of his
50 years of experience and the books that he wrote, GutsMuths is considered the real founder of physical education (“An Abbreviated World History,” n.d.).

Another German, Friedrich Lidwig Jahn was also a pioneer in the field of physical education. Jahn’s studies were based on the work of GutsMuths. In the early 1800s after leaving the university, Jahn spent several years writing and teaching gymnastics. It was during these years that Jahn witnessed the Prussian defeat and attributed it to the cultural influences of the French occupation. In 1809, he decided to move to Berlin in order to work toward his objective of a unity of German states (“An Abbreviated World History,” n.d.).

While in Berlin, he first became an auxillary teacher at the Friedrich Werdeschen Gymnasium and became involved with other patriots with the same goals. During the spring of 1811, the German Turnverein movement began. Jahn coined this name from the Teutonic word *turnen*, which means to perform gymnastic exercises. Jahn established the first turnplatz, or outdoor gymnastic field, just south of Berlin. On June 19, 1811, the first Turnfest, or outdoor gymnastic festival was organized. The following year the Hasenheide Turnverein was organized and the number of exercises offered were increased. That same year Jahn and Friesen established the Gymnastics Association with the goal of spreading the program throughout Prussia (“An Abbreviated World History,” n.d.).

Politically, Jahn continued to work for a united Germany. In 1813, Jahn and a group of his gymnasts joined the Lutzow Free Corp, which fought as a unit in the German states war of liberation from France. This lasted until 1815 (“An Abbreviated World History,” n.d.).
After the war, Jahn formed the Nationalist Gymnasts. Together with the Burchenscheft, Patriotic Students, the two groups continued to be very active at the universities. What started out as peaceful protest soon became very violent and dangerous (“An Abbreviated World History,” n.d.).

By 1819, the liberal movement had gained strength and King Fredrich Wilhelm III was losing control of the situation. At this point it became necessary for something to be done. On July 19, 1819, Jahn was arrested on suspicion of treason. On January 20, 1820, the Prussian government banned all gymnastics and ordered all of the gymnastic fields closed. Jahn was released from prison on May 20, 1820, but was forced to live under house arrest in Kolberg until 1825. The gymnastic fields remained closed until 1842 (“An Abbreviated World History,” n.d.).

It was during this political unrest that one of Jahn’s followers, Karl Beck moved first to Basel in 1823 and then to New York in 1824. Once in the United States, he secured a position at Round Hill School in Massachusetts. Beck is credited for becoming the first physical education teacher in America (“An Abbreviated World History,” n.d.).

Prior to establishing Round Hill School, both Joseph Cogswell and George Bancroft spent time touring Europe. In fact, Cogswell visited Schnepfenthal. In a letter dated March 8, 1817, he described Schnepfenthal as the “admirable institution of Salzman” (Marburg-Cappel, 1997, p.237). Likewise, Bancroft attended Schleiermacher’s lecture on the pedagogy of the University of Berlin. Bancroft stated, “I have taken a course of lectures with Schleiermacher on the science of education; it is the most interesting which I have yet attended.’ (Howe & Strippel, 1908, p. 90)
Schleiermacher was a close associate of Jahn’s. These associations led to the German connection with America’s physical education programs.

In the United States, outdoor/environmental education began with Joseph Cogswell and George Bancroft at Round Hill School, which existed from 1823 to 1834 in Northampton, Massachusetts. This institution offered the unique allotment of two hours per-day to physical education as part of the regular school curriculum. The following excerpt was in their first prospectus for the school:

…. certainly in the pleasant days of spring and autumn, so far from compelling them to remain at home, we encouraged them to go abroad and learn to feel the beauty of creation and the benevolence of its author. Short journeys, whether on foot or by other means of conveyance, might quicken their powers of observation, and by refreshing and strengthening their bodies, prepare their minds for more profitable application (Cogswell & Bancroft, 1823, p.8-9).

The students at Round Hill were involved in many different activities. The most remarkable was the construction of Crony Village by the boys themselves. John Murray Forbes, a former Round Hill boy, related the building of the village this way, "In parties of twos and threes we burrowed into the side hill, made a low chimney, and front door, looking south, with height enough to stand erect and a real lock and key" (Hughes, 1899, p.44). The boys used brick, wood, and dirt to construct the buildings. While at the village, the boys hunted and trapped and roasted corn and baked potatoes in ashes for their meals. The boys also occasionally went to neighboring farmhouses for pies and doughnuts. However, on one such instance, one of the boys flirted with the farmer's daughter. He was expelled from school and Cogswell ordered Crony Village destroyed (Donaldson & Goering, 1972).

What impact did life at Round Hill School have on its pupils? It seemed to have had a very positive impact. The students at Round Hill apparently enjoyed excellent
health. During the 16 months there, Cogswell reported that there were no illnesses and almost no study time lost from minor ailments. Forbes also declared that the relations with Mr. Cogswell, and the other teachers were a virtue of the school. Upon leaving Round Hill School, Forbes provided an interesting personal evaluation:

> When I left it (Round Hill) in 1828 to enter my uncle's Boston office, I was strong, healthy, and self-reliant, though not remarkable in any degree; a fair swimmer, a good shot, and best of all a good rider; and I never can be grateful enough for the advantages which Mr. Cogswell conferred (Hughes, 1899, p. 46).

Hence, the contribution of Round Hill School in outdoor/environmental education is well documented.

In 1861, Frederick William Gunn established the Gunnery School for Boys in Washington, Connecticut. In this project, Mr. and Mrs. Gunn used camping as an organized, educational project. Every two years they took the entire student body on a two-week trip to Milford on the Sound to go boating, fishing, hiking, and sailing (MacMillan, 1956). A series of camps for the boys was held from 1861 to 1879. The number of campers increased from 60 in the early years to more than one 100 in the latter years. The camping experience was an integral part of the school regime.

The first camping experience was described in a letter to Eugene H. Lehman, who was working on an article for Encyclopedia Britannica. The letter is from Mary Gunn Brinsmade, the daughter of Frederick Gunn. This excerpt, as stated by Gibson (1936), concerns the beginnings of the camping ventures:

> In the summer of 1861, Mr. and Mrs. Gunn took the whole school on a hike, or a gypsy trip, as it was called, about four miles to Milford, on the Sound near New Haven. This trip took two days. The tents, baggage, supplies, etc. were carried in a large marked wagon. There were also a few comfortable carriages and two donkeys, but many walked much and some of the boys all the way. Camp was established on the beach at
Welches Point and around Camp Comfort. Here two happy weeks were spent boating, sailing, fishing, and trapping. This proved such a helpful and delightful experience that Mr. Gunn repeated it in the years 1863 and 1865. (p. 26)

These two programs were established for the purposes of exercise, observation, and educational activities. Each program contained elements of physical education, natural history, and social adjustment and included what would be called recreational activities today. At the same time, neither of the programs contained any components concerned with the stewardship of the environment (Ford, 1981).

Very few schools operated outdoor education programs prior to the 1930s; however, the number of organized summer camp programs significantly increased. Between 1890 and 1912, the YMCA, YWCA, Boy Scouts, Girl Scouts and Camp Fire Girls were all initiated. By 1910 several professional associations of camp directors merged to form the Camp Directors Association, presently the American Camping Association. William Gould Vinal became the president of the National Association of the Directors of Girls' Camps in 1920. In 1914, he and Professor Alice Hamilton Belting of Vassar established Camp Chequesset at Wellfleet, a seafaring camp for girls that operated 14 summers. It is here that Vinal was affectionately dubbed Cap'n Bill. Through his influence thousands of campers and students learned natural history, and thousands of "nature recreation leaders" were trained (Ford, 1981).

One of the most influential individuals in outdoor education was L.B. Sharp. Sharp received his doctorate from Columbia University, where he wrote the first dissertation on outdoor education in 1929. In 1925, the Life Fresh Air Fund opened two sites that later became Life Camps. One of the camps was located in Branchville, Connecticut, and the other in Potterville, New Jersey. These two camps would soon
merge into one camp at the New Jersey site. Sharp was hired as the director, and the studies he conducted the first years at the camp served as his dissertation (Ford, 1981).

Sharp's (1930) dissertation provided for several changes in organization that were done at the camp. His study explored the background of the programs, surveyed operation of the program, and described the reorganization plans, which he began implementing in 1925. First, Sharp established a philosophical base for education in camp life through determining the values in camping and their relationship to the aims of education. Then, he developed and applied principles for evaluating activities in the program, identified situations favorable to learning, and implemented plans for reorganization. The "Standards for Camp Program" changed the philosophical underpinnings of the life camps (Donaldson & Goering, 1972).

In the 1930s Sharp began to turn his attention toward the effects of camping on education in public schools. In 1934, he became involved in a program conducted with sixteen New York City school dropouts in an attempt to determine what subjects could best be taught through direct experiences in the outdoor classroom (Ford, 1981).

By 1940, some public schools had begun camping education and others were considering developing such programs. Understanding the need for trained leadership, Sharp established the National Camp for the purpose of training leaders. Through the financial contributions of Miss Doris Duke, the National Camp opened as a professional training facility in 1940, with a six-week session as the first offering. Throughout the 1940s, six-week summer sessions were offered at the National Camp. From 1940 to 1953, the National Camp also conducted many workshops and clinics (Ford, 1981).
In 1951, with some help from several associates, Sharp developed the idea of establishing an organization that would help other agencies provide outdoor education related services. Finally, in 1953, Sharp became Executive Director of the Outdoor Education Association, Inc. The Association provided a wide range of services. Its objectives included the following:

1) Promotion of living and learning in the out-of-doors as an integral part of the education and organizations. 2) Dissemination of information through materials, publications, and films. 3) Training of leaders at National Camp in summer sessions, short institutes, pilot and demonstration projects and workshops. 4) Research and study of problems and new frontiers in operation of children's camps and related projects. 5) Field services and consultant assistance- to communities, agencies, and institutions program surveys, plans for camp layout, leadership training programs, and study groups (Ford, 1981, p. 34).

In 1959, Sharp became a faculty member at Southern Illinois University as a guest instructor. In 1960, he took a half-time faculty position while directing the Outdoors Education Association, Inc. The following year Sharp moved the offices of the Outdoor Education Association, Inc. to the campus of Southern Illinois. On December 4, 1963, Sharp died. His contributions to outdoor education are well documented (Donaldson & Goering, 1972).

**Trends and Movements**

There were three trends of the conservation movement leading up to environmental education: nature study, outdoor education, and environmental education. As early as 1864, George Marsh wrote *Man and Nature*, which marked the beginning of the conservation movement. Soon afterward, Wilber Jackman published *Nature Study for the Common School*. Jackman's book helped publicize the nature study concept in the United States (Good, 1956). During this phase of the conservation movement, nature
education appeared. The primary focus of this movement was to develop an understanding and respect for the environment and to develop the powers of accurate observation. This focus seemed to imply that if someone became interested in the environment they would be more concerned with environmental issues (Swann & Stapp, 1974).

Around 1900 during the Theodore Roosevelt administration, this movement saw its greatest growth. During Roosevelt's two terms as President of the United States, he accomplished many things in the area of conservation. He was able to set aside 150 million acres of national forest land, established the first wildlife refuge, added five national parks and many national monuments to our federal land holdings, and established the National Park Service (Environmental Defense, 2003).

During the late 1920s outdoor education was strongly emphasized through the work of L.B. Sharp and Julian Smith. The influence of outdoor education was at its height during the middle 1900s. Sharp’s (1943) ideas on outdoor education were stated in this manner,” That which can best be taught inside the schoolrooms should there be taught, and that which can best be learned through experience dealing directly with native materials and life situations outside the school should there be learned (p. 363)” Smith’s philosophy was that outdoor education had no content of its own. These two men continued to be very influential in outdoor education for years to come.

The "Dust Bowl" mentality of the 1930s led to the rise of conservation education in the United States (Nash, 1976). The main objective of this movement was to improve the understanding of environmental problems and the importance of conserving national resources. Resource management agencies such as the United States Forestry Service,
National Park Service, and the United States Fish and Wildlife Service played major roles in supporting this initiative (Braus & Disinger, 2002). In 1935, The National Education Association joined this initiative stating:

Forests, soils, grasslands, water, minerals, oils, fish, game, and scenic beauty are among the rich natural endowments of the areas of the North American Continent covered by the United States… a general knowledge of appropriate remedial and preventative conservation procedures are among the marks of an educated citizen. Since future welfare and safety depends on those things, the schools may well assume considerable responsibility for checking the ravages upon the heritage of the nation made by ignorance, indifference, carelessness, and unbridled selfishness (as quoted in Funderburk, 1948, p. 151).

Between 1940 and 1950, resident outdoor schools witnessed growth. First, in 1940, the W.K. Kellogg Foundation turned over its Clear Lake Camp program to three school districts in the Battle Creek, Michigan area. The camping and outdoor education phase of the program got underway about September 1, 1946, when an Advisory Committee was appointed to oversee the efforts of the diverse groups and to explore the many possibilities (Elliott & Smith, 1947). In 1945, Michigan became the first state to enact legislation permitting boards of education to lease and acquire property for these purposes (Elliott & Smith) A program in San Diego, California at Cuyamaca State Park was conducted around the same time. Educators and interested citizens conducted an experimental community camp in the spring of 1946. The results were very positive. Pumala (1947) stated, “The results from a considerable investment of time and effort and a relatively modest outlay of money have been very satisfying to all concerned (p. 100).

In 1944, Dr. L.B. Sharp began the National Camp. Working through the Teachers Colleges of New Jersey and New York, the National Camp began a series of conferences in which selected faculty members and students were invited to attend. Along with these
sessions, graduate level summer sessions were offered to educators and youth workers from all over the nation with credits offered by New York University (Smith, Carlson, Donaldson, & Masters, 1972). Sharp was the first person to use the term "outdoor education" as a way to explain his work. It was during this period that this term became more frequently used in conjunction with resident outdoor schools (Donaldson & Goering, 1972). The period during the 1950s saw the rapid growth of resident outdoor schools and a greater emphasis on other locations including the use of school sites and other areas for “out of the classroom experiences.” In 1954, the Outdoor Education Project of the American Association of Health, Physical Education, and Recreation was initiated, and it broadened the scope of the term to include teaching skills and attitudes and appreciation, which were necessary to satisfy outdoor pursuits. This project helped outdoor education to keep pace with the growing interest in the subject. It also allowed outdoor education to encompass more aspects of the school curriculum, especially in the area of physical education and recreation. "Education in and for the outdoors" came to be a common definition for outdoor education. In 1953, the interdisciplinary approach to outdoor education was emphasized at a National Conference on Teacher Education for Outdoor Education. Finally, Taft Field Campus was established at Northern Illinois University. The first director of the program was Mr. Paul Harrison. He was extremely instrumental in hiring a very competent staff. Several of the staff members had been associated with other well-known programs (Donaldson & Goering, 1972).

In the 1960s outdoor education continued to grow and an increasing concern over environmental problems led to the movement toward environmental education. First, Title III of the Elementary and Secondary Education Act of 1965 was responsible for the
development of over 50 outdoor education programs. Many of these programs continued to flourish after federal funding had diminished (Donaldson & Goering, 1972). At this time the teaching of outdoor skills and in-service programs for teachers and administrators increased. Several colleges, including Indiana University and Penn State University, developed graduate study programs in the field of outdoor education (Hammerman & Hammerman, 1964). Also, in the 1960s, the shift began toward environmental education. This thrust began when Rachel Carson (1962) expressed some disturbing concerns over the use of chemical insecticides in the environment. She argued that poisonous and biologically dangerous chemicals had been placed in the hands of people who were ignorant of their potential to damage the environment. She claimed we were caught in a cycle in which the insects had evolved in super races immune to previously used insecticides causing more and more dangerous insecticides to be developed. The writing of Edward Abbey, Paul Ehrich, John Muir, and Henry Thoreau continued to fuel this movement. In addition, several ecological disasters such as M/V Torrey Canyon oil spill, Agent Orange, and DDT stirred public opinion (Schmied, 2000).


The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and
commitment to work individually and collectively toward solutions of current problems and the prevention of new ones (p.2).

The Tbilisi Declaration (1978) called environmental education a learning process that increases knowledge and awareness about the environment. Environmental education developed skills that enable responsible decisions and actions that impact the environment, and it encouraged inquiry and investigation. It enabled learners to develop such skills as critical thinking, problem-solving, and effective decision-making. Finally, it allowed individuals to weigh both sides of an environmental issue, but it did not advocate a particular viewpoint or action.

In 1968, the National Park Service became involved in environmental education. This was due in part to problems caused by increased visitation to national parks resulting in packed campgrounds, traffic jams at park entrances, and the park environments impacted through trampling of meadows and impeding the regeneration of plants and flora. Because the purpose of the NPS was to conserve, it seemed imperative for the parks to become involved in education. The following is an excerpt from the Organic Act of 1916, which established the National Park Service as a federal agency:

> to conserve the scenery and natural and historic objects and the wildlife therein and to provide for the enjoyment for the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations (U.S.C., Title 16, sec. 1).

For years personnel of the park service used the phrase "in such manner and by such means" in the statement as a rationale for becoming involved with environmental education. However, since the late 1960s and early 1970s, several important laws have been passed to give the agency a legal basis for carrying on the environmental education programs. The following list shows several important examples:
1. Act of August 7 of 1946 (16 U.S.C. 17j-2) granted the National Park Service legislative authority for interpretive activities and legislation that has specific regard to environmental education.


3. Environmental Education Act of 1990 (20USC 1531-1536) authorized the cooperation of all federal agencies with the Secretary of Health, Education and Welfare, whose department was selected for the primary responsibility of environmental education in our country.

The rationale behind placing environmental education within the scope of the National Park Service was three fold. First, the National Park Service was responsible for the wise stewardship of some of the nation's most valued lands, and its need forestalled environmental degradation in order to maintain the integrity of the National Park Service. Second, the National Park Service was required to produce effective environmental impact statements. Finally, the National Park Service worked with scientists, resource managers, and other professionals from around the world. These individuals used national park areas for research and/or as examples to emulate in their own nation's park.

(Ford, 1981, p. 268)

**History and Descriptors of Environmental Education Programs in the National Park Service**

Bill Everhart (1967), assistant director for interpretation, declared that interpreting park resources to park visitors was not enough:

First, our interpretive programs have traditionally been limited to the parks themselves. We have concentrated mostly on telling the park story to
visitors… Secondly, we have had a tendency to interpret a park in terms of its resources. We have not effectively carried out an educational campaign to further the general cause of conservation... Only through an environmental approach to interpretation can an organization like ours, which has both Yosemite and the Statue of Liberty, achieve its purpose of making the park visitor’s experience fully significant (p.4)

On February 11, 1968, National Park Service Director George B. Hartzog, Jr., announced a series of new programs at the Lincoln Boyhood National Monument. He called this first program "A Cooperative Program for Environmental Conservation."

Shortly after the first statement he issued a memorandum to all National Park Service employees that included these statements:

The concept of total environment includes man and all his works. His history is in effect an outgrowth of environment at earlier periods. The natural worlds and man's cultural heritage join in support of the present environmental education concept (as cited in Ford, 1981, p. 270).

In this memorandum Hartzog announced the undertaking of two programs in environmental education. First was the development of curricula-integrated materials to be used in schools. Second was the establishment of environmental study areas with park areas. These programs were to be "developed and carried on in cooperation with existing school systems.” The first program was named the National Environmental Education Development (NEED). The NPS worked with Mario Menesini, director of the Educational Consulting Service, to develop materials for schools. The NEED program used the following five strands intending to develop environmental awareness and values: (1) variety and similarities, (2) patterns, (3) interpretation and interdependence, (4) continuity and change, and (5) adaptation and change. These strands were to be interwoven into all subjects taught in school and into all interpretive park programs (Mackintosh, 2000). Throughout this program, the National Park Service produced curriculum-relating materials for elementary schools, grades K-8. This program was
multidisciplinary, used the concept approach, and fitted it against most often-used curricula objectives across the nation. Even though the concepts are still used and materials still sold, the development of new materials ended in 1976 (Ford, 1981). The second program came to be called the National Environmental Study Areas (NESA). A National Park brochure described NESA as...

...natural or cultural sites...with high potential for, and active programs in environmental education. Usually, the schools and/or parks involved with these sites developed study guide material, which aided students in understanding the processes and dynamics to be found there, and help them to relate the area's resources to people's use of them. (Ford, 1981, p. 270.)

By 1975, 80 parks had one or more NESA’s being used by approximately 180,600 students from 202 school systems throughout the nation (Mackintosh, 2000). Bill Dunmire, former chief of interpretation, cited a “slough slog” at the Everglades National Park and an ecology float trip at Yosemite as examples of successful programs. Dunmire (1975) wrote, “The new breed of interpreters are finding that the more visitors will participate by using all their senses, by making their own discoveries and by getting into the thick of any given environment, the more they will carry away from the experience (p.4).”

One such program was developed in the late 1970s in conjunction with Clukkamas, Multnomah, and Wadhington counties in Oregon. The program is called Sunship Earth (Ford, 1981). It emphasizes seven basic ecological concepts: energy flow, cycles, community, interrelationships, adaptations, change, and diversity. This program is a weeklong experience with a variety of activities planned throughout the week. On Monday "Touch the Earth " activities are conducted. During this time, a high school student counselor guides students through a series of activities intended to create a sense
of wonder in the students and challenge them to look at things in a new way. On Tuesday, Wednesday, and Thursday, the groups rotate through four concept paths designed to teach the seven basic concepts. Each station has materials for activities designed to teach an aspect of student involvement. High school guides act as facilitators rather than lecturers. “Discovery Parties” are conducted on Tuesday and Thursday afternoon. These emphasize spontaneous discovery, individual exploration, and in-depth study of fields of interest. This is the most flexible time of the program and can be wide open for any teacher input. On Friday two things are stressed. The first is a review and crystallization of concepts that the participants have been exposed to during the week. This is done when students are instructed to create a model planet using leaves, rocks, etc. and including all necessary ecological systems. Second, passenger responsibility is stressed. For the second part of the activity, students are told their planet does not have the right conditions for life, and they must migrate to another planet. There is only one with the right conditions. This new planet quickly becomes overcrowded and damaged, which possibly illustrates what is happening today on our planet. This illustration allows students to think about what each child or adult can do to ensure a high quality of life for future generations on “Sunship Earth” (McKeever, 2003).

Another example of the program began in the fall of 1991 when Glenn Bogart, principal of Pi Beta Phi Elementary, and W. Eugene Cox, former chief of interpretation of the Great Smoky Mountains National Park, discussed the development of a thematic ecosystem curriculum for the school. At that time, they agreed to develop a Parks As Classrooms curriculum that encompassed all nine grade levels of the elementary school (Glenn Bogart, personal communication, May 13, 2002).
Great Smoky Mountains National Park includes 521,490 acres taking in the
eastern border of Tennessee and western border of North Carolina. It is distinguished by
its diversity and the abundance of plants and animals (National Park Service, n.d.). It also
has the distinction of being the most visited National Park in the United States. Pi Beta
Phi Elementary School is a K-8 school with a 90-year tradition of excellence in
education. In 1910 the Pi Beta Phi fraternity, the first national fraternity for women,
voted to establish an educational project in memory of the founders of the fraternity. The
group then contacted the Department of Education in Washington, DC to find the area of
greatest need. After visiting the mountains of Tennessee and Kentucky, Gatlinburg,
Tennessee was chosen as the site for the project. A school was started in 1912. Not until
1965 when the economy improved was the county able to take over full support of the
school, except for the art teacher, the music teacher, and full salary for the principal. At
this time the Pi Phi’s made an arrangement with the county to use the land for an
elementary school, which was named Pi Beta Phi School in appreciation for what the
fraternity had done for the community (Sevier County, 1994). Today, the school serves
432 students. The faculty consists of 39 teachers, 6 teacher assistants, and 10 staff
members (Glenn Bogart, personal communication, May 13, 2003).

After the initial planning by Mr. Bogart and Mr. Cox, the “committee of seven”
was established. This committee included four members of the school staff: Glenn
Bogart, Bill Beard, Marie Piney, and Shirley Early and three members of the National
Park Service: Gene Cox, Karen Ballentine, and Don DeFoe. They developed a mission
statement, objectives, timeline, and definitions of the park and school system. Along
with this, a five-year plan was established (Glenn Bogart, personal communication, May 13, 2003).

Program objectives were twofold. First was to restructure the curriculum to reflect the interdisciplinary nature of learning and second to design a curriculum that utilized the park ecosystem as a primary resource. These lessons and materials would be coordinated to meet the Tennessee Curriculum standards and readily adaptable for other schools and parks (Cox, 1996).

Pi Beta Phi Elementary School, along with the Great Smoky Mountains National Park, developed thematic units that integrated all subjects from kindergarten through eighth grade with a scope and sequence that tied all lessons together. These units were developed to organize units around real life concepts of change, interaction, culture, patterns, order, and structure (Cox, 1996).

During 1991-1992 project guidelines by academic years were established and students from all grade levels were surveyed. In 1992-1993, grades one, four, and six were chosen to develop pilot thematic units. These developmental teams consisted of two teachers from each grade level and two park interpreters. The first units were developed and the first field trips taken into the park. Throughout this process strategies were continually reviewed and adjusted as necessary (Glenn Bogart, personal communication, May 13, 2003).

The second phase of implementation began in May 1993, as the entire school faculty and park staff met to begin school-wide implementation. Teacher and interpreter teams were established in grades kindergarten, second, third, fifth, seventh, and eighth. Thematic units were developed during the summer of 1993. Field trip dates were chosen,
and these first units were implemented in 1994. By 1996, the comprehensive unit implementation was completed for all grade levels (Cox, 1996).

Research Involving Environmental-based Programs

Since the late 1960s, many studies have been conducted concerning the benefits of outdoor/environmental education. Most of these studies have been centered primarily on the attitudinal and behavioral benefits of these types of programs for students. The knowledge-attitude-behavior change model explained by Mathews and Riley (1995) indicates that an increase in knowledge will lead to a change in attitude, which then will influence behavior.

Several studies have also been conducted which consider the characteristics of effective programs. For instance, Knapp (1996) found that effective outdoor education programs include the following characteristics: a focus on the community, involve service learning, are interdisciplinary, use problem based learning methods, permit cooperation, and include a time for reflection. Similarly, Attarian (1996) states:

…developing values is a lifelong process. As educators we can provide our students with the experiences and tools to help them become more knowledgeable about the environment and their place in it. Participation in outdoor pursuits classes and programs can give all of us the opportunity for challenge, adventure, and excitement. Perhaps most of all, the outdoor experience offers us a chance to explore and shape our values, attitudes, and behaviors towards the environment and ourselves (p. 44).

Likewise, Howe and Disinger (1988) reported that the best strategies to use for promoting environmental awareness were case studies, field trips, community inventory projects, and community action projects. In addition, Hungerford and Volk (1990) added that effective programs require students to gather in-depth knowledge, have students to use critical thinking skills, and require students to apply what they have learned. Finally, programs most likely to change behaviors involve concrete, environmentally positive,
action oriented experiences; and include a relevant context, sustain long-term involvement, support, follow-up, and constant reinforcement by role models.

First, it seems to be important to start environmental education in the earliest years of one’s education. Tilbury (1994) and Wilson (1994) said such experiences play a critical role in shaping life-long attitudes, values, and patterns of behavior toward the natural environment. Likewise, two major premises define the rationale for environmental education during the early childhood. First, children must develop a sense of respect and caring for the environment very early, or they risk never developing these attitudes (Stapp, 1978; Tilbury, 1994; Wilson, 1994; Wilson, 1996). Tilbury (1994) said that the newly emerging field of early childhood education reflected an increasing awareness that “environmental experience in the critical phase of the early learning years can determine subsequent development in environmental education” (p. 11), and that particularly the preschool years may “prove to be critical for the environmental education of the child” (p. 11). Second, positive interactions with the natural environment is an important part of healthy childhood development (Carson, 1956; Cobb, 1977; Crompton & Sellars, 1981; Miles, 1986/87; Patridge, 1984; Sebba, 1991; Wilson, 1994; Wilson, 1996). It is also believed that these interactions with the environment enhance the learning and quality of life over the span of a person’s life (Wilson, 1994). To children who are close to nature, it is considered a source of wonder, joy, and awe. Their spirits seem to be nurtured by nature, and they discover through it “sources of human sensibility” (Wilson, 1992, p. 348).

Several studies have been conducted that seem to indicate outdoor education has a positive impact on the knowledge and attitude change toward environmental
responsibility. Bryant and Hungerford (1977) conducted a study with kindergarten students in which they presented a unit on environmental problems. From their research, they concluded that kindergarten students could understand environmental issues and citizenship problems. Similarly, Jaus (1984) found environmental instruction to have a significant impact on the attitudes of third graders. Finally, Driver and Johnson (1984) studied the impact of the Youth Conservation Corp program, a program for 15-18 year olds, which combines environmental education and outdoor work opportunities. The participants in the program indicated that they had become more environmentally aware as a result of the program.

Studies have been conducted which seem to indicate that behavioral changes can take place when the right types of activities are incorporated into the program. Ford and Blanchard (1993) state:

> Outdoor activities can create an initial sensitivity toward the environment, the first and essential step on the path toward increased understanding of environmental processes, increased understanding of our place in, and dependence upon, the ecosystem, and … to action on behalf of the environment. (p. 54)

Other studies seem to support this statement. Mathews and Riley (1995) assert that environmental responsibility should be developed in the outdoors. Outdoor activities seem to stimulate interest in the outdoors, which develops an interest to know more about the natural environment. Ramsey and Hungerford (1989) studied a seventh grade curriculum package that used environmental issue investigation and action training. After 18 weeks, the experimental group reported significant changes in behavior and knowledge of environmental problems and possible solutions to those problems.
Likewise, Howe and Disinger (1988) found that outdoor experiences were effective in the teaching of environmental issues and made a significant impact on student attitudes.

Georgi (1980) conducted a doctoral study to assist in designing the Wilderness Learning Programs (WLP's). It was an attempt to discover if the use of Wilderness Learning Programs were advantageous and if the wilderness was being used effectively. The scope of the study was limited to four areas: 1) historical and philosophical foundations, 2) a relationship between understanding life meanings, 3) the ways that WLP's can meet the needs of the students rather than an institution, and 4) the cultural need for attitudes and values through environmental education. The data collection was done primarily through questionnaires and surveys, which were administered to students the week following a wilderness trip. Three questionnaires were developed. The first was based on essay questions, the second on a quicker response with a rating scale similar to the Likert scale, and the third on perceptions of the students. The Life Learning Survey, tape-recorded interviews, was given to students who went on a particular trip. The leader questionnaires were administered to the adult learners after a trip related to the effects of the person's impression of himself as a person or teacher. After the data were examined, the researcher concluded that the field study was specifically helpful in three areas: First, the students had a better understanding of life meanings due to the field trip. Second, students learned the concepts that were taught more effectively in a wilderness context. Finally, student awareness of specific environmental problems increased after the field trips.

Lappin (1984) demonstrated that outdoor education programs have a positive impact on students with behavior disorders. Findings show an improvement in self-
concepts, social adjustment, academic achievement, and group cohesion. In other
programs, improvements were also made in relationships with peers, parents, teachers,
and counselors. Other studies showed that teachers have a greater ability to teach
specific skills due to improved academic behaviors and fewer disruptive behaviors
because programs were conducted outdoors. For instance, "Group Walk-Talk" programs,
which combined hiking and counseling in a public school program for adolescents, found
increases in peer relationships and group cohesion (Lane, Bonie, & Wallgren-Bonie,
1983). During an evaluation of the Eckard Foundation, a residential therapeutic camping
program, Griffen (1981) reported significant improvements in self-concept, personality
adjustment, and academic skill level. Burdsal and Force (1983) studied the counselor
rating of youth involved in three, two-week wilderness expeditions. The results of this
study showed that the boys were perceived as becoming more self-reliant and as
increasing in the involvement of the therapeutic process; however, there were no
significant changes in the girls. In contrast, Girls Adventure Trails, a Dallas, Texas
program specifically for girls, showed significant changes in students’ attitudes scales
and academic motivation measures (Neff, 1973).

Even though most of the studies have addressed the attitudinal and behavioral
benefits of outdoor and environmental education, several studies have attempted to
address the positive cognitive impact of these programs on students. Glenn (1968)
conducted a study with the purpose of evaluating two different methods of teaching earth
science. The objective was to improve pupils' abilities to make observations of local
geologic features and use observations in forming hypotheses. The two compared
methodologies were field trip observations and in-class observations of 35mm slides of
the same geographic features. The study involved three groups with one group going on field trip observations, one group viewing the slides, and a control group, which received neither. Three tests were used in the evaluation of data: the Test of Ability to Form Hypotheses, the Test of Ability to Make Observations, and the Cornell Critical Thinking Test, Form x, Part 1, Section A. The test results indicated that the group taught with the color slides scored significantly higher on the Test of Ability to Form Hypotheses. On the Test of Ability to Make Observations, both groups scored significantly higher than the control group. Interestingly, neither group scored significantly higher than the control group on the Cornell Critical Thinking Test. Considering the results and the logistical problems with taking field trips, Glenn concluded that classroom teaching with 35 mm slides is significantly effective in teaching students to make observations of geographic features and to form hypotheses concerning their origin and development (Glenn, 1968).

In a similar study, Peters (1971) compared the effect of a field trip program with the effect of simulated sound film excursions on cognition and concept in environmental education. This study was at King Junior High School in Portland, Maine. For the study, 60 students were randomly chosen and placed in one of two groups. One group toured three different facilities while the other group watched Sim Tour film simulations of the same places. Afterward, a factual test and concept principle questionnaire was given to the groups. A t-test was applied to ascertain if there were differences in performance between the two groups. The results demonstrated there was no significant difference between the two groups. From this, Peters concluded that students could remain in the classroom and gain exposure to the community through sound film simulations as
effectively as they could through field trips. This study suggested that time spent on field trips may not be beneficial (Peters, 1971).

In a similar study, Wilcox (1976) worked to determine the effectiveness of outdoor education techniques in increasing cognitive knowledge. Wilcox used an experimental approach. Two groups of students were chosen. Both groups were then administered the Iowa Test of Educational Development (ITED) as a pretest. During the next semester, the experimental group received the treatment, which included outdoor education techniques, and the control group studied the same material using a traditional approach. After the semester, the ITED post-test was administered. The results of the study showed the experimental group acquired “to a measurable degree” a greater amount of cognitive knowledge in language arts, math and science. Contrary to the previous study, this study indicated outdoor techniques were quite beneficial (Wilcox, 1976).

In 1981, Stoneberg studied "The Effects of Pre-visit, On-site, and Post-visit Zoo activities on the cognitive achievement and attitudes of sixth grade students". This study included 1651 sixth grade students in 78 classes within 52 schools throughout the state of Maine. Three different types of learning activities were used as treatments: seven pre-visit activities, an on-site learning excursion at the Minnesota Zoological Garden, and seven post-site visits in the classroom. An on-site excursion to the zoo alone was the second activity. All pre-visit and post-visit activities without an on-site visit were compared to the classes receiving the on site activity. Finally, one control group was used which did not receive any of the previously mentioned activities. Five instruments developed by researchers were used in evaluation of a cognitive pretest, cognitive posttest, attitude pretest, attitude posttest, and a zoo visit evaluation. The most significant
results of the study showed that schools receiving the pre and post-visit activities, which included treatments one and three, significantly outperformed the schools that received treatments two and four. This research leads one to believe these types of immersion activities are important (Stoneberg, 1981).

In 1998, Orange County Outdoor Science School in California and Project WILD in Michigan were evaluated. The results showed that all stakeholders, participants, professionals, and sponsors, perceived both programs as being effective. However, the areas of effectiveness varied with each program and by stakeholder level. The major issues facing each program also differed. For example, the California based program cited costs as the major issue while Project WILD participants cited public awareness as the major issue. Themes, which emerged from the interview data, included 1) cost of the program, 2) respondent and program receptivity to changes, and 3) reconciling program philosophy with personal philosophy at Orange County. Project WILD themes included 1) perceptions of environmental education, 2) definition of the program boundaries, and 3) barriers to implementation (Luera, 1998).

State Education and Environment Roundtable (SEER, 2000), a cooperative of educational agencies from 12 states working to improve student performance by integrating the environment into kindergarten through twelfth grade curricula, reported on a study conducted for the 1996-97, 1997-98, and 1998-99 school years. In the study, 11 pairs of schools were studied; however, only 8 pairs reported enough data for the comparison. Eight schools implemented environmental based programs while the other eight schools had traditional programs. When the data were evaluated using the Environment as an Integrating Context for Learning (EIC), students out performed their
traditional counterparts in six major areas. First, the EIC students scored higher in 137 of 179 academic assessments (77%). Second, in Language Arts, EIC students scored higher in 86 of 108 assessments (80%) compared to their traditional counterparts. Next, compared to their traditional counterparts, EIC students scored higher in 22 of 34 math assessments (65%). In the fourth area, EIC students scored higher in 10 of the 15 science assessments (65%). Fifth, EIC students also excelled in 10 of 13 social studies assessment (77%). Finally, EIC students scored higher in 84% of the discipline and attendance assessments. These findings demonstrated important significance through the use of environmental education. (Lieberman & Hoody, 1998).

A follow up report to Closing the Gap (2000) consisting of seven case studies from six states showed similar results. The first case study came from Kruse Elementary School in Pasadena, Texas. The demographics of this school included 87% free and reduced lunch, and the school received Title I funding. Libby Rhoden’s first grade class is compared with other first grade students from the same school who did not receive the same instruction and to the national norm averages using the Iowa Test of Basic Skills. The test results seem to suggest that Rhoden’s approach using student experiences and other environmental education strategies positively influenced her students in reading, language arts, and mathematics. Other case studies in this report include Isaac Dickson Elementary, Hawley Environmental Elementary School, The School of Environmental Studies at the Minnesota Zoo, Kentucky Public Schools, Pine Jog Environmental Education Center, and Condit Elementary School. All of these case studies showed similar positive results for sites using environmental education techniques (Lozar-Glenn, 2000).
Summary

In conclusion, more recent research seems to indicate environmental/outdoor education programs are successful in educating students in a variety of ways. Many studies illustrate improved academic achievement. In addition, stakeholders seem to perceive the programs to be effective. Improved attitudes and self-concepts by participants seemed to be a benefit, and these programs seemed to demonstrate therapeutic improvements for students with varying problems.

Although some of the earlier studies carried out to analyze outdoor education effectiveness suggested other types of instruction were more successful, it is important to remember the earlier studies used only cognitive tests. These studies did not take into account the other benefits these programs may have had on students. More recent research indicates that these programs are beneficial and many participants in a wide variety of modalities have shown excellent gains in these programs.
CHAPTER 3
METHODS AND PROCEDURES

Introduction

The purpose of this case study was to describe and assess the Parks As Classrooms program at Pi Beta Phi Elementary School located in Gatlinburg, Tennessee. This chapter includes the research design, description of the population, and how the data were collected and analyzed.

Research Design

Gall, Borg, and Gall (1996) describe postpositivist research as being grounded in the assumption that features of the social environment are constructed as interpretations by individuals, and these interpretations are usually transitory and situational. Qualitative researchers tend to develop knowledge through the collection of data during intensive studies of cases and then subjecting this data to inductive analysis. Denzin and Lincoln (1994) suggested, “Qualitative research is multimethod in its focus, involving an interpretive, naturalistic approach to its subject matter (p.2)”. Thus, according to these researchers, qualitative researchers study things in their natural setting, trying to make sense of, or interpret in terms of, the meanings people bring to them. Merriam (1988) describes qualitative research as having five main characteristics. First, it is an umbrella approach consisting of several different forms of inquiry that explains some social phenomenon with the least amount of disruption to the natural setting as possible. Second, the researcher is the primary medium for data collection and analysis. Third, it usually requires fieldwork with the researcher going to the people, site, or institution in
order to observe the natural setting. Fourth, it primarily employs inductive research methods. This method builds on abstractions, hypotheses, or theories rather than testing existing theory. Finally, the product of a qualitative study is richly descriptive using words and pictures to convey what the researcher learned rather than numbers (Merriam, 1988, p. 5-8).

A case study is defined as an in-depth study of a natural phenomenon in its natural setting and from the viewpoint of the participants involved in the phenomenon (Gall et al., 1996). Examples of phenomenon include programs, curricula, roles, and events. The methodology of a case study includes thick, rich descriptions, explanations, and judgements of a single unit or bounded system. Many different works have been written concerning qualitative evaluation (Creswell, 1998; Guba & Lincoln, 1981; Merriam, 1988, 1996; Patton, 1987, 1990, 1996). Guba and Lincoln (1981) find case studies to be the best form for reporting qualitative evaluation. Likewise, Merriam (1988) suggests case studies are especially appropriate for educational purposes because they examine specific issues, illuminate problems, and evaluate programs and interventions (Merriam, 1988, p. 19).

In order to explore the research questions in this study, an evaluative case study was developed that relied on several different types of data, some of which was qualitative and some quantitative, including observations, interviews, an evaluation of pretest/posttest data, and a survey. The selection of participants varied, depending upon the data being collected. For the observations and interviews, the selection of participants was purposeful and nonrandom (Bogdan & Bilken, 1992). Merriam (1996) stated that the most appropriate strategy for sampling during qualitative research is
nonprobability. Next, for the pretest/posttest data, the sampling included all the students in all classes in grades K-8, who had taken the pretest and posttest for each unit. When the opportunity arises it is best to use the entire population. Considering the relatively small size of the school, this was possible in this case. Again, due to the relatively small size of the school, it was possible to survey all of the parents with children enrolled at the school. Teachers, NPS staff, and members of the Gatlinburg School Board were surveyed as well (Merriam, 1996).

This evaluative case study examined a specific Parks as Classrooms program at a school located at the entrance of the Great Smoky Mountains in Gatlinburg, TN. As the researcher, I was an observer in the setting, collecting field notes, doing in-depth interviews with administrators, teachers, staff, National Park Service staff, members of the community, and school board members. An analysis of pretest/posttest data administered and collected was conducted, and a survey was administered to parents, school staff, and National Park Service staff. The study was conducted during the 2003-2004 school year. I made regular visits to the site to collect and record data. The purpose of this study was to determine how successful the PAC program at Pi Beta Phi was perceived to be based on student achievement, community opinion, parental opinion, and teacher opinion.

Selection of Participants

Students attending Pi Beta Phi Elementary School and their parents were the primary participants in the study. The parents had children enrolled at the school during the time of the study. These were students who were typically between the ages of 5 and 14 or in kindergarten through the eighth grade. Administrators, teachers, NPS staff, and
other school personnel who participated in the development and implementation of the Parks as Classrooms program were also participants in the study. The survey and pretest/posttest data were used to supplement the data gathered from the observations and the interviews.

The first two parts of the study were qualitative in nature, while the final two components were quantitative. The first part of the case study was designed to gather information concerning the development of the Parks as Classrooms curriculum. This was done by interviewing key members, who were involved in the early stages of the development of the program, a review of any articles, and any pertinent documents. The second part of the study was designed to discover what the program looks like today. The data collection methods for this section included interviews, observation, and a review of the curriculum mapping of the school’s curriculum in conjunction with the Tennessee Standards. During these first two components of the study, I used a purposeful sample, selecting participants from whom I believed the most could be learned. The data collected were analyzed for common patterns and themes.

The third part of the study was designed to gather data about stakeholder satisfaction. This included interviews with various individuals and a survey instrument was developed and administered. The interviews were conducted using a purposeful sample, while the survey was administered to the entire population. The interview questions and the survey instruments were developed by me along with input from the Parks as Classrooms Management Team and other experts in the field. The interview data were subjected to inductive research, which includes searching for common patterns and themes, while the survey instrument was subjected to descriptive statistics in order to
gain some insight into stakeholder satisfaction and obtain a wider scope of responses.

The final section of the study included discovering the impact of the program on student learning. This section of the study was quantitative in a nature. Due to the relatively small size of the school, it was possible to use the entire population of the school, kindergarten through eighth grade. This section included an evaluation of pretest/posttest data collected from teachers on the various units taught to the students and an assessment of the *TerraNova* Comprehensive Test of Basic Skills (CTB/McGraw-Hill, 1996). The pretest/posttest data was subjected to a t-test for correlated mean in order to determine if there was a difference between the pretest and posttest scores, and the *TerraNova* exams were compared to other schools within the same district over the last three years.

All of the participants included in the survey component of the evaluation were informed of the goals of the study and signed an informed consent document, which is in accordance with the Rights of Human Subject Protocol required by East Tennessee State University (see Appendix Q). Prior to the interview, participants listened to and read the informed consent notification. This was done so they would understand the purpose of the study, the nature of the questions to be asked, and the fact that their participation was voluntary and could be assured. I assured the participants of the confidentiality of their responses.

*Measures*

This case study was conducted in the state of Tennessee based on an evaluation of the Parks As Classrooms curriculum at Pi Beta Phi Elementary School. This program has been in effect since 1991 and no extensive, formal evaluation has taken place concerning
the impact of the program on the students, the impact of the program upon the
community, or the impact of the community upon Parks as Classrooms. Because of the
uniqueness of the setting and the approach used, no existing instrument would produce
the collection of data necessary to complete the study. Therefore, it was necessary to use
six different measures in the study: a parent survey instrument, a teacher survey, an
analysis of pretest/posttest data, TerraNova test scores, interviews, and observations.

Quantitative Measures

First, a survey instrument was developed. One survey was developed for the
parents and another one for teachers and NPS staff. These surveys were developed in
order to address the final two research questions concerning program satisfaction and
student impact. The surveys for each group were similar in content varying only slightly
(see Appendices A and B). Both surveys contained four parts. Part 1 addressed the
impact of Parks as Classrooms. Part 2 addressed the opinions of parents and teachers.
Part three dealt with parent and community involvement, and part four dealt with
collaboration.

Due to the nature of study, it was necessary to develop the surveys because no
known instrument would collect the data necessary to answer the research questions. The
instrument was developed through the work of the researcher and Judy Dulin, the Parks
as Classrooms Coordinator. The researcher also solicited input from the PAC
Management Team, which included Glenn Bogart and Bill Beard, two school
representatives, and three park representatives, Karen Ballentine, Jennifer Pierce and
Mike Maslona. It was through the work of these people that the surveys were developed.
The format that was chosen for the survey instrument was a listing of declarative sentences with Likert scale responses. This format gave the respondents the opportunity to choose a number from one to five. Each number represented a varying degree of agreement or disagreement with each response. “The response options… [were] worded as to have roughly equal intervals with respect to agreement.” (DeVellis, 1991) The following is a list of the options: Strongly Agree, Agree, Uncertain, Disagree, and Strongly Disagree.

Once the format was chosen, an initial pool of items was developed. This initial pool of items came from a review of literature pertaining to outdoor/environmental education, the Parks as Classrooms management team, and through communication with experts in the field. After the instrument was developed, it was again sent to the Parks as Classroom coordinator, the staff at the Great Smoky Mountains National Park, and the school administration for review. The survey instruments were evaluated using the following criteria:

1. The relevance of each declarative statement to the Parks as Classrooms program at Pi Beta Phi Elementary School.
2. The evaluation of the clarity and conciseness of each statement.
3. Further suggestions for additional avenues in which to approach the Parks as Classrooms program at Pi Beta Phi. (DeVellis, 1991, p. 75-76)

These initial steps were taken to ensure the instrument measured what it was intended to measure.
Apart from the survey, pretest and posttest instruments were administered to students in first, fourth, and sixth grades (see Appendices F-P). Pretests and posttests were developed for each interdisciplinary thematic unit at each grade level. A true/false, fill in the blank, and multiple-choice formats were chosen for the tests. The number of questions depended on the unit and the grade level. The pretests for each unit were given prior to instruction. Following the instruction and the excursions into the park, posttests were given to determine how much knowledge was gained due to the teaching of the unit and the park experiences.

For the analysis of the *TerraNova* scores, the school report cards for each school in the district over the last three years were collected. These data were easily accessed from the Tennessee Department of Education’s web-site.

*Content Validity*

With pretests, posttest, and surveys being used in the assessment process, it was necessary to establish content validity. Gall et al. (1996) define content validity as, “the degree to which the scores yielded by the test adequately represent the content or conceptual domain, that these scores purport to measure” (p. 250). The content validity for the survey was ensured through a review of literature and continued contact with the PAC coordinator and the PAC Management Team, who evaluated the instrument and gave valuable input into the survey items. The content validity of the pretests and posttests was ensured through a review of goals and objectives for each unit (Gall et al.).

*Qualitative Measures*

All the interviews contained semi-structured, open-ended questions relevant to the research question being focused on at the time. Open-ended questions were used because
they allowed the participant to take the direction he or she wanted. Similarly, semi-
structured questions permitted the interviewer to ask follow-up questions based on the
statements made during the interview. The questions were written prior to the interview.

The interviews were conducted primarily at the school site, while others were
conducted at other locations at the request of the person being interviewed. The
scheduling of interviews was done at the convenience of the participants. Typically, the
interview sessions were less than one hour, although some lasted longer. The interview
sessions were tape recorded with consent of the individuals. This permitted me to focus
on the interview and not take notes. The data from the interview were then transcribed,
analyzed, and compared constantly throughout the study, which allowed for patterns and
themes to emerge as the study continued (see Appendices C-E).

*Trustworthiness*

One concern when conducting qualitative research is the issue of trustworthiness
(Glesne & Peshkin, 1992). Lincoln and Guba (1985) suggest that trustworthiness relates
to convincing the audience that the findings of the study are meaningful and worth giving
attention. Several steps are taken in order to establish trustworthiness: credibility,
transferability, dependability and reliability. Due to my connections with the school, with
my wife a staff member and my daughter a student, becoming a participant observer at
the school raised some questions about the objectivity of the study. However, subjective
perspectives and biases of the researcher and participants are a part of any qualitative
study. It is important to understand that the observations and analysis were filtered
through my perspectives and viewpoint (Glesne & Peshk; Lincoln & Guba).
First, time is a major factor in obtaining trustworthy data. The more time spent in the field observing, interviewing, and building relationships allows for better data to be collected. This is similar to the purposes of prolonged engagement (Lincoln & Guba, 1985). Regular visits over the course of six months allowed for a deeper understanding of the climate and culture of the Parks as Classrooms program. It also permitted me to develop a deeper knowledge and understanding of the operation of the program and the roles of the administration, teachers, PAC coordinator, NPS staff, and other significant personnel. Second, triangulation, which involves the incorporation of multiple sources of data, investigators, and theoretical perspectives, was used to improve the confidence of research findings (Denzin, 1988). As the data were collected and analyzed, it was cross-checked with other sources in order to verify its accuracy. Triangulation was achieved through the use of transcribed field notes, interviews with founders of the program, interviews with Park staff, teachers, and other significant personnel. Friends and colleagues were asked to assist in order to avoid researcher bias. Peer debriefing is another well-established means of establishing credibility (Lincoln & Guba). In addition, an auditor was used to ensure the proper procedures were used. Finally, the most critical component used to establish credibility was member checking. This is consistent with Lincoln and Guba, who said that member checks allow data, analytical data, interpretations, and conclusions to be evaluated for accuracy by members of the case or the culture being studied. Copies of the interview transcripts and field notes were sent to members so they could be checked for accuracy and for their approval. All of these methods help ensure the trustworthiness of the study.
Transferability is similar to generalizability in quantitative research. It is the ability to transfer the findings to other locations or populations. Patton (1990) said transferability depends on the provision of clear, descriptive data or rich, thick descriptions. Unlike quantitative research, this primarily qualitative study depended on the context and interactions of members of the Parks As Classrooms culture. Therefore, external validity, as associated with quantitative studies, could not be established. However, I attempted to use rich, thick descriptions and detailed all comments made, so that another researcher wishing to apply the findings of this study to their own work might be able to make an informed decision about the possibilities of doing so (Patton, 1990).

Dependability was established by conducting an audit trail (Lincoln & Guba, 1985). An auditor examined the process used and the different techniques that were used at the various stages of the study. The auditor then determined if the process was appropriate for the research undertaken and if it was applied consistently.

Confirmability was established through maintaining records of all taped interviews, transcriptions, field notes, discussions, and reflections. These records are available upon request.

Finally, a reflective journal was kept in order to maintain as much objectivity as possible. It contains detailed information surrounding all decisions made related to the study and all of the events related to and surrounding the development of the study.

Methods of Data Collection

For this case study I used the basic methods of data collection including participating in the setting, direct observations, in-depth interviews, and document
analysis (Marshall & Rossman, 1995). In order to gain some added perspective, pretest/posttest data that had been collected by the teachers were also analyzed and a survey was administered to the school, NPS staff, and the Gatlinburg City School Board. The variety of the data available to me added to the depth of the study (Hamel, Dufour, & Fourtin, 1993), and was used to uncover unexpected interpretations (Marshall & Rossman, 1995).

This study was limited to one Parks As Classrooms program in a medium sized school district in East Tennessee. Additionally, the location allowed for ongoing observations during the 2003-2004 school year. I gained permission to conduct the research by contacting the building principal directly. Following contact with the principal, a personal visit with the PAC coordinator was conducted at which time the researcher asked permission to conduct the study using the Parks As Classrooms program. Next, a meeting was conducted with the PAC Management Team, which is made up of school personnel and NPS staff members, to explain the proposed protocols for the study. In each meeting I explained the purpose of the study and asked permission to collect data. Finally, a schedule was developed for interviews with school and park personnel, along with a general timeline for analyzing pretest/posttest data and comparison of TerraNova test scores.

For the data collection of the survey instruments, I distributed a teacher questionnaire to each staff member at the school. The survey took approximately 15 minutes to fill out. I recorded a unique number on each survey so I could associate the survey with each staff member. When a survey was returned, the corresponding name was marked off the list. A second copy of the survey was sent out if the first was not
returned. A similar procedure was used with the parent survey. A survey instrument was sent home with every student. A unique number was placed on the survey in order to associate the survey with the student’s parents. As the surveys were returned, the names were checked off the list. After two weeks, a second survey was sent out to parents who had not returned the first survey.

The pretest/posttest data were collected by the teachers. Prior to a unit being taught, students were administered a pretest for that unit. The pretests were developed by the teachers of each grade level. After the unit was taught and the field experience completed, a posttest was given. These tests were then collected by the teachers and given to the Parks As Classrooms coordinator who then forwarded them to me for analysis. Unique matching numbers were placed on the test so I could match the pretest score with the appropriate posttest score.

For the analysis of the TerraNova test scores, the school report cards for each school in the district over the last three years were collected. These data were accessed from the Tennessee Department of Education’s web-site.

I assured the interview participants of the confidentiality of their responses. Additionally, reasonable precautions were taken in order to protect the anonymity of the participants in the survey and of the students in the analysis of the pretest/posttest data.

The first two parts of this case study are qualitative in nature. Creswell (1998) describes the data collection circle for qualitative research. He suggests seven stages in this circle: 1) locating the site or individuals, 2) gaining access and rapport, 3) purposeful sampling, 4) collecting data, 5) recording information, 6) resolving field issues, and 7) storing data. Although most individuals start by locating the site or individuals, the
research may start at any point on the continuum. Finding the site, gaining access and rapport with the subjects is essential in order to collect useful data. Purposeful sampling of individuals and sites is a type of sampling so that the researcher can best study the questions under examination. Data collection is collecting the relevant information necessary to answer the research questions. Recording the data includes things such as observation write-ups, interview write-ups, video and sound recording, and collecting and organizing documents. Field issues include a variety of things such as difficulty in making initial contact with an individual in the field, incorporating quotations into field notes, and asking the appropriate questions. Storing data is also an important issue. In today’s modern technological world, this includes word processing programs, such as Microsoft Word. This cycle continues until all relevant data is collected and the research questions are answered (Creswell, 1998 p.110). Creswell gives an excellent chart that explains the process (see Figure 1).

Figure 1. Creswell’s Data Collection Circle
Analysis of Data

Due to the use of different types of data, two different types of analysis took place. Creswell (1998) describes the data analysis process in qualitative research as a spiral. The researcher moves in analytical circles rather than in a linear approach. This approach is also commonly called the constant comparative method. The constant comparative method has been described by Glaser and Strauss (1967) as containing four distinct stages. These include the following: 1) comparing incidents applicable to each category, 2) integrating categories and their properties, 3) delimiting the theory grounded in the data, and 4) writing the theory. Thus, as the data is collected and stored, different patterns and theories emerge while the data is being compared across categories. Using this process allowed me to discover what was important and needed to be shared (Glaser & Straus, 1967).

This analysis focused on the factors leading up to the development of the program and the way the program looks today. The primary strategy for these segments of the study was using the QSR NUD*IST (non-numerical unstructured data indexing, searching, and theorizing) version 4.0. This program helped me in numerous ways. It was very beneficial in storing and organizing files. Documents were converted from word processing files and stored in the NUD*IST program. Next, this program helped in searching for themes. Segments from all documents including interview data and transcribed field notes related to a single theme were tagged as a node, and a query can be run on the database for all the information pertaining to a single theme. By coding these data, I was able to place data into broad categories including the following: 1) formation of Parks As Classrooms, 2) how the program looks today, and 3) stakeholder satisfaction.
(Seidman, 1991). Being able to focus on transcribed field notes and interviews allowed me to interpret what meanings, administrators, teachers, parents, NPS staff, and other personnel thought about the Parks As Classrooms program. My goal was to determine what patterns, themes, or categories existed within the categories identified, and what connections existed between the categories and the relationship between the formation of the program, the way it looks today, and the participants’ satisfaction (Seidman, 1991).

Field notes were taken during observations at the school and on field trips to encourage reflections. The writing of field notes and reflections permitted me to clarify the significance of what administrators, teachers, NPS staff, and other personnel meant, and what they perceived to have influenced the development of the program, how it looks today, and the level of participant satisfaction.

As patterns and themes emerged, informed judgement was exercised concerning what was significant in the transcripts (Seidman, 1991). Phrases and expressions that showed agreement about the factors leading to the formation of the program, how it looks today, and present satisfaction were given particular attention, as well as information indicating differences of opinion (Seidman, 1991).

All of the data from the study were collected and organized for analysis. During the analysis, as categories emerged, the data were feasible to interpret. The development of categories, typologies, or themes involves looking for reoccurring regularities in the data. This was accomplished by examining reoccurring themes that emerged during this analysis (Merriam, 1996).

Explanations were developed for the data that were collected. These explanations were meant to transcend the data and sought to explain the factors leading to the
development of the program, describe the program as it is today, and describe the current satisfaction level of stakeholders.
CHAPTER 4
ANALYSIS OF DATA

The purpose of this study was to determine how successful the PAC program at Pi Beta Phi was perceived to be based on student achievement, community opinion, parental opinion, and teacher opinion. This assessment was two-fold including a stakeholder satisfaction component, which included interviews, parent and teacher surveys, and an assessment of student learning, which included an evaluation of pretest and posttest data along with a comparison of *Terra Nova* scores. This study was based on three primary research questions:

1. What does the program look like today?
2. How satisfied are stakeholders with the present program?
3. How does the program impact student learning?

*Research Question #1*

What does the program look like today?

Currently, Pi Beta Phi is a K-8 with 461 students. This student population is made up of 236 males (51.2%) and 225 females (48.8%). The school’s ethnic diversity is currently 91.5% white, .2% African American, 4.1% Hispanic, 3.2% Asian, .8% Indian. Due to the tourist driven economy and the availability of low-income jobs, this school population is also transient in nature. During the 2003-2004 school year, 11% of the school’s population enrolled after the beginning of school on August 18, 2003. Subsequently, many students withdrew from the school over the course of the year. This
past year 52 (12%) withdrew from Pi Phi and enrolled elsewhere. Interestingly enough, 1.7% of those returned to Pi Phi.

The school has 25 homeroom teachers with eight support staff personnel. Each grade level has two homerooms except Kindergarten and eighth, which only have two. Kindergarten through sixth grade is self-contained classrooms while seventh and eighth grades are departmentalized.

Pi Beta Phi Elementary School is a public Sevier County school supported by local, state, and federal funds. The reported per pupil expenditure for Pi Phi during the 2003-2004 school term was $6,675.00, while the state average was $6648.16. In comparison the national average per pupil expenditure was $8383.00. Therefore, Pi Phi’s per pupil expenditure statewide is at best average and even far below the national average.

At present, Pi Beta Phi Elementary School is not designated as a Title 1 school; however, 54% of the school’s student population is currently receiving free and reduced lunch. This is a very dramatic increase from 2001 when only 28% of Pi Phi’s student body qualified.

Annual income levels of Pi Phi parents are concentrated in the lower and upper economic classes with fewer middle classes. For example 35% of the families earned less than $30,000 per year while 38% earned $50,000 per year or more. This is due largely to many businesses that are locally owned and operated in the area. Most of these businesses are related to tourism, retail, real estate, leisure, or hospitality. However, most of these employers offer largely minimum wage jobs. This combination allows for an
average income of $37,606 per year, which allows for middle to upper middle economic level in the community.

Due to the increasing demands of the PAC project, a full-time position was added to alleviate some of the duties of the management team. The funds for this position came jointly from the National Park Service and the Gatlinburg Board of Education. The title of this position became the Parks As Classrooms Coordinator. This person was to oversee the project, make necessary adjustments to the curriculum, do the necessary logistical work for the PAC fieldtrips, and serve as liaison between the NPS staff and school staff.

In the spring of 1997, Susan Sachs was hired as the first PAC coordinator. Her initial focus was to evaluate the program and eliminate gaps and repetitions in the program. Then, she focused on developing different themes for different age groups: K-2, awareness; 3-5, knowledge; and 6-8, stewardship. Jennifer Pierce described PAC well when she stated, “The Program is tiered so that students progress from early levels of awareness to middle school or graduate levels of stewardship using the national park as a resource in which to teach.”

Gradually, the program began to change. The make-up and the responsibilities of the management team changed. This happened, in part, due to retirement and reassignments. Today, the management team consists of five members: three from the Great Smoky Mountains National Park and two from the school. The NPS representatives are Karen Ballentine, Mike Maslona, and Jennifer Pierce, and the school representatives are Bill Beard and Glenn Bogart. With the hiring of a Parks As Classrooms Coordinator, the responsibility of the management team became primarily
oversight of the project. This is accomplished through quarterly meetings of the team with the PAC coordinator.

The project’s curriculum changed as well. Initially, the program was an attempt to restructure the entire curriculum into six thematic units, which would be taught during the school year. This format was previously discussed in greater detail in Chapter 2. However, major changes were made by shifting the focus of the curriculum from being thematic in nature to more topical in nature. Today, PAC is more of a pre-site, on-site, and post-site format. Mike Maslona described the program as a “comprehensive, interdisciplinary learning experience where the Park is the classroom.” Instead of a six-week thematic unit, most units are approximately a week long covering various topics developed for each grade level and ending with a fieldtrip into GSMNP. This year students participated in a total of 37 PAC fieldtrips into GSMNP with each grade level taking at least three trips into the park. Refer to Appendix R for the 2003-2004 schedule of PAC fieldtrips. The teachers begin each unit by administering a pre-test to assess prior student knowledge. Then, pre-site unit instruction is done according to student needs. Once on-site in GSMNP, various experiential, hands-on activities are conducted to reinforce student learning of unit concepts. Chris Stein established the importance of the PAC field trips into GSMNP when he claimed, “There is no better way to learn about this world than real life investigation. For kids to be able to go outside and do a math problem at a stream and see that those are not just numbers on a board, it is a powerful tool.” After the on-site fieldtrip, a posttest is administered to assess student learning. Judy Dulin gave the most summative description of PAC. She said, “It is a program in which students do curriculum instead of hear it or read it.”
During the interview process, this change in format was seen as positive. Karen Ballentine concluded that the program was “more focused”. Judy Dulin added that it “allowed the teachers to get their hands around it better”, that it was “more flexible”, and that it “allowed for teachers to have more control” over what was taught and how it was introduced. It was also added that even with this change in format the original concept of linking the park message to curriculum objectives had been maintained.

On-site park visits changed as well. When the program first began, rangers from the education division of the National Park Service taught the on-site lessons inside Great Smoky Mountains National Park. As the program grew and other schools were brought into the project through the Smoky Mountains Classrooms, a program run by Great Smoky Mountains National Park and based on units developed at Pi Beta Phi, it became necessary for teachers to direct most of the on-site lessons inside the GSMNP. This process began during the tenure of Susan Sachs as the Parks As Classrooms Coordinator. Today, most PAC fieldtrips are teacher directed. Currently, the rangers have only one target unit on which they focus each year with each grade level. This target unit is the one taught in the Smoky Mountain Classroom program, which has brought thousands of students throughout the region into part of the program.

Another driving force in change has been the shifting demands of the Tennessee State curriculum. Since the inception of the program, the state’s curriculum has been updated twice. Therefore, it has been necessary to update the correlation between the program and what is taught and tested at each grade level under the current Tennessee Value-Added Assessment System (TVAAS) and Tennessee Comprehensive Assessment...
Program (TCAP) system. This has required a lot of time but is necessary in order to keep a current program. Karen Ballentine emphasized this point when she stated,

> I think it is an opportunity for students grades K-8 to learn about the park while also meeting the state mandated curriculum objectives. It’s a program that tries as much as possible to merge the cultural and natural resources that the park has to try to link those with the curriculum so that those connections can be made and that kids can come to the park and learn in a real hands-on fashion.

**Research Question #2**

How satisfied are the stakeholders with the present program?

I contacted the school administrator, Mr. Glenn Bogart, to gather descriptive data about the school including the numbers of teachers, staff, and numbers of students currently enrolled at the school. The school has 25 homeroom teachers and 8 support staff for a total of 33 individuals. At the time of the study, the school had 453 students enrolled in the school.

Survey data were collected from teachers and parents with students currently enrolled in the school. A total of 33 surveys were distributed to homeroom teachers and support staff. Twenty-eight of the teacher surveys were returned resulting in a return rate of 85%. Four hundred fifty-three parent surveys were sent home to parents. These surveys were distributed to parents by homeroom teachers and were collected by them. Returned were 356 surveys resulting in a return rate of 79%.

**Items with Levels of Agreement Between 5 and 3.49**

The means of the survey statements were used to determine the results of the data collected. On the parents’ survey, 41 of the 42 statements reflected a level of agreement of more than 3.5. On the teachers’ survey, 42 of the 43 statements reflected a level of
agreement of more than 3.5. On the parents’ survey, there were only two questions with means of 5.0-4.5, which showed strong agreement. Those two questions were

4. Parks as Classrooms makes learning at this school fun.

5. I am proud to be a parent of a student at this school.

A full analysis of the parental responses is presented in Appendix S. Column 1 represents the survey statements. Column 2 shows the mean for the levels of agreement for each statement. Column 3 expresses the mode, and Column 4 the standard deviation.

Parents responded positively (mean scores between 4.5-4.0 with a mode of 5) to the following statements in Part I of the survey, which asked questions that pertained to their perceptions about the impact of PAC on teaching and learning. They indicated that PAC has established attainable goals for the students, and the school has a positive atmosphere that is conducive to effective teaching and learning. They also said PAC is preparing students for the future and improving the community. They also said that the PAC learning environment was orderly and serious. They also indicated GSMNP staff played an important role in PAC. For instance, the survey showed parents perceived rangers to be effective teachers and that they use appropriate presentation methods with students. They perceived the PAC Coordinator was important to the project, and that the program was highly regarded in the Gatlinburg community. For Part II, which asked questions about parent perceptions about community involvement, parents responded very positively (mean scores between 4.5-4.0 with a mode of 5) in the following areas. First, it showed parents perceived the school kept them informed about PAC events, and they were encouraged to participate. Likewise, Part III, which asked questions about
parent perceptions about the collaboration with PAC, indicated parents were extremely satisfied with the efforts of teachers, NPS staff, and the Gatlinburg Board of Education.

Similarly, 14 responses by parents scored a mean between 4.5-4.0 with a mode of 4. This seemed to indicate that parents were in agreement with these statements as well. In Part I, they indicated PAC was beneficial academically for the following reasons: 1) set high academic standards, 2) lent to a greater retention of learned material, and 3) kept students engaged in learning. Besides academic skills, they indicated PAC enhanced physical and social skills as well. Third, they indicated that the PAC Coordinator and NPS staff provided enough information about field experiences and parent responsibilities. Finally, parent responses indicated they enjoyed and supported PAC and that PAC provided opportunities for them to be involved in their children’s education.

Part III addressed the parent responses concerning stakeholder collaboration with PAC. At this point parents indicated parents, principal, students, and support staff were working collaboratively with PAC.

The following mean scores ranged from 3.99-3.5. However, all had a mode of 4, which still indicated most people agreed with the statements. In Part I, impacting student learning, parents perceived PAC: 1) reduced student stress, 2) was based on information about how students learn most effectively, 3) motivated students to attend school, and 4) supported state standards. In Part III they also perceived the principal as working collaboratively with all stakeholders.

Even though these last statements had mean scores ranging from 3.99-3.5, their modes were 3. This indicated that most parents were undecided about the following statements. In Part I, parent perceptions were unsure about PAC’s ability to help students
overcome learning problems or if it helped students to improve test scores. In Part II, parents were undecided about how they perceived their involvement in the planning process.

The data analysis for the Teacher Survey is displayed in Appendix T. Again, Column 1 represents the survey statement. Column 2 shows the mean scores for each question. Column 3 represents the mode and Column 4 shows the standard deviation.

Comparatively speaking, the teachers’ surveys were even more positive in nature than the parents’ survey. Twenty of the questions scored means of 5.0-4.5, which showed strong agreement. These include the following responses in Part I. The survey indicated that teachers were proud to be teaching PAC and that their efforts and input were being supported by the local administration, including both the NPS and school. They also indicated that PAC supported state standards and promoted effective teaching and learning. Teachers also indicated that PAC was conducive to academic learning by keeping students engaged, providing an atmosphere in which students learned effectively, and preparing students for the future. They also indicated PAC improved and was highly regarded in the Gatlinburg community. The survey also indicated the PAC Coordinator and the NPS staff as playing an important role in student experiences.

In Part II, parent and community involvement, teachers very strongly indicated that the school kept parents informed about PAC events. They also implied parents were encouraged to participate and felt welcome on PAC fieldtrips. In Part III, collaboration, teacher responses were very positive. First, they overwhelmingly indicated that the principal worked collaboratively with all stakeholders. Teacher responses were to strongly agree that they were satisfied with the efforts of the vast majority of the
stakeholders in their efforts to improve the PAC project. They indicated they were satisfied with NPS staff, principal, support staff, and teachers.

Closely following this category, 17 statements scored means ranging between 4.5-4.0 with modes of five, which indicated most teachers strongly agreed with these statements. They indicated students were able to achieve the PAC goals that were set for them and that the PAC project supported state standards. They also indicated teaching through PAC to be fun. They also indicated that the local administration, PAC Coordinator and the NPS staff supported their input in the project and their efforts with PAC. Teachers also indicated PAC allowed families opportunities to be involved in their children’s education, was enjoyed and supported by parents, and was highly regarded by the Gatlinburg community. They indicated the rangers’ presentation style to be effective with students. They also indicated the PAC Coordinator and the NPS staff to play an important role for students in the program. In Part II, parent and community involvement, teachers’ responses were also very positive. They indicated strongly that the school kept parents informed about PAC field trips. They also indicated parents were encouraged to participate and felt welcome on PAC field trips. In Part III, collaboration, teacher responses were very positive on how satisfied they were with the efforts of stakeholders to improve the program. The remaining stakeholders who were not mentioned previously were parents, Gatlinburg Board of Education, and students. Only one statement had a mean score of less than 4.0 and a mode of three or less, which denoted the teachers were undecided on the fact of parents/community members having input into the PAC planning process.
On the Teacher Survey, there were areas designated for comments. Out of the 28 returned surveys only 8 comments were written. Of these, seven were positive, and only one was negative. One teacher commented, “This program provides a wonderful opportunity to teach in the classroom then actually experience what has been taught. I love it!” Another teacher stated, “This is a super program. It is one of the reasons my child attends Pi Beta Phi.” While these comments address the overall program, one teacher addressed feelings toward the programs impact on student learning and stated, “Greatest asset of PAC is that it teaches all ability levels allowing all resource students to be successful.” The other positive statements were similar in content. The only negative aspect of the program mentioned was that one teacher stated the students were out of the classroom too many days.

The participants in the parent survey were provided with space to make written comments on the subject of the Parks As Classrooms project at Pi Beta Phi Elementary School. Many of the respondents provided comments, 95 or 27%. On these 95 surveys were 153 comments, and of these there were 104 positive comments comprising 68%. Some wrote in great detail about their opinions of what they thought made the program special and others cited things that could be improved.

The majority of the written comments were positive in nature toward the program at Pi Beta Phi. From these positive comments, three areas were generalized due to the significant number of times they were mentioned. Most significantly, the positive strands showed parents viewed the hands-on and experiential learning as important. Twenty-five comments (16%) mentioned the different experiences that the program incorporates into the curriculum and how important that experiences are to learning. The second strand
showed that the parents viewed the program as a fun way for students to learn. This strand had 13% of the positive comments. The third positive strand showed that the program leads to parent involvement. There were 25 comments related to parent involvement in the program in one way or the other. The majority of these were positive in nature, 20 of the 25. The only strand that showed an area of improvement surrounded the need for better communication. This strand included 26 comments, which made up 17% of the overall comments, but when combined with all participant responses, it actually accounted for 53% of the negative comments.

A representative sampling of the comments was included in the report to illustrate the feelings of the respondents that were expressed. These positive comments were grouped into three categories: experiential learning, fun, and parent involvement. Likewise, the related area of improvement was grouped into the category of communication.

Experiential Learning

One parent commented, “I feel extremely fortunate to be in a community that offers these experiences to my child. My children learn so much with these hands-on experiences!!” Another parent commented, “The outdoor environment and Smoky Mountains make a wonderful learning environment and help students learn about the history of the area also and outdoor life: plants [and] animals.” These comments seemed to indicate a strong sense of community pride and an understanding of the importance of hands-on, experiential learning activities. Another parent commented:

This is a wonderful program, and I feel it enriches the learning experiences of the students at Pi Beta Phi in countless ways. One of the biggest, most valuable aspects of PAC, in my opinion, is that it shows the children a different way to learn, and emphasizes the value of not only the
National Park, but the WORLD as a classroom. I have been impressed with everyone involved with the program, and our involvement with it has strengthened my family’s ties with the park and our appreciation for its existence.

Likewise, this comment seemed to indicate the importance of different learning styles and learning outside the classroom in real world experiences. It also seemed to indicate that PAC was at least beginning to build a constituency within the community. Another parent commented, “Mrs. Dulin and the teachers obviously work very hard in putting together age-appropriate activities for the students, and the park personnel have been incredible!! ‘Ranger Mike’ and ‘Ranger Carey’ are especially good with younger children.” This comment seemed to indicate the appropriateness of the activities for each grade level, and possibly the idea that the project corresponded to state curriculum objectives. Another parent commented,” PAC is one of the most important changes we’ve seen in our local schools in many years. The opportunities it provides outside the school day are important, for- volunteerism, camps, etc.” Based on the above quotes, parents indicated that through experiential learning PAC is impacting students in a variety was ways.

Fun

Another theme that evolved from the parent comments was the idea that parents perceived PAC to be a fun and entertaining way for students to learn. For example, one parent commented, “The Parks As Classrooms projects have done a wonderful job of engaging the children’s interests in a fun and informative way. My children have gotten a lot out of the PAC, and I enjoy going on the fieldtrips with them.” Similarly, another parent stated, “I believe this is a wonderful experience for our children. ‘Hands on’ is
more important to learning than most people realize. One of many reasons is that if you want to learn because it is fun, you learn more.” Yet another parent praised, “I’ve had two children involved in the Parks program- I find they both enjoyed and learned much from their experience,” commented another parent. In a similar statement, another parent added,” I have gone on every PAC trip and I really enjoy them. I learn as much as they do!” Finally, in one brief but to the point comment, one parent added, “They make learning fun!” Based on these comments parents perceived PAC to be a fun and informative way for young and old alike to learn.

*Parent Involvement*

The third common theme from the parent comments was parent involvement. One parent commented, “My child and I have enjoyed all the PAC trips we have experienced over the last two years. I feel it is more interesting to the children to learn about nature and the park with hands on activities being able to see, touch, and smell.” This comment directly mentioned involvement with the program and the importance of hands-on experiences in learning. In agreement with the above statement, another parent added:

I have had children in the Pi Beta Phi School for 13 years and have never had a problem with the PAC program and would rate it on of the best things that the school is associated with. My kids have learned respect for nature and everything around them due to the program.

This comment indicated a continuing relationship with the program through probably more than one child and a very positive attitude about PAC that includes the programs perceived effectiveness in teaching respect for the environment. “As a parent I have
always enjoyed working and helping the program,” stated another. In a similar fashion, a parent added:

My wife and I have attended all the Parks As Classroom trips for the past three years. As a former secondary school teacher, I strongly endorse all aspects of the program. It is impossible to imagine doing this in NYC, NY or LA, CA too bad! This program is great and should take priority over any other such type programs. There is nothing to compare to Parks As Classrooms.

“I try to attend all of the PAC fieldtrips,” stated another. Based on these statements, parent perceptions are very positive about PAC. Many parents indicated involvement with the program. They implied PAC is a very important part of the curriculum, teaching students through hands-on experiences.

Communication

One theme that emerged through parent comments indicated parents perceived communication to be an area of improvement for the PAC program at Pi Beta Phi Elementary. The following comments are a representative sample of comments made by parents that seemed to indicate this need. For example, one parent commented,” [I] Need more information on this program in general and in detail. I think the concept, such as I understand it, is wonderful; I have yet to see any materials sent home on its actual implementation.” Another added, “I don’t know much about the program.” Another parent commented, “As the parent of a fourth grader, I feel uninformed and disconnected from class and PAC.” While this comment mentioned PAC, it is possible the comment is related to feelings about a specific class and grade. In a similar fashion, one parent commented, “I have no knowledge of this program.” In a comment similar to the first one cited, this parent added, “There are probably more PAC things/classes going on besides the field trips but if so this is not clear to me and wonder how parents find out. Some of
the items are in [the] school newsletter, but I do not think that includes everything.”
From these comments, it seems parents perceive communication to be an area for improvement even though it scored favorably in mean scores on the survey instrument.

Interview Results

The second component used to answer the research question was interviews conducted with the founders of the program, PAC Management Team, Gatlinburg School Board Members, and other GSMNP staff, who currently are or were involved with the program. The questions were open-ended and allowed for the respondents to discuss the program and relate their feelings on certain topics. (see Appendices C-E)

In all, 12 individuals were interviewed including both founders, the entire PAC Management Team along with another ranger closely associated with the program, a former Chief of Resource Education at GSMNP, and a former Superintendent of the GSMNP. The group that was the hardest to gain access to was the members of the school board. All five members were contacted either via telephone or letter requesting an interview. Of the five members, two members responded.

The answers to the questions were subjected to qualitative research methods as previously described in Chapter 3. Many of the answers showed trends emerging on the various topics of the questions.

Strengths of the Program

On the topic of the strengths of the program, there were 30 comments from the respondents. Three themes emerged in this area. The strongest theme
was the way in which students learn. Of the 30 comments, 18 (60%) were related to this theme. The partnership between the two organizations was the second strongest theme, which made up 33% of the comments. The two remaining comments (7%) were connected to parent involvement, which made up the final seven percent. A representative sampling of the comments was included in the report to illustrate the perceptions of the respondents that were expressed.

*The Way Students Learn*

The strongest theme, the way students learn, was closely related to the experiential learning theme in the parent comments on the survey. This theme helped to strengthen the case for the importance of the various experiences students receive through PAC. For instance Bill Beard, member of the PAC Management Team, stated, “I think the greatest strength is that it provides for our students opportunities to expand what they’ve learned in a classroom setting into a non-classroom setting in this case, in the national park.” Similarly, Paul Appel, member of the Gatlinburg School Board, added, “I think from an educator’s perspective a lot of things can be learned outside the four walls of a classroom, and this program provides students with that opportunity.” Likewise, Chris Stein added:

> Its strength is real life learning experience for students. The fact that the PAC experience is woven into the entire K-8 experience spending nine years connecting with the park. Without question it is [the] best most comprehensive educational program that I have observed and worked with during my 25 years in working with parks.

Based on these comments, these stakeholders perceived PAC to be an important key that allowed students to learn outside the classroom and expand what was learned inside the

classroom to real world settings. These elements were perceived to be very beneficial in student development.

**Partnership**

The partnership between the school and GSMNP was the second theme of the perceived strengths of the program. Several individuals mentioned the importance of the partnership in relation to the program and its success. For instance, Jennifer Pierce, GSMNP park ranger and member of the PAC management Team, stated, “I think the two strengths that guide this program are the dedications by the school system, including the principal, and the dedication of the National Park Service and the leaders of the Smoky Mountains National Park. Without that commitment we wouldn’t have the program.” Likewise, Karen Ballentine, Education Grant Chief at GSMNP and member of the PAC Management Team, said, “I think the other strength is just the relationship built over the years with the school and the park.” Mike Maslona, GSMNP park ranger and member of PAC Management Team added the strength of the program was the GSMNP’s collaboration with the school, and that the park service saw partnerships as a way to do more with less as far as from an internal budget perspective. Based on these comments, these stakeholder perceptions seem to indicate that stakeholders from all areas perceive partnerships as a viable means of funding the PAC program. Members from both organizations indicated the partnership to be productive and effective for both groups.

**Parent Involvement**

Even though parental involvement was the weakest of the common threads related to the strengths of the PAC program during the interviews, this theme was also shown in the parent comments of the surveys. The fact that it is addressed
here as well simply strengthens the case that stakeholders perceive PAC to be instrumental in bringing parents into the school and encouraging parents to participate in their children’s education. During one interview Judy Dulin, PAC coordinator, stated, “I think one of its biggest strengths is its ability to bring parents into the school and into the educational program. Parents are very enthusiastic about the project and really like participating even if it’s just chaperoning.”

**Weaknesses of the Program**

On the subject of weaknesses, 23 comments were made. The themes of the comments varied widely and contained seven different themes: replication, communication, buying into the program, curriculum objectives, proof it’s working, changing staff, and training. Of the 23 comments, six (26%) were related to replication. Five (22%) were related to communication. Four (17%) were related to buying into the program. Two (9%) were related to matching curriculum objectives. Two (9%) were related to proof the program is working. Two (9%) were related to changing staff. One (5%) was related to the need for more teachers’ training. A representative sampling of the comments was included in the report to illustrate the feelings of the respondents that were expressed.

**Replication**

Most of the comments concerned about replication of the program were related to sharing the PAC program with a wider student audience. However, all the stakeholders interviewed viewed replication in a slightly different sense. Several of the individuals viewed replication to be taking the program as it is to another school in a similar gateway
community. A gateway community is one that is located at a park entrance. There were other varying degrees to the idea of replication. The most flexible was the idea that replication of the PAC program could actually take place in any location. The essential idea was to take students out of the classroom and engage them in real life experiences where they can relate what was learned in the classroom. For example, Gene Cox, PAC founder and former Chief of Interpretation and Visitor Services at GSMNP, simply stated, “In other words [we need to] reach out to a larger audience.” Another stakeholder seemed to view replication as a total recreation of the PAC project at another school. Susan Sachs, former PAC Coordinator, commented, “Another weakness is it hard to replicate because of the logistics. Great project but hard to replicate.” Based on the comments, stakeholders indicated replication of the program to be a weakness no matter what their definition of replication was. It seemed to be perceived, as a weakness for the most part because the stakeholders were interested in seeing PAC taken to a wider audience but this has not been done to their satisfaction.

Communication

Communication was another reoccurring theme. Of the reoccurring themes, communication was the only seen weakness by parents. This area of need was typically related to communication between the parents and the school. However, in this thread, these stakeholders were more concerned with internal communication. Bill Beard stated, “Part of what we need to do is perhaps find a better way of communicating it so that when new teachers come on board they can more seamlessly be folded into the process.” Similarly, Jennifer Pierce commented,

The weaknesses are illustrated when there is a change in staff whether that is school staff or park staff. I think that always uncovers that there is room
for improvement. Whether it is a new teacher that is uncertain or not confident about the program yet or whether it is a leader in the park service who doesn’t fully see.

Based on these comments, stakeholders indicated that a more efficient means of communication needs to be developed between staff members in both organizations, and this communication was especially important with new staff members in both organizations.

Buy In

The second theme that developed as a perceived weakness was the idea of having individuals buy into the program and actually supporting the program and believing it is worthwhile. This is a fundamental concern when beginning any program. Based on the statements made by the stakeholders, it seems evident that this was one of their concerns. For example, Chris Stein admitted, “A weakness is you have to have complete buy in with teachers. What I did hear was that sometimes it was a challenge to get the teacher buy in. I did not personally see this but I did hear it.” Susan Sachs added, “Some teachers will never embrace the program. They see it simply as an add-on.” These comments led me to believe that this is still an issue even today, 13 years after the program has been in use. Karen Ballentine implied that this was a concern, and they were still working on ways to develop teacher and staff buy in.

Curriculum Objectives

To a lesser degree correlating PAC objectives to the Tennessee curriculum objectives was another perceived concern. Since the beginning of the PAC project, the Tennessee curriculum has been updated twice. This led to the very time-consuming process of adjusting PAC objectives to match those of the state. Still, Karen Ballentine
admitted, “I think that, I’m not completely convinced that we’re meshing as much with the curriculum objectives as we could in terms of really teaching to the test.” This response probably reflects concern related to the greater emphasis of standardized test that has come about in the last few years.

Proof working

With increased emphasis on standardized tests and teacher evaluations based on these tests, it has become vitally important to have proof that programs are beneficial to students. Also with increasing demands on the budgets of both organizations, it is important to be able to show that the program is working. To a lesser degree this was a perceived weakness of the PAC program. Mike Maslona admitted,

I’d like to emphasize we need some solid evaluation, and I think this is a good start. This case study on how this effects the park. A lot of our managers want to see results besides just numbers and hopefully we can provide them some degree of results as these kids age and become citizens in the community and pass our success on to other areas where a partnership like this might be effective.

This response probably reflects importance of showing qualitative data depicting PAC success in building future park constituents and the importance broadening the scope of this PAC program

Changing Staff

The theme of changing staff is related to the issues that develop when new personnel are brought into both organizations. To a lesser degree this was also a perceived weakness of the PAC program. Jennifer Pierce shared, “The weaknesses are illustrated when there is a change in staff whether that be school staff or park staff.” The specific weaknesses were not elaborated on at this time. However, this response
probably reflects the weakness of the need for a stronger line of communication to be
developed within the program, or the need for improved teacher and staff development.

*Teacher Training*

When programs are developed and implemented, staff development is always key to success. Over the years numerous staff development activities have been conducted at Pi Beta Phi concerning the PAC program. However, teacher training was a perceived weakness of the program. Judy Dulin commented, “I think we need more teacher-training than we currently have. A more structured formal teacher training than we have right now.” This response probably seems to imply that currently there is some staff development, but that it is perceived to be in more of an informal nature.

*Impacts for the Community, Park, and School*

On the subject of impacts for the community, park, and school, there were 14 comments. Six (43%) of these comments were related to the educational programs at Pi Beta Phi and the GSMNP. Six (43%) were related to future benefits for the community. The other two (14%) comments were related to school achievement. The following is a representative sampling of the comments.

*Educational Program*

The educational programs of Pi Beta Phi and GSMNP both changed as a direct result of the PAC program. The curriculum at Pi Beta Phi changed more to an experienced-based curriculum that essentially uses the GSMNP as a resource. However, the biggest changes may have taken place at GSMNP. For example, Bill Beard admitted, “They got a more focused set of programs to share with the public.” Similarly, Gene Cox added, “I think as a former Chief Interpreter it focused us immediately on a program that we were going to do. And we were going to do 100%. And as much as we could we did.
We were forced to be as professional as we could.” Both of these comments discuss the development of the Smoky Mountain Classrooms, a GSMNP program developed by using units from the PAC project at Pi Beta Phi.

*Future Benefits*

The second major perceived impact of PAC was the possible future benefits this program might have for the Gatlingburg community and GSMNP. For example, Bill Beard commented, “As far as the community goes, I think the community impacts are going to be much more visible in another generation than they are now.” Similarly, Gene Cox added:

> I think this is the dream part. Later on we’ll know how much it affected Gatlinburg. You know when they try to put the next hotel inside the park instead of on the edge of it. There will be one of those Pi Phi students say, “No we’re not going to do that.”

Both of these statements probably reflect the idea that through PAC students are being taught community and GSMNP issues and how those issues could impact each entity.

*Students Achievement*

To a lesser degree improved student achievement was perceived as an impact PAC had on Pi Beta Phi. For instance, Bill Beard commented:

> This has been I think the singular difference that has allowed our scores to basically make that leap from being a very good above average school to really superior achievement with our student body. That is something that I would be very willing to give credit to PAC for that particular last leap from simply being above average to being in the superior range in most of our scores.

Based on this comment, some stakeholders perceive PAC as improving student test scores. This comment probably relates to the idea that an experiential based curriculum with students doing hands-on activities in a real world setting is the key to improved test scores.
Impacts Student Learning

On the subject of impacting student learning, there were 20 comments. From these 20 comments, there were five themes. The themes were varying styles, life experiences, hands-on, progression, and other. Real-life experience was the most common theme, which included seven comments (35%). Varying styles also included seven (35%) of the comments. Hands-on experiences include comments (14%) of the three comments. The other two themes were insignificant making up the remaining 9%. A representative sample of the comments has been included in this report.

Real Life Experiences

One of the two strongest themes on how PAC impacts student learning was perceived to be the variety of real life experiences that the students are exposed to through the program. Paul Appel commented, “The program develops student’s interests in a variety of things and that interest may open up options that the children might not know about otherwise like different career choices.” This comment seems to imply that PAC experiences benefit students in other areas besides just academically. It probably reflects the idea that PAC helps to develop a more well rounded student that is more aware of the world around them. Similarly, Chris Stein added, “I think it changes their view of the world. It helps them to see the value of the subjects in school and how they relate to the real world.” This comment is similar the first in that it reflects the idea that the importance of these experiences broaden the students horizons. It also seems to indicate that relating what is learned at school to the real world is a key comment in learning. Mike Maslona added a similar statement, “Getting away from the school setting and into a learning experience where they’re actually seeing what is being talked
about by the park staff.” This comment probably reflects the same sentiment as the one above. Both seem to reflect the importance of relating what is learned in the classroom to real life situations.

**Varying Styles**

The other dominant theme of how the program impacts learning was the varying styles of teaching that are associated with PAC. For example, Karen Ballentine commented, “They’re trying to get at different learning styles. You know they deliver it to try to reach all sorts of learners. I think that that helps.” This comment reflects that stakeholders understand students learn in a variety of ways and the importance of varying teaching methods in order to try to reach all students. Similarly, Judy Dulin added, “Simply because students have different learning styles, and I think some of them need this kind of style in order to learn, and if we have students who get the material the way they should get it, I think that means higher scores on standardized tests.” This response reflects understanding of the importance of using a variety of methods but also adds to it the concern related to the increased emphasis on testing.

**Hands-On**

To a lesser degree, these stakeholders perceived hands-on learning as being an important part of the PAC project and its impact on student learning. For instance, Susan Sachs commented, “Very hands-on and it reaches multiple learning styles. It is another style to reach different learners.” These stakeholders seem to be aware of individual differences and suggest this program reaches out to a variety of learning styles.

**Most Important**

On the question of the most important thing that needs to be said about the program, there were three dominant themes. They were expanding the audience,
continuing the program, and type of experiences. There were 29 comments. Expanding the audience was the most dominant comprising of 16 comments, which made up 55% of the comments. Continuing the program contained 10 comments, which made up 35% of the comments. The type of experiences included three comments, which made up 10% of the comments. A representative sample of the comments is included in the report.

Expanding the Audience

During interviews, each individual was asked what was the most important thing that needs to be said about PAC. The majority of individuals interviewed discuss the idea of the program being expanded in order to reach a larger audience of students. This theme seems closely related to the idea of replication mentioned in the previous section. Most of the individuals appeared to want this to happen. For example, Paul Appel said, “The most important thing that needs to be said about the program is that it needs to be expanded.” Jennifer Pierce stated, “I can’t think of a more perfect match of how you get a gateway community involved in your natural resources of the National Park.” Similarly, Judy Dulin added, “I think that we need to be striving to approach another community to replicate this project.” As with the idea of replication, the majority of the stakeholders seemed to view this as a positive move for the future. However, based on these comments it seems that the biggest hurdle in this process is in the idea of what constitutes expanding the program. The majority of the stakeholders seem to view expanding the audience as replicating the program essentially as it is at Pi Beta Phi at another school in a similar community.
Continue Program

The second strongest theme centered on the most important thing that needs to be said about the program is the idea that the program needs to be continued. Many programs similar to this have been started and for one reason or another have ended. Several of the stakeholders strongly supported the program and seemed to feel that it was important for the program to continue. For example, Gene Cox simply stated, “The most important thing about the program is it needs to be continued. It needs to be supported financially with more staff, and you need to think about that answer a little cause what that means is more students.” This comment reflects not only the importance of continuing the project, but also the idea that the program needs to be expanded into other areas. Likewise, Karen Ballentind added, “I think we need to be strategic about that and think what can we do to ensure this program continues into the future.” This comment reflects not only the importance of continuing the program, but also the need to engrain the program into the culture of Pi Beta Phi and GSMNP.

Type of Educational Experiences

To a lesser degree, some of these stakeholders indicated the most important thing that needs to be said about the program as being the importance of the type of experiences students were exposed to through the PAC project. Some indicated the importance of the experiences as leading to greater student achievement and a better understanding of subject matter. However, Karen Wade, former Superintendent of Great Smoky Mountains National Park, alluded to a higher calling when she stated,

I was reminded of Conservationist Aldo Leopold’s clock repair story. He wrote that if you are going to take a clock apart, the first rule of intelligent tinkering is to save all the pieces. Leopold was, of course, using his clock repair story as a way to get others to envision the ecological complexities
of the landscapes within which we live. And the truth is that without that understanding, we can never hope to fix what is broken. THAT is the importance of the grand adventure into knowledge. And THAT is the importance of the educational programs of the Smokies.

This response suggests the importance of PAC is the awareness of the environmental issues facing GSMNP and the world in which we live, and the understanding that if people are not aware of these issues nothing can be done to improve the environment in which we live.

Research Question #3

What impact does the program have on student achievement?

For this part of the study, two components were used. First, TerraNova scores were addressed from all the schools in Sevier County. This data were taken from the Tennessee Department of Education’s web page. In the evaluation of student achievement, the State of Tennessee used the familiar grading scale of A, B, C, D, and F to reflect the academic achievement of each school. In the development of the scale, the state decided to use percentile scores to determine the grade each school made. Schools with percentile scores from 60-99 received an A, 59-55 received a B, 54-50 received a C, 49-45 received a D, and 44-1 received an F. The scores received by schools in Sevier County are presented in Appendix U 1. The scores of each individual school are presented in Appendix U 2 through 14.

As shown in Appendix U 1, in 2002, Sevier County’s scores were average or above average in each of the five academic areas according to the State of Tennessee. In 2003, they were above average in four of the five areas with only social studies being average.
As shown in the Appendix U 2 through 14, Pi Beta Phi Elementary School’s scores are among the very best in Sevier County. In all areas except social studies, their percentile scores were at the 60\textsuperscript{th} percentiles receiving a grade of A from the State of Tennessee. A closer look at percentile scores for 2003 showed students at Pi Beta Phi scored at the 62\textsuperscript{nd} percentile in math while the Sevier County average was at the 57\textsuperscript{th} percentile. Second, in reading Pi Beta Phi students scored at the 60\textsuperscript{th} percentile while the Sevier County average was the 55\textsuperscript{th} percentile. Third, in language arts Pi Beta Phi students scored at the 62\textsuperscript{nd} percentile while the Sevier County average was the 56\textsuperscript{th} percentile. In social studies Pi Beta Phi students scored at the 58\textsuperscript{th} percentile while the Sevier County average was the 54\textsuperscript{th} percentile. Finally, in science Pi Beta Phi students scored at the 60\textsuperscript{th} percentile while the Sevier County average score was the 55\textsuperscript{th} percentile. This is significant because it is an indicator that schools that offer alternative programs such as this can and do still maintain high test scores which have been maintained despite increased percentages free and reduced lunch and the pressure of testing.

A very interesting fact came to light in this comparison. The only schools to come close to the same academic achievement as Pi Beta Phi Elementary School in Sevier County were Catons Chapel Elementary School and Pittman Center Elementary School, both of which are relatively small elementary schools in close proximity to Pi Beta Phi. One takes advantage of the Smoky Mountain Classrooms project while the other is located beside the environmental center.

The second component of this evaluation included an evaluation of pretest and posttest data that were collected by the teachers at Pi Beta Phi during the 2003-2004
school year. The 2004 test data that were available was used; however, some tests had not been completed for the spring of 2004. In this case, the data from 2003 were used. The results of these tests are presented in Table 1.

Table 1

*Results of the Mean Differences of PAC Units Taught at Pi Phi*

<table>
<thead>
<tr>
<th>Unit Test</th>
<th>Type</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Grade Cades Cove</td>
<td>Pretest</td>
<td>36</td>
<td>70</td>
<td>17.24</td>
<td>7.99</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>36</td>
<td>94.44</td>
<td>7.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Grade Noah Bud Ogle</td>
<td>Pretest</td>
<td>25</td>
<td>74.23</td>
<td>13.34</td>
<td>4.99</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>25</td>
<td>91.92</td>
<td>10.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Grade Sugarlands</td>
<td>Pretest</td>
<td>40</td>
<td>88.05</td>
<td>10.05</td>
<td>.0004</td>
<td>.50</td>
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<tr>
<td></td>
<td>Posttest</td>
<td>40</td>
<td>94.44</td>
<td>8.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fourth Grade Greenbriar</td>
<td>Pretest</td>
<td>45</td>
<td>69.07</td>
<td>13.39</td>
<td>7.995</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>45</td>
<td>86.62</td>
<td>9.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fourth Grade Indian Gap</td>
<td>Pretest</td>
<td>44</td>
<td>43.43</td>
<td>13.84</td>
<td>5.42</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>44</td>
<td>62.36</td>
<td>17.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fourth Grade Elkmont</td>
<td>Pretest</td>
<td>42</td>
<td>42.93</td>
<td>14.82</td>
<td>7.45</td>
<td>.00</td>
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<tr>
<td></td>
<td>Posttest</td>
<td>42</td>
<td>80.21</td>
<td>15.83</td>
<td></td>
<td></td>
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<tr>
<td>Fourth Grade Cades Cove</td>
<td>Pretest</td>
<td>31</td>
<td>41.94</td>
<td>10.01</td>
<td>1.57</td>
<td>0.06</td>
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<tr>
<td></td>
<td>Posttest</td>
<td>31</td>
<td>87.1</td>
<td>10.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sixth Grade Roaring Fork</td>
<td>Pretest</td>
<td>46</td>
<td>58.61</td>
<td>13.11</td>
<td>3.63</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>46</td>
<td>90.41</td>
<td>8.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sixth Grade Cades Cove</td>
<td>Pretest</td>
<td>34</td>
<td>55.74</td>
<td>16.8</td>
<td>9.03</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>34</td>
<td>67.74</td>
<td>15.92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05

As shown in Table 1, there were significant differences between the pretest and posttest scores in seven of the nine units. Significant differences occurred in First Grade Cades Cove (t= 7.99, p=.00), First Grade Noah Bud Ogle (t=4.99, p=.00), Fourth Grade
Greenbriar (t= 7.99, p=.00), Fourth Grade Indian Gap (t=5.42, p=.00), Fourth Grade Elkmont (t=7.45, p=.00), Sixth Grade Roaring Fork (t=3.63, p=.00), and Sixth Grade Cades Cove (t=9.03, p=.00). These results seem to suggest that in most PAC units, objectives are being met.

Summary

Interviews, a literature review, and a review of documents provide the data for answering the first research question. Survey instruments along with interviews with key stakeholders provided the data for answering the second research question. Descriptive statistics were applied in order to evaluate the responses. The data answering the third research question included a comparison of TerraNova scores among Sevier County schools, and an analysis of pre-test and post-test data for first, fourth, and sixth grades. A one tailed t-test was used to determine if there was a significant difference between the means.

For research question 1, the interviews, literature review, and various documents showed the program had gradually changed from a thematic approach in the early stages of development to a topical approach concentrating on a pre-site, on-site, and post-site format with an emphasis on experiential, hands-on learning. One element that has remained constant is the idea of linking park issues to curriculum objectives.

For research question 2, both parent and teacher surveys indicated that perceptions of the program were extremely positive with the teacher responses slightly more positive than the parent responses. Teacher written responses to the survey were also positive in nature including only one negative remark out of seven responses. The parent comments were also very complimentary. These comments indicated that parents
perceived hands-on, experiential learning as being an important factor. Parents also perceived PAC was a fun way for students to learn and that it led to parent involvement at the school. The only area parents seemed to indicate as an area to be improved upon was communication. Interviews also showed other stakeholders perceived PAC in a positive manner. Most of the stakeholders perceived that the strength of the program was the way in which students learn. They also perceived the biggest impact of the program was how PAC had directly impacted the educational programs of both institutions. In similar fashion stakeholders perceived that PAC not only should continue at Pi Beta Phi but also should be replicated in some fashion and taken to a broader audience. Depending on one’s view of replication, it could be argued that this has taken place through the development of the Smoky Mountains Classroom project.

For research question 3, analysis of TerraNova scores indicated that students at Pi Beta Phi Elementary are very successful academically. This study cannot support the fact that PAC alone is responsible for this academic achievement, but most of the stakeholders perceive it as playing an important role in the students’ academic success. Likewise, analysis of the pre-test and post-test data from the PAC units at Pi Beta Phi indicated that significant gains had been made in seven of the nine units. This seemed to indicate that PAC objectives are being met in a majority of the units. This is significant because it is an indicator that schools offering alternative educational programs such as PAC still achieve academically despite changing a changing demographic population and the pressure of testing.

Chapter 4 described the program as it is today and presented an analysis of the research data. The findings of the study were addressed and presented in narrative form.
with charts and tables demonstrating the statistical analysis placed in Appendices A through U.
CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine how successful the PAC program at Pi Beta Phi based on student achievement, community opinion, parental opinion, and teacher opinion. The population for the surveys included all parents with students attending Pi Beta Phi during 2003-2004, and all teachers employed at the school during this time. The interview population included key park staff, which were or are involved with the program and members of the Gatlinburg School Board. *TerraNova* Comprehensive Test of Basic Skills (CTB/McGraw Hill, 1996) had been administered to all students. The scores of students at Pi Beta Phi Elementary School were compared with the other Sevier County Schools. The study targeted pre-test and post-test data from PAC units taught in first, fourth, and sixth grades that were used to in the analytical comparison associated with the differences in means.

*Summary of Findings*

The analysis centered on three research questions. Interviews were completed, transcribed, and imported into NUD*IST in order to search for common threads. Survey instruments were given to parents and teachers with descriptive statistics administered in order to evaluate the data. The population consisted of 33 teachers and support staff and the parents of the 453 students who were enrolled in the school at the time of the study. The school achievement scores reported on the *TerraNova* exams from Pi Beta Phi were compared with other schools in Sevier County. This comparison looked at both the letter grades as assigned by the state of Tennessee and the percentile score in each subject area.
Pre-test and post-test data from first, fourth, and sixth grades were examined comparing the average mean of the pre-tests and post-tests. The results are summarized.

Research Question #1

What does the program look like today?

Pi Beta Phi Elementary School is a public school located in Gatlinburg, Tennessee. The school serves students from kindergarten through eighth grade. The school’s population is transient in nature, which is due in part to the tourist economy of the community. The school’s demographics are changing as well. The numbers of students who are economically disadvantaged has risen dramatically since 2001. At the end of the 2003-2004 school year, there were 461 students enrolled in the school. There were twenty-five homeroom teachers with eight support staff.

Today, the program is flourishing in all nine grades, K-8. However, what started out as a complete revamping of the school’s curriculum into six thematic units has gradually changed into more of a pre-site, on-site, and post-site program with the culminating event for the units being a trip to one of the sites in the GSMNP. This year students of Pi Beta Phi Elementary School took 37 PAC trips into GSMNP with each grade level taking at least three trips.

Today, a PAC Coordinator oversees the project and does much of the logistical work for the trips into the park and continually revises the PAC curriculum keeping it current and in line with the Tennessee curriculum objectives. Now, PAC field trips are primarily teacher directed with the NPS staff concentrating on one core unit that is shared with other schools. This change became imperative as GSMNP began its Smoky
Mountain Classrooms, which opened the program to thousands of students across the region.

*Research Question # 2*

How satisfied are stakeholders with the current program?

The results of the parent and teacher surveys indicated both groups were satisfied with the program with the teacher results indicating a higher level of satisfaction. For example, parent surveys indicated a high level of satisfaction with the program. Twenty-nine of the 42 comments scored means over 4.0, which indicated agreement with the statements. The highest levels of satisfaction reported by the parents were in the fact that they perceived the program to make learning fun, and they were proud to be a parent at the school. Other findings showed parents perceived the program has an atmosphere in which students effectively, are being prepared for the future, as well as an obligation to improve the community. Teachers’ perceptions of the program were very similar and even more supportive with 20 of the 43 statements showing a strong agreement with the statements, and only two statements with a mean score of below 4.0, which indicated agreement with the statements. One of these was due to the way the statement was worded.

My interview data from founders, park staff, and school board member indicated they were satisfied with the program as well. They expressed this belief in three main ways. First, the majority of these individuals felt the program was very important to both organizations. Second, they seem to feel the program needs to be continued. Finally, most suggested the program needs to be opened up to a greater audience in some capacity. The findings here support similar results found by Luera (1998) with the
Orange County Science School in California and Project WILD in Michigan. Her results showed stakeholders, participants, professionals, and sponsors perceived both programs to be effective.

*Research Question # 3*

How does the program impact student learning?

First, a review of *Terra Nova* scores was conducted. The students at Pi Beta Phi Elementary School have consistently received a grade of A from the state of Tennessee in every subject area over the past three years except social studies. A closer look at percentile scores for 2003 showed students at Pi Beta Phi consistently scored higher than the Sevier County average in every core academic (math, reading, language, social studies, and science) area on the *TerraNova* assessment tests.

These results are similar to the findings of Lieberman and Hoody (1998) and the State Education and Environment Roundtable (2000). They found students’ scored higher in six areas: academic, language arts, math, science, social studies, and discipline and attendance. These results were similar to Lozar-Glenn (2000) who reported using student experiences and other environmental education strategies had a positive influence on reading, language, and math. Although it is not possible to say with certainty that the PAC program brought about the higher scores, it is an interesting thought to consider.

Second, unit pretest and posttest data was evaluated from first, fourth, and sixth grades. A one-tailed t-test was used to determine if there was a significant difference between the means of these tests. The results indicated there was a significant difference in two of the three first grade tests, three of the four fourth grade tests, and both sixth grade’s tests. The findings of this component of the study are similar to the results of Stoneberg (1981) in her study on the effects of pre-site, on-site and post-site zoo
activities upon the cognitive achievement and attitudes of sixth grade students. Her results concluded that the groups receiving the activities significantly outperformed the schools that did not have such activities.

The findings of Glenn (1968) seem to contradict the results of this study. When he compared field trip observations to in-class observations of 35mm slides of the same geographic features, he concluded that classroom teaching with 35 mm slides was significantly effective in teaching students to make observations of geographic features and to form hypotheses concerning their origin and development. In similar findings, Peters (1971) concluded that students could remain in the classroom and gain exposure to the community through sound film simulations as effectively as they could through field trips.

Conclusions

Conclusion #1

The PAC program has a positive effect on student learning. Continuing to progressively move through the program from kindergarten through eighth grade, students are able to move from simple knowledge based instruction in primary grades through the evaluation levels of learning during service learning projects in the middle school years. This connection and awareness may lead to great benefits for the community and the park as these students become future leaders.

The use of an interdisciplinary, experiential based curriculum may lead to a greater retention and understanding of subject matter leading to higher test scores on standardized tests. Considering these benefits, schools, especially those in gateway communities may consider piloting a PAC program to test its merits on their community.
Conclusion #2

The PAC program has a high level of stakeholder satisfaction. All stakeholders involved in this study, including the PAC founders, parents, NPS staff, and teachers viewed the program in a positive manner. Interviews and survey results indicated these stakeholders had a favorable view of this program’s impact on student learning, community involvement, and collaboration.

Conclusion #3

Pi Beta Phi Elementary School is an excellent school. TerraNova test scores indicate students at this school are achieving above the norm in all academic areas. According to survey data and interviews, the vast majority of the stakeholders perceived that PAC has enhanced the student achievement of this school.

Conclusion #4

Community involvement is strength of the PAC program. During the interview process stakeholders perceived that involving parents was a strength of the program. Likewise, survey data indicated that parents were involved with the program and that teachers perceived parents were involved.

Conclusion #5

The PAC Coordinator is very instrumental to the program and the students. Interview data indicated this position was responsible for revising the PAC curriculum, managing all the logistics of the trips into GSMNP, and being a liaison between the teacher and the NPS staff among other responsibilities. Many of the individuals interviewed felt that this position had played an important role in the success of the
program. Similarly, survey data from both parents and teachers perceived this position to play an important role in PAC.

Conclusion #6

Communication is an area that needs to be improved with the program. This communication is a two-fold problem. Even though the mean scores on the parent surveys were high in satisfaction, many comments were made that led to belief that communication between the parents and the school is an issue that needs to be addressed. In the interview data, it appeared communication within the program should be improved. It seemed apparent this type of breakdown was more apparent when new staff personnel were involved from both organizations.

Recommendations for Practice

This study provides support for a number of practitioners and organizations who have suggested that programs involving outdoor/environmental education programs can favorably impact student learning. The following recommendations are for those individuals who have a voice in the implementation or participation in a PAC program.

1. A PAC program similar to the one at Pi Beta Phi Elementary School should be considered as a curriculum format in all gateway communities. This study focused on two main areas: stakeholder perceptions and the impact on student learning. The results proved favorable in both aspects.

2. When planning and organizing a PAC program, schools need to consider the resources necessary for successful implementation. The resources include an extensive amount of time during the planning and organizing stages prior to implementation and during the evaluation and revision of the program once it
is in place. This investment in time leads to other financial obligations including transportation to sites and purchasing other equipment necessary for on-site lessons. Establishing a partnership between Pi Beta Phi and GSMNP has proven to be very positive and productive for both organizations. Other schools and parks should consider such partnership as a means to alleviate expenses for both institutions.

*Recommendations for the Pi Beta Phi Project*

The PAC program at Pi Beta Phi Elementary School seems to be a very productive program in its ability to satisfy stakeholders and to impact student learning. Very few weaknesses can be associated with the program. With that thought in mind, the following recommendations are made: 1) The program should be continued. Programs such as this requiring support from two separate organizations are always on uncertain ground due to the changing staff members. Without the support of organizations, this program would not be possible. 2) A better line of communication should be established with parents. Even though the mean scores were high in this area, a larger number of parent comments on the survey leads one to believe this is an area of need. 3) A better form of communication needs to be established, especially with new staff member of each organization. This might include the development of a PAC staff manual, or improved staff development for new staff members. Other possible solutions include emails sent to parents and the development of WebPages with information about the PAC program and highlighting its unique aspects. 4) The program should be replicated in some form. Many of the individuals interviewed addressed this desire in some capacity.
Therefore, it would be pertinent for the management team to define what replication is and to begin to address this issue.

*Recommendations for Further Research*

After conducting this study, several pertinent topics came to mind for further research. These include the following: 1) Replication of this study that compares the impact of similar programs by gender to ascertain if there is any gender bias. 2) Replications of this study that compare the gains made by grade level to determine if the program is more suitable for various ages. 3) Studies that compare gains made by students of different ability levels to determine if the program benefits ability levels differently. 4) Studies that compare the student gains by subject matter to determine if the program has more of an impact in different subject areas. 5) Studies that compare the effectiveness of the program on special education students. 6) Studies that determine the long-term academic effects of the program by tracking student progress over several years. 7) Studies that describe the long-term attitudinal effects of the program by tracking students over several years. 8) A larger replication of this study that includes the students in the Smoky Mountain Classrooms project to determine its effectiveness on learning.
REFERENCES


Attarian, A. (1996). Integrating values clarification into outdoor adventure programs into outdoor adventure programs and activities. Journal of Physical Education, Recreation, and Dance, 67(8), 41-44.


APPENDIX A

Parks As Classrooms Teacher Survey

Part I. Teacher Perceptions About the Impact of Parks as Classrooms (PAC) on Teaching and Learning At Pi Beta Phi Elementary School

Use the following scale in responding to questions 1-30. 5=strongly agree, 4=agree, 3=undecided, 2=disagree, 1=strongly disagrees

1. Through the Parks As Classrooms program, students in this school can achieve the goals that have been set for them. 1 2 3 4 5

2. I believe that my students have the ability to achieve academically because of their participation in Parks As Classrooms. 1 2 3 4 5

3. Teaching Parks As Classrooms is fun for me. 1 2 3 4 5

4. The Parks As Classrooms project has an atmosphere in which students learn effectively. 1 2 3 4 5

5. I am proud to be a teacher instructing through Parks As Classrooms at this school. 1 2 3 4 5

6. Instruction through the Parks as Classrooms project is preparing students for the future. 1 2 3 4 5

7. My input into curriculum development is recognized by the Parks As Classrooms coordinator and Park staff. 1 2 3 4 5

8. My teaching and development efforts with Parks As Classrooms are supported by the local administration. 1 2 3 4 5

9. Although my teaching schedule is based around PAC experiences, I am still able to fit many other important teaching strategies into my lesson plans. 1 2 3 4 5

10. The Parks As Classrooms project promotes effective teaching and learning. 1 2 3 4 5

11. The Parks As Classrooms project helps students to overcome learning problems. 1 2 3 4 5

12. The Parks As Classrooms project helps students improve test scores. 1 2 3 4 5

13. The Parks As Classrooms project leads to greater retention of learned material. 1 2 3 4 5

14. The PAC project reduces opportunities to participate in other school activities. 1 2 3 4 5
15. The Parks As Classrooms project reduces student stress.

16. The Parks As Classrooms project is based on information about how students learn most effectively.

17. The Parks As Classrooms project keeps students engaged in learning.

18. The Parks As Classrooms project motivates students to attend school.

19. The Parks As Classrooms project allows families opportunities to be involved in their children’s education.

20. The Parks As Classrooms project enhances physical and social as well as academic skills.

21. The Parks As Classrooms project improves my community.

22. The Parks As Classrooms project is enjoyed and supported by parents.

23. The Parks As Classrooms project supports state standards.

24. The Parks As Classrooms project is highly regarded by the Gatlinburg community.

25. Park Rangers or PAC coordinator provide enough training to provide me with confidence for teaching Parks as Classrooms lessons.

26. The rangers are effective teachers/presenters to the students.

27. The rangers’ style of presentation works well with the students.

28. Park Rangers play an important part in the Parks As Classrooms experiences for my students.

29. The Parks As Classrooms coordinator plays an important part in the Parks as Classrooms experiences for my students.

30. The learning environment is orderly and serious during the Parks As Classroom field experiences.
Part II. Teachers’ Perceptions Of Parent/Community Involvement With Parks as Classrooms (PAC)

Use the following scale in responding to questions 1-4. 5=strongly agrees, 4=agrees, 3=undecided, 2=disagrees, 1=strongly disagree.

1. Parents seem to feel welcome on the PAC field trips.  
2. Parents/Community members are encouraged to participate on PAC field trips.  
3. The school keeps parents informed about PAC events.  
4. Parents/Community members have input into the PAC planning process.

Part III. Teacher Perceptions of Collaboration on Parks As Classrooms

Use the following scale in responding to questions 1-4. 5=strongly agrees, 4=agrees, 3=undecided, 2=disagrees, 1=strongly disagrees.

1. High levels of trust and mutual respect exist between the Park staff and the School staff.
2. The principal works collaboratively with all stakeholders (parents, teachers, park staff, etc.)
3. In general, I am satisfied with the efforts of these Stakeholders to improve the Parks as Classrooms project:
   a. Students
   b. Teachers
   c. Parents
   d. Support staff
   e. Principal
   f. Park staff
   g. Gatlinburg Board of Education
4. List any other comments that you might have about the Parks as Classroom program.
# APPENDIX B

## Parks as Classrooms Parent Survey

### Part I. Parents’ Perceptions About the Impact of Parks As Classrooms on Teaching and Learning At Pi Beta Phi Elementary School

*Use the following scale in responding to questions 1-29. 5=strongly agree, 4=agree, 3=undecided, 2=disagree, 1=strongly disagrees*

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>1.  The students in this school can achieve the goals that have been set for them through Parks As Classrooms.</td>
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<tr>
<td>2.  Parks As Classrooms sets high standards for academic achievement.</td>
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<td>3.  Through the Parks As Classrooms program, this school has an atmosphere in which students learn effectively.</td>
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<td>4.  Parks As Classrooms makes learning at this school fun.</td>
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<tr>
<td>5.  I am proud to be a parent of a student at this school.</td>
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<tr>
<td>6.  The learning environment during Parks As Classrooms field experiences is orderly and serious.</td>
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<tr>
<td>7.  The Parks As Classrooms instruction at this school is preparing students for the future.</td>
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<tr>
<td>8.  The Parks As Classrooms program promotes effective teaching and learning.</td>
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<td>9.  The Parks As Classrooms program enables students to overcome learning problems.</td>
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<tr>
<td>10. The Parks As Classrooms program helps students improve test scores.</td>
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<tr>
<td>11. The Parks As Classrooms program lends to greater retention of learned material.</td>
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<tr>
<td>12. The Parks As Classrooms program reduces opportunities to participate in other school activities.</td>
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<tr>
<td>13. The Parks As Classrooms program reduces student stress.</td>
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<tr>
<td>14. The Parks As Classrooms program is based on information about how students learn most effectively.</td>
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<tr>
<td>15. The Parks As Classrooms program keeps students engaged in learning.</td>
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</tbody>
</table>
16. The Parks As Classrooms program motivates students to attend school.  
17. The Parks As Classrooms program allows families opportunities to be involved in their children’s education.  
18. The Parks As Classrooms program enhances physical and social as well as academic skills.  
19. The Parks As Classrooms program improves my community.  
20. The Parks As Classrooms program is enjoyed and supported by parents.  
21. The Parks As Classrooms program supports state standards.  
22. The Parks As Classrooms program is highly regarded by the Gatlinburg community.  
23. The rangers are effective teachers/presenters to the students.  
24. The rangers’ style of presentation works well with the students.  
25. Park Rangers provide enough information about Parks as Classrooms field experiences and parent responsibilities.  
26. The Parks As Classrooms coordinator provides enough information about PAC field experiences and parent responsibilities.  
27. The Park Rangers play an important part in the Parks as Classrooms experiences of my child.  
28. Parks as Classrooms coordinator plays an important part in the Parks As Classrooms experiences of my child.  
29. The learning environment is orderly and serious during Parks As Classrooms field experiences.  

Comments:
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
### Part II. Parent Perceptions About Parent/Community Involvement With Parks As Classrooms (PAC)

*Use the following scale in responding to questions 1-4. 5=strongly agrees, 4=agrees, 3=undecided, 2=disagrees, 1=strongly disagree.*

1. I feel welcome on the PAC field trips.  
2. Parents/Community members are encouraged to participate on PAC field trips.  
3. The school keeps parents informed about PAC events.  
4. Parents/Community members have input in the PAC planning process.

**Comments:**

______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________

### Part III. Parent Perceptions about Collaboration on Parks As Classrooms

*Use the following scale in responding to questions 1-4. 5=strongly agrees, 4=agrees, 3=undecided, 2=disagrees, 1=strongly disagrees.*

1. High levels of trust and mutual respect exist between the Park staff and the School staff.
2. The principal works collaboratively with all stakeholders (parents, teachers, park staff, etc.)
3. In general, I am satisfied with the efforts of these stakeholders to improve the Parks as Classrooms project:
   a. Students
   b. Teachers
   c. Parents
   d. Support staff
   e. Principal
   f. Park staff
   g. Gatlinburg Board of Education

**Comments:**

______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________
______________________________________________________________________________________

125
APPENDIX C

Founder Interview Guide

Title of the Project: Perceptions of stakeholders in the Pi Beta Phi Elementary School Parks As Classrooms Program

Founders Interview Guide

Pre-Interview Guidelines
- Introductions
- Purpose of the Study Explained
- Informed Consent Form and its Purpose Described
- Informed Consent Form is Presented
- Time for Reading and Answering Questions
- Informed Consent Form Signed

1. Please tell who you are and what position you held during the formation of the Parks As Classrooms program at Phi Beta Phi Elementary.

2. What were the factors that led to development of the Parks As Classrooms program at Pi Beta Phi?

3. Describe the Parks As Classrooms as it was first developed.

4. How has the program changed over the years?

5. What do you perceive to be the strengths of the program?

6. What do you perceive to be the weaknesses of the program?

7. How do you think the program impacts student learning?

8. Describe the Parks As Classrooms approach to learning.

9. How do you think the program has impacted the Great Smoky Mountains National Park, Pi Beta Phi Elementary School, and Gatlinburg?

10. What is the most important thing that you believe needs to be said about the program?

11. What other information about the Parks As Classrooms program would you like to offer that you have not been given the opportunity to address during the interview?

12. Who else would you suggest for me to interview in order to gain a better understanding of the Parks As Classrooms program?
APPENDIX D

Parks Staff Interview Guide

Title of the Project: Perceptions of stakeholders in the Pi Beta Phi Elementary School
          Parks As Classrooms Program

Park Staff Interview Guide

Pre- Interview Guidelines
- Introductions
- Purpose of the Study Explained
- Informed Consent Form and its Purpose Described
- Informed Consent Form is Presented
- Time for Reading and Answering Questions
- Informed Consent Form Signed

1. Please tell who you are and what position you hold in relationship to the Parks As
   Classrooms program at Phi Beta Phi Elementary.

2. Describe the Parks As Classrooms program from your perspective.

3. How do you believe the program has changed over the years?

4. What do you believe are the strengths of the program?

5. What do you believe are the weaknesses of the program?

6. How do you think the program impacts student learning?

7. Describe the Parks As Classrooms approach to learning from your perspective.

8. How do you think the program has impacted the Great Smoky Mountains National
   Park, Pi Beta Phi Elementary School, and Gatlinburg?

9. What do you think is the most important thing that needs to be said about the program
    from your point of view?

10. What other information about the Parks As Classrooms program would you like to
    offer that you have not been given the opportunity to address during the interview?

11. Who else would you suggest for me to interview in order to gain a better
    understanding of the Parks As Classrooms program?
APPENDIX E

Political Constituent Interview Guide

Title of the Project: Perceptions of stakeholders in the Pi Beta Phi Elementary School Parks As Classrooms Program

Political Constituents Interview Guide

Pre-Interview Guidelines
- Introductions
- Purpose of the Study Explained
- Informed Consent Form and its Purpose Described
- Informed Consent Form is Presented
- Time for Reading and Answering Questions
- Informed Consent Form Signed

1. Please tell who you are and what position you hold in relationship to the Parks As Classrooms program at Phi Beta Phi Elementary.

2. What do you perceive to be the strengths of the program?

3. What do you perceive to be the weaknesses of the program?

4. How do you think the program impacts student learning from your perspective?

5. How do you think the program has impacted the Great Smoky Mountains National Park, Pi Beta Phi Elementary School, and Gatlinburg?

6. What do you think is the most important thing from your point of view that needs to be said about the program?

7. What other information about the Parks As Classrooms program would you like to offer that you have not been given the opportunity to address during the interview?

8. Who else would you suggest for me to interview in order to gain a better understanding of the Parks As Classrooms program?
APPENDIX F

Sugarlands Visitor Center Unit Test First Grade

1. Are all animals in the national park in the same animal family?
   
   YES  NO

2. Does the Smoky Mountains National Park protect the animals and plants that are found in the park?
   
   YES  NO

3. Do mammals have fur or hair to cover their bodies?
   
   YES  NO

4. Are snakes covered with feathers?
   
   YES  NO

5. Do birds use wings to get from one place to another?
   
   YES  NO

6. Do insects have eight legs?
   
   YES  NO

7. Do amphibians like a frog always look the same?
   
   YES  NO

8. Is it okay to take things from the National Park that you see there?
   
   YES  NO

9. Is it our job to help the rangers keep the National Park a clean and safe place to visit?
   
   YES  NO

10. Do park rangers work in the National Park to help wildlife be safe as well as the people that come to the park?

   YES  NO
APPENDIX G

Noah Bud Ogle Unit Test First Grade

1. Did the Noah Bud Ogle house have electricity?
   YES  NO

2. Did Ma Ogle cook the family’s food in a microwave?
   YES  NO

3. Did Ma Ogle have to cook on a wood stove?
   YES  NO

4. Did the mountain people in Noah Bud Ogle’s Day listen to music?
   YES  NO

5. Did the mountain people make music using spoons for instruments?
   YES  NO

6. Was the tub mill used to wash clothes?
   YES  NO

7. Did the mountain children play games?
   YES  NO

8. Did the children play video games?
   YES  NO

9. Did the girls play with Barbie dolls?
   YES  NO

10. Did the family members have chores to do?
    YES  NO
Cades Cove Unit Test First Grade

1. Does Cades Cove have a restaurant, a mall, and a hospital?
   YES  NO

2. Did people long ago travel by horse and wagon in Cades Cove?
   YES  NO

3. Did people in Cades Cove community help each other build barns and get food and clothes?
   YES  NO

4. Does Cades Cove have a church?
   YES  NO

5. Were green beans the most important food in the garden in Cades Cove?
   YES  NO

6. Is a mill a machine that grinds corn into flour or meal?
   YES  NO

7. Long ago, did people in Cades Cove watch television and play video games?
   YES  NO

8. Is Cades Cove protected and taken care of by the National Park Service?
   YES  NO

9. Is Cades Cove a community?
   YES  NO

10. Does a blacksmith work in a restaurant?
    YES  NO
These questions refer to the organization and functions of the National Park. On all multiple choice questions, put a check in front of the answer you choose.

1. A special permit is needed for anyone to…
   ___(A) hike the trails       ___(B) back country camping       ___(C) pick flowers

2. Taking care of roads, trails, signs, and buildings is the job of which division?
   ___(A) Resource Management       ___(B) Administration
   ___(C) Interpretation

3. The division responsible for giving out information to the public, answering questions, and holding educational programs is…
   ___(A) Resource Management       ___(B) Administration
   ___(C) Interpretation

4. Resource Management/Science division would be responsible for which of the following?
   ___(A) road repair       ___(B) backcountry camping       ___(C) air quality issues

5. A park ranger who carries a gun is working under which division?
   ___(A) Maintenance       ___(B) Administration
   ___(C) Visitor Management and Resource Protection

6. This division is responsible for critical issue program support, public affairs, personnel, and media relations…
   ___(A) Administration       ___(B) Interpretation       ___(C) Maintenance

7. The working together of different divisions to perform functions is called…
   ___(A) Interpretation       ___(B) Intermingling       ___(C) Interaction
8. A diagram that shows the members of a family is called…

   ___(A) kinfolk      ___(B) forefathers    ___(C) family tree

9. Jobs that require special training and may be performed over most of your life are called…

   ___(A) hobbies      ___(B) careers        ___(C) employment
APPENDIX J

Logging Unit Fourth Grade

Please circle the correct answer.

1) Businessmen were lured to the smokies in the early 1900’s by what valuable resource?
   A) coal       B) salt       C) timber

2) What two major companies were charted to exploit the forest of the little River area near Townsend?
   A) Little River Railroad Company   B) Smokies Logging Company
   C) Little River Company

3) Before Townsend became a bustling mill town it was known as _________________
   A) Tuckaleechee Cove    B) Parson’s Branch Company
   C) Wears Valley

4) Townsend was named for ____________ from Pennsylvania, the founder and president of the LRR&LC’s.
   A) Chief Townsendii    B) Col. W.B. Townsend   C) John Sevier’s Sister

5) A group of investors that included Col. Townsend purchased nearly ____ acres of timberland for harvest.
   A) 25            B) 10            C) 100,000

6) When movement was launched to create a National Park in 1934, Col. Townsend agreed to sell nearly _________ acres to become part of the Great Smoky Mountains National Park.
   A) 80,000        B) 10            C) 100,000

7) Logging took place in Elkmont from:
   A) 1901-1925      B) 1800-1825     C) 1978-1995
8) What individual divided and sold lots and land in Elkmont to business people from Knoxville, Maryville, and Chattanooga?
   A) President Kennedy  B) Wiley B. Oakley  C) W.B. Townsend

9) Circle all the terms that relate to environmental damage caused by logging in the mountain.
   A) erosion  B) rockslides  C) fires

10) Circle all of the terms related to logging in the 1900’s.
    A) splash dams  B) Ball hooting  C) Team skidding
    D) Mule swings

11) Circle all the most valued kinds of trees to loggers in the Smokies.
    A) Cherry  B) Poplar  C) Palm  D) Walnut

12) The Appalachian Club that utilized the Elkmont Area was originally a:
    A) hunting and fishing club  B) Photography Club  C) Dance Club

13) The Wonderland Hotel was built for use by:
    A) homeless people  B) the president  C) prominent, wealthy people

14) Most people got to Elkmont by:
    A) train  B) large trucks  C) mules

15) The Civilian Conservation Corps was:
    A) group of workers brought to Elkmont in the 1930’s by President Roosevelt to rebuild and repair structures in the park
    B) a group of lawyers suing the National Park Service to keep cottages in Elkmont
    C) another name for the Appalachian Club.

16) Elkmont got its name from?
    A) the large number of elk roaming the area in the early 1900’s
    B) the Elk’s Club of Knoxville
    C) it was named after Jonathan Elk, the first settler in the Elkmont region.
APPENDIX K

Resource Management: Fourth Grade Greenbriar Test

Directions: Circle the correct answer for each of the following questions.

1. What do scientists look for when trying to identify animals?
   A. rain  B. evidence  C. flowers  D. trees

2. Reptiles are…
   A. warm blooded  B. hot blooded  C. cool blooded  D. cold blooded

3. What body part helps fish to breathe?
   A. scales  B. gills  C. fins  D. tail

4. The body covering of mammals is:
   A. feathers  B. scales  C. fur  D. shells

5. Carnivores have:
   A. sharp teeth  B. flat teeth  C. round teeth  D. dull teeth

Which is an example of evidence of a mammal?

6. A. beak  B. print  C. feather  D. scales

7. A. gills  B. scat  C. tail  D. fin

8. A. fur  B. shell  C. bark  D. bulb

9. A. leaf  B. skull  C. berries  D. flowers

Directions: Fill in the blank with the appropriate answer.

10. Which trout is native to The Great Smoky Mountains National Park? ___________

11. Name an example of an amphibian. ______________________________

12. Animals that eat both plants and animals are ________________________.

13. What seasons of the year do birds call each other looking for a mate?
    _________________________
Directions: Circle T if the answer is true and F if the answer is false.

14. An example of a reptile is a salamander.   T   F
15. Birds use their wings to fly.   T   F
16. Fish are cold blooded.   T   F
17. Most animals lay eggs.   T   F
18. Herbivores eat only plants.   T   F
19. Carnivores eat only other animals.   T   F

Directions: Circle the correct answer for the following questions.

21. Which is a reptile?
   A.  
   B.  
   C.  
   D.  

22. Which is a fish?
   A.  
   B.  
   C.  
   D.  

23. Which is an amphibian?
   A.  
   B.  
   C.  
   D.  

24. Which is a bird?
   A.  
   B.  
   C.  
   D.  

25. Which is a mammal?
   A.  
   B.  
   C.  
   D.  

137
APPENDIX L

Culture- Cades Cove Fourth Grade Unit Test

Directions: Circle the letter with the correct answer.

1. Cades Cove is largely a _______________ bed.
   A. Granite  B. Limestone  C. Sandstone

2. Cades Cove is surrounded by:____________________
   A. Canyons  B. Valleys  C. Mountains

3. The first people to use the Cove were the:_______________
   A. Confederates  B. Indians  C. Settlers

4. The first job of the settlers was to:_______________
   A. clear land  B. hunt for game  C. weave cloth

5. The last person to live in Cades Cove was:_______________
   A. John Oliver  B. Russell Gregory  C. Kermit Caughorn

6. The first settler to enter and live in the Cove was:_______________
   A. John Oliver  B. Joe Gregory  C. Russell Gregory

7. Cades Cove is made up of over ____________ acres.
   A. 2,000  B. 4,000  C. 6,000

8. By 1850 there were over ________ people living in the Cove.
   A. 500  B. 700  C. 900

9. What type of tree was called the “Chicken Tree”?_______________
   A. white pine  B. hemlock  C. cedar

10. The first priority for establishing a home site was: ________________.

   138
11. What was used to store water for washing clothes and scrubbing floors? __________
   A. cistern   B. well   C. springs

12. The plant used for string and rope was: ______________.
   A. wild cherry   B. cedar tree   C. yucka plant

13. When the rainwater mixes with carbon dioxide in the air it forms a weak acid called: ____________.
   A. sulfuric acid   B. carbonic acid   C. citric acid

14. The cave produces poison gas called: ______________.
   A. radon gas   B. natural gas   C. propane gas

15. One inhabitant of the cave that is endangered is the: ________________.
   A. copperhead   B. elk   C. Indian Bat

16. When a person in the community died someone would: ________________.
   A. ring the church bell   B. telephone neighbor   C. plant flowers

17. Who sat on the left side of the church? ________________
   A. women   B. children   C. men

18. If the ceiling of a cave collapsed it would form a: ________________.
   A. mound   B. sink hole   C. ditch

19. What important war took place while settlers lived in the Cove? ________________
   A. Revolutionary War   B. Civil War   C. WWI

20. Something that was very important to the people of the Cove was: ________________
   A. planting crops   B. making clothes   C. family and religion
Number the different stages of Succession in order of growth.

_____ Grasses and shrubs, with young trees

_____ Grasses and non-woody plants only

_____ Mature trees

_____ Grasses and woody and non-woody plants

_____ Ground vegetation and young trees
Circle the correct answer:

1. One of the following is not a vital part of Cades Cove history
   A. Cherokee Indians
   B. The National Park Service
   C. Quakers
   D. European Settlers

2. Cades Cove was once a:
   A. Densely wooded area
   B. Large lake
   C. Barren desert
   D. Vast open plain

3. In the early 1700’s a visitor to the cove would have seen:
   A. European settlers
   B. Cherokee Indians
   C. Spanish explorers

4. T or F Cades Cove is composed of dry, shallow soil.

5. T or F Visitation to Cades Cove is expected to increase in the next few years.

6. T or F Air pollution is a problem in the Cove.

7. T or F Nuisance animals may be hunted in Cades Cove with a special permit.

Fill in the blank

8. The red wolf is a significant animal because it was once one of the few large ______________ in the Smoky Mountains.

9. It would be difficult to grow corn at the Cove, even though it is historically correct, because ___________ and ___________ like to feed on that crop.

10. The National Park Service has attempted to ___________ animals such as red wolves and river otters into the Cove.

11. The cattle operation in the Cove can cause bad ______________ of the soil.

12. The open fields in the Cove allow the visitors to more easily see _____________.

Short Answer

13. Briefly describe (no more than three paragraphs) what you would like the Cades Cove area to be like in twenty years. (For example, More visitors? Less visitors? No buildings? More rebuilt and restored homes?) State your opinion

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
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APPENDIX N

Field Trip to Roaring Fork Sixth Grade Pre/Post Test

Directions: Fill in the blank with the letter with the correct answer.

_____ 1. What purpose would a tame dog serve on a pioneer farm?
   A. To hunt with
   B. To sound the alarm
   C. To run off or kill critters
   D. All of the above

_____ 2. What are some practical reasons for small doors in a cabin?
   A. Lets out less heat
   B. Takes less time and effort to build
   C. Takes less material to build
   D. All of the above

_____ 3. Historically, no animal better represents farm life in the mountains than the?
   A. Mule
   B. Pig
   C. Bear

_____ 4. Butchering took place when?
   A. After lunch
   B. In July
   C. When the weather was cold

_____ 5. If meat was to be smoked, what kind of wood was used?
   A. Pine
   B. Hardwood
   C. Wet, green wood

_____ 6. How many required days of labor on road maintenance did every able-bodied man (over 18 and under 65) have to work each year?
   A. 6
   B. 3
   C. 9

_____ 7. The pioneers used every part of the hog except?
   A. The snout
   B. The ears
   C. The squeal
8. Corn is pollinated by?
   A. Animals
   B. Wind
   C. Water

9. What kind of corn was commonly grown on the Ephram Bales farm?
   A. Indian corn
   B. Hickory Cane corn
   C. Silver Queen corn

10. Roaring Fork is a small stream originating high on the slopes of what mountain?
    A. Mt. LeConte
    B. Mt. Mitchell
    C. Mt. Everest

11. Why is it called Roaring Fork Creek?
    A. Because of the Mountain Lions that used to live in the area.
    B. Because of the circus lion that escaped in the Roaring Fork area.
    C. Because of the noise from the water running over the rocks.

Directions: Fill in the blank with a T if the answer is true and a F if the answer is false.

12. T or F, CCC stands for Civilian Conservation Corp.

13. T or F, On the Ephram Bales farm some animals were consumed such as hogs and chickens.

14. T or F, Some animals provided labor such as mules, oxen, and hunting dogs.

15. T or F, Some animals such as cats protected precious resources.
This test is to assess prior knowledge of information you will learn when we visit the Cherokee Museum. Circle “T” for true or “F” for false for each of the following 15 statements. Answer # 16 with something you hope to see or learn while we tour the museum.

1. Cherokee Indians had legends about the creation of the world.  
   T  F
2. Paleo-Indians used spears to hunt for food.  
   T  F
3. Spearsheads could be made from bone.  
   T  F
4. Archaic Period Indians shot their food with guns.  
   T  F
5. Woodland Period Indians had to fight dinosaurs.  
   T  F
   T  F
7. Mississippi Indians lived in mound homes.  
   T  F
8. European Period brought trading with guns and deerskins.  
   T  F
9. Indians had diseases among their tribes before the Europeans arrived.  
   T  F
10. Sequoia developed the Cherokee language.  
    T  F
11. John Ross was a European.  
    T  F
12. Four to Eight-Thousand Cherokee Indians died on the Trail of Tears.  
    T  F
13. The Trail of Tears ends in the state of Missouri.  
    T  F
14. President Abraham Lincoln ordered the Cherokees to be moved out of their land.  
    T  F
15. All Cherokees left their land to walk the Trail of Tears.  
    T  F
16. Write one thing you hope to learn while you are at the museum.
This test is to assess your knowledge of information you learned when we visited the Cherokee Museum. Circle “T” for true or “F” for false for each of the following 15 statements.

1. Cherokee Indians believed that a brave sea turtle made the land.  
   T  F
2. Indians used spears to get their food.  
   T  F
3. Many Indians died from smallpox.  
   T  F
   T  F
5. The Trail of Tears was 1,000 miles long.  
   T  F
6. Men and women have always been allowed to play stickball.  
   T  F
7. The Mississippi Indians started “fishing for food”.  
   T  F
8. Many Indians died of chicken pox.  
   T  F
9. Indians had diseases among their tribe before the Europeans arrived.  
   T  F
10. Sequoia developed the Cherokee language.  
    T  F
11. There was a person named “Dragging Canoe” that stood up for the Cherokee.  
    T  F
12. Four to Eight Thousand Cherokee Indians died on the Trail of Tears.  
    T  F
13. Some Indians made jewelry out of shells.  
    T  F
14. President Abraham Lincoln ordered the Cherokee to be moved out of their land.  
    T  F
15. There was a ceremonial dance called the “Booger Dance”.  
    T  F
APPENDIX Q

Informed Consent Form

PRINCIPAL INVESTIGATOR: Johnny M. Henry

TITLE OF PROJECT: An Assessment of the Parks as Classrooms Curriculum at Phi Beta Phi Elementary School

This informed consent document will explain the research being conducted in the study. It is important that you read the document carefully and decide if you wish to participate.

The purpose of the study is to assess the Parks as Classrooms curriculum being implemented at Phi Beta Phi in Gatlinburg, Tennessee. First, this assessment will include a review of what factors led to the development of the program and what it looks like today. Next, stakeholder satisfaction will be reviewed. Each participant will be interviewed in depth regarding their experience with the Parks As Classroom curriculum.

This study is not an experiment. No variables will be manipulated. The interview will take approximately one hour. Risk for participating will be minimal and participation is completely voluntary. You may decide not to answer any question that makes you feel uncomfortable and may end the interview at any time. The interview will be tape recorded and transcribed for accuracy. All information provided during the interview process will be kept strictly confidential.

This research project will begin in October 2003 and end December 2003.

I understand the procedures to be used in this study and the possible risks involved. I understand that participation in the study is voluntary and that I may withdraw from the study at any time by notifying Johnny Henry whose phone number is 865-509-4829.

I also understand that if there are any questions or research related problems, I may contact Johnny Henry at 865-509-4829 or Dr. Louise MacKay at 423-439-7629. By signing the line below, I consent to participate in the study.

__________________________    __________________
Signature of Participant      Date

__________________________    __________________
Signature of Investigator      Date
## Appendix R

### PAC Calendar

### 2003/2004

#### September

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>19th</td>
<td>Fall Creek Falls</td>
<td>TEEA Conference</td>
<td>Friday-Sunday</td>
</tr>
<tr>
<td>23rd</td>
<td>Greenbrier</td>
<td>Animal Research</td>
<td>8:30am-2:00pm</td>
</tr>
<tr>
<td>24th</td>
<td>Cades Cove</td>
<td>Communities</td>
<td>8:30am-2:30pm</td>
</tr>
<tr>
<td>25th</td>
<td>Clingmans Dome</td>
<td>Air Quality/Exotics</td>
<td>8:30am-2:30pm</td>
</tr>
<tr>
<td>30th</td>
<td>Look Rock</td>
<td>Geology &amp; Geography</td>
<td>8:15am-2:30pm</td>
</tr>
</tbody>
</table>

#### October

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Metcalf Bottom</td>
<td>Insects/Spiders</td>
<td>8:30am-2:00pm</td>
</tr>
<tr>
<td>2nd</td>
<td>Walker Sisters</td>
<td>One-room schools</td>
<td>8:15am-2:30pm</td>
</tr>
<tr>
<td>3rd</td>
<td>Foothills Parkway (East)</td>
<td>Exotics/Endangered</td>
<td>8:15am-2:30pm</td>
</tr>
<tr>
<td>7th</td>
<td>Noah Bud Ogle Place</td>
<td>Families and Culture</td>
<td>8:30am-1:30pm</td>
</tr>
<tr>
<td>8th</td>
<td>Little River Ranger Sta.</td>
<td>Community Helpers</td>
<td>9:15-10:45am</td>
</tr>
<tr>
<td>15th</td>
<td>Indian Gap</td>
<td>Forest/Trees</td>
<td>8:15am-2:30pm</td>
</tr>
<tr>
<td>22nd</td>
<td>Cherokee</td>
<td>Comparing cultures</td>
<td>8:30am-2:30pm</td>
</tr>
<tr>
<td>31st</td>
<td>Sugarlands Valley Trail</td>
<td>Community</td>
<td>8:30am-2:30pm</td>
</tr>
</tbody>
</table>

#### November

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th</td>
<td>Sugarlands Valley</td>
<td>Seasons/Senses</td>
<td>8:30am-10:55am</td>
</tr>
<tr>
<td>5th</td>
<td>Sugarlands Visitor Cent.</td>
<td>Birds/Adaptations</td>
<td>8:30am-1:00pm</td>
</tr>
<tr>
<td>14th</td>
<td>Elkmont/ Townsend</td>
<td>Logging History</td>
<td>8:15am-2:15pm</td>
</tr>
<tr>
<td>18th</td>
<td>Alternative Date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20th</td>
<td>Roaring Fork</td>
<td>Ephraim Bales</td>
<td>8:30am-12:00</td>
</tr>
</tbody>
</table>

#### January

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>22nd</td>
<td>East TN Discovery Ctr</td>
<td>Solar System</td>
<td>8:30am-2:30pm</td>
</tr>
</tbody>
</table>

#### February

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd</td>
<td>Sugarlands Overflow</td>
<td>Star Party</td>
<td>7:30-9:00pm</td>
</tr>
</tbody>
</table>

#### March

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>18th</td>
<td>Quiet Walkway</td>
<td>Service Project</td>
<td>8:30am-2:00pm</td>
</tr>
<tr>
<td>19th</td>
<td>Cades Cove</td>
<td>Resource Management</td>
<td>8:30am-2:30pm</td>
</tr>
<tr>
<td>23th</td>
<td>Sevier Co. Recycling Fac.</td>
<td>Recycling</td>
<td>12:00-2:00pm</td>
</tr>
<tr>
<td>25th</td>
<td>PB Library</td>
<td>PAC DAY</td>
<td>3:30-4:30pm</td>
</tr>
<tr>
<td>27th</td>
<td>Cosby House</td>
<td>Cleaning Service</td>
<td>9:00am-1:00pm</td>
</tr>
</tbody>
</table>

#### April

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th</td>
<td>Sugarlands Visitor Ctr.</td>
<td>Animals</td>
<td>8:30am-12:30pm</td>
</tr>
<tr>
<td>8th</td>
<td>Metcalf Bottoms</td>
<td>Soils and Habitats</td>
<td>8:30am-1:30pm</td>
</tr>
<tr>
<td>22nd</td>
<td>Chimney’s Picnic Area</td>
<td>Wildflowers</td>
<td>8:30am-10:55am</td>
</tr>
<tr>
<td>28th</td>
<td>Chimney’s Picnic Area</td>
<td>Wildflowers</td>
<td>11:30am-2:30pm</td>
</tr>
<tr>
<td>29th</td>
<td>Cades Cove</td>
<td>Life and Death in CC</td>
<td>8:15am-2:30pm</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
<td>Location</td>
<td>Activity</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>4th</td>
<td>2nd</td>
<td>Porters Flat</td>
<td>Culture</td>
</tr>
<tr>
<td>7th</td>
<td>7/8th</td>
<td>Cosby</td>
<td>Camping Trip</td>
</tr>
<tr>
<td>11th</td>
<td>3rd</td>
<td>Noah Bud Ogle/City Hall</td>
<td>Government/Civics</td>
</tr>
<tr>
<td>12th</td>
<td>6th</td>
<td>Cades Cove</td>
<td>Biking Managers</td>
</tr>
<tr>
<td>18th</td>
<td>5th</td>
<td>Henwallow Falls</td>
<td>Watersheds/Erosion</td>
</tr>
<tr>
<td>19th</td>
<td>5th</td>
<td>Henwallow Falls</td>
<td>Watersheds/Erosion</td>
</tr>
<tr>
<td>25th</td>
<td>2</td>
<td>Water Department</td>
<td>Water Conservation</td>
</tr>
</tbody>
</table>
APPENDIX S

Results of the Parent Survey

*Part 1 of Parent Survey*

<table>
<thead>
<tr>
<th>Part I. Parents' Perceptions About the Impact of Parks as Classrooms (PaC) on Teaching and Learning At Pi Beta Phi Elementary School</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The students in this school can achieve the goals that have been set for them through Parks As Classrooms.</td>
<td>4.21</td>
<td>5</td>
<td>0.82</td>
</tr>
<tr>
<td>2. Parks as Classrooms sets high standards for academic achievement.</td>
<td>4.15</td>
<td>4</td>
<td>0.87</td>
</tr>
<tr>
<td>3. Through the Parks as Classrooms program, this school has an atmosphere in which students learn effectively.</td>
<td>4.33</td>
<td>5</td>
<td>0.82</td>
</tr>
<tr>
<td>4. Parks as Classrooms makes learning at this school fun.</td>
<td>4.51</td>
<td>5</td>
<td>0.74</td>
</tr>
<tr>
<td>5. I am proud to be a parent of a student at this school.</td>
<td>4.68</td>
<td>5</td>
<td>0.74</td>
</tr>
<tr>
<td>6. The learning environment during Parks as Classrooms field experiences is orderly and serious.</td>
<td>4.16</td>
<td>4</td>
<td>0.80</td>
</tr>
<tr>
<td>7. The Parks as Classrooms instruction at this school is preparing students for the future.</td>
<td>4.20</td>
<td>5</td>
<td>0.85</td>
</tr>
<tr>
<td>8. The Parks as Classrooms program promotes effective teaching and learning.</td>
<td>4.33</td>
<td>5</td>
<td>0.75</td>
</tr>
<tr>
<td>9. The Parks as Classrooms program enables students to overcome learning problems.</td>
<td>3.61</td>
<td>3</td>
<td>0.86</td>
</tr>
<tr>
<td>10. The Parks as Classrooms program helps students improve test scores.</td>
<td>3.71</td>
<td>3</td>
<td>0.75</td>
</tr>
</tbody>
</table>
11. The Parks as Classrooms program lends to greater retention of learned material.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>4.10</td>
<td>4</td>
<td>0.81</td>
</tr>
</tbody>
</table>

12. The Parks as Classrooms program reduces opportunities to participate in other school activities.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>2.36</td>
<td>1</td>
<td>1.22</td>
</tr>
</tbody>
</table>

13. The Parks as Classrooms program reduces student stress.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>3.78</td>
<td>4</td>
<td>0.92</td>
</tr>
</tbody>
</table>

14. The Parks as Classrooms program is based on information about how students learn most effectively.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.</td>
<td>3.76</td>
<td>4</td>
<td>0.83</td>
</tr>
</tbody>
</table>

15. The Parks as Classrooms program keeps students engaged in learning.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>4.22</td>
<td>4</td>
<td>0.78</td>
</tr>
</tbody>
</table>

16. The Parks as Classrooms program motivates students to attend school.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>3.84</td>
<td>4</td>
<td>1.00</td>
</tr>
</tbody>
</table>

17. The Parks as Classrooms program allows families opportunities to be involved in their children’s education.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td>4.36</td>
<td>4</td>
<td>2.51</td>
</tr>
</tbody>
</table>

18. The Parks as Classrooms project enhances physical and social as well as academic skills.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.</td>
<td>4.17</td>
<td>4</td>
<td>0.85</td>
</tr>
</tbody>
</table>

19. The Parks as Classrooms program improves my community.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.</td>
<td>4.20</td>
<td>5</td>
<td>0.87</td>
</tr>
</tbody>
</table>

20. The Parks as Classrooms program is enjoyed and supported by parents.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.</td>
<td>4.22</td>
<td>4</td>
<td>0.84</td>
</tr>
</tbody>
</table>

21. The Parks as Classrooms program supports state standards.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Rating</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>3.89</td>
<td>4</td>
<td>0.85</td>
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</tbody>
</table>
### Part 1 of Parent Survey Continued

<table>
<thead>
<tr>
<th>Question</th>
<th>Score</th>
<th>Ranking</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. The Parks as Classrooms program is highly regarded by the Gatlinburg community.</td>
<td>4.19</td>
<td>5</td>
<td>0.83</td>
</tr>
<tr>
<td>23. The rangers are effective teachers/presenters to the students.</td>
<td>4.43</td>
<td>5</td>
<td>0.78</td>
</tr>
<tr>
<td>24. The rangers’ style of presentation works well with the students.</td>
<td>4.32</td>
<td>5</td>
<td>0.79</td>
</tr>
<tr>
<td>25. Park Rangers provide enough information about Parks as Classrooms field experiences and parent responsibilities.</td>
<td>4.15</td>
<td>4</td>
<td>0.86</td>
</tr>
<tr>
<td>26. The Parks as Classrooms coordinator provides enough information about PaC field experiences and parent responsibilities.</td>
<td>4.04</td>
<td>4</td>
<td>0.93</td>
</tr>
<tr>
<td>27. The Park Rangers play an important part in the Parks as Classrooms experiences of my child.</td>
<td>4.39</td>
<td>5</td>
<td>0.79</td>
</tr>
<tr>
<td>28. Parks as Classrooms coordinator plays an important part in the Parks as Classrooms experiences of my child.</td>
<td>4.25</td>
<td>5</td>
<td>0.83</td>
</tr>
<tr>
<td>29. The learning environment is orderly and serious during Parks as Classrooms field experiences.</td>
<td>4.14</td>
<td>5</td>
<td>0.88</td>
</tr>
</tbody>
</table>
### Part II of Parent Survey

<table>
<thead>
<tr>
<th>Part II. Parents’ Perceptions Of Parent/Community Involvement With Parks as Classrooms (PaC)</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel welcome on the PaC field trips.</td>
<td>4.30</td>
<td>5</td>
<td>0.84</td>
</tr>
<tr>
<td>2. Parents/Community members are encouraged to participate on PaC field trips.</td>
<td>4.29</td>
<td>5</td>
<td>0.85</td>
</tr>
<tr>
<td>3. The school keeps parents informed about PaC events.</td>
<td>4.18</td>
<td>5</td>
<td>0.95</td>
</tr>
<tr>
<td>4. Parents/Community members have input into the PaC planning process.</td>
<td>3.60</td>
<td>3</td>
<td>0.98</td>
</tr>
</tbody>
</table>

### Part III of the Parent Survey

<table>
<thead>
<tr>
<th>Part III. Parent Perceptions of Collaboration on Parks as Classrooms</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. High levels of trust and mutual respect exist between the Park staff and the School staff.</td>
<td>4.22</td>
<td>4</td>
<td>0.79</td>
</tr>
<tr>
<td>2. The principal works collaboratively with all stakeholders (parents, teachers, park staff, etc.)</td>
<td>3.99</td>
<td>4</td>
<td>0.88</td>
</tr>
</tbody>
</table>
In general, I am satisfied with the efforts of these Stakeholders to improve the Parks as Classrooms project:

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Students</td>
<td>4.19</td>
<td>4</td>
<td>0.75</td>
</tr>
<tr>
<td>b. Teachers</td>
<td>4.30</td>
<td>5</td>
<td>0.79</td>
</tr>
<tr>
<td>c. Parents</td>
<td>4.09</td>
<td>4</td>
<td>0.85</td>
</tr>
<tr>
<td>d. Support staff</td>
<td>4.20</td>
<td>4</td>
<td>0.77</td>
</tr>
<tr>
<td>e. Principal</td>
<td>4.11</td>
<td>4</td>
<td>0.92</td>
</tr>
<tr>
<td>f. Park staff</td>
<td>4.38</td>
<td>5</td>
<td>0.60</td>
</tr>
<tr>
<td>g. Gatlinburg Board of Education</td>
<td>4.09</td>
<td>5</td>
<td>0.92</td>
</tr>
</tbody>
</table>
## APPENDIX T

### Results of the Teacher Survey

### Part I of the Teachers’ Survey

<table>
<thead>
<tr>
<th>Part I. Teacher Perceptions About the Impact of Parks as Classrooms (PaC) on Teaching and Learning At Pi Beta Phi Elementary School</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Through the Parks as Classrooms program, students in this school can achieve the goals that have been set for them.</td>
<td>4.48</td>
<td>4</td>
<td>0.51</td>
</tr>
<tr>
<td>2. I believe that my students have the ability to achieve academically because of their participation in Parks as Classrooms.</td>
<td>4.17</td>
<td>4</td>
<td>0.66</td>
</tr>
<tr>
<td>3. Teaching Parks as Classrooms is fun for me.</td>
<td>4.45</td>
<td>5</td>
<td>0.83</td>
</tr>
<tr>
<td>4. The Parks as Classrooms project has an atmosphere in which students learn effectively.</td>
<td>4.62</td>
<td>5</td>
<td>0.49</td>
</tr>
<tr>
<td>5. I am proud to be a teacher instructing through Parks as Classrooms at this school.</td>
<td>4.69</td>
<td>5</td>
<td>0.54</td>
</tr>
<tr>
<td>6. Instruction through the Parks as Classrooms project is preparing students for the future.</td>
<td>4.55</td>
<td>5</td>
<td>0.51</td>
</tr>
<tr>
<td>7. My input into curriculum development is recognized by the Parks as Classrooms coordinator and Park staff.</td>
<td>4.62</td>
<td>5</td>
<td>0.49</td>
</tr>
<tr>
<td>8. My teaching and development efforts with Parks as Classrooms are supported by the local administration.</td>
<td>4.76</td>
<td>5</td>
<td>0.44</td>
</tr>
<tr>
<td>9. Although my teaching schedule is based around PaC experiences, I am still able to fit many other important teaching strategies into my lesson plans.</td>
<td>4.45</td>
<td>5</td>
<td>0.69</td>
</tr>
<tr>
<td>10. The Parks as Classrooms project promotes effective teaching and learning.</td>
<td>4.69</td>
<td>5</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project helps students to overcome learning problems.</td>
<td>3.55</td>
<td>4</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project helps students improve test scores.</td>
<td>3.86</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project leads to greater retention of learned material.</td>
<td>4.17</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>The PaC project reduces opportunities to participate in other school activities.</td>
<td>2.00</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project reduces student stress.</td>
<td>3.43</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project is based on information about how students learn most effectively.</td>
<td>4.00</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project keeps students engaged in learning.</td>
<td>4.52</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project motivates students to attend school.</td>
<td>3.86</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project allows families opportunities to be involved in their children’s education.</td>
<td>4.41</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project enhances physical and social as well as academic skills.</td>
<td>4.48</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project improves my community</td>
<td>4.52</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>The Parks as Classrooms project is enjoyed and supported by parents.</td>
<td>4.48</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>23. The Parks as Classrooms project supports state standards.</td>
<td>4.52</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>24. The Parks as Classrooms project is highly regarded by the Gatlinburg community.</td>
<td>4.55</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>25. Park Rangers or PAC coordinator provide enough training to provide me with confidence for teaching Parks as Classrooms lessons.</td>
<td>4.28</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>26. The rangers are effective teachers/presenters to the students.</td>
<td>4.21</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>27. The rangers’ style of presentation works well with the students.</td>
<td>4.17</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>28. Park Rangers play an important part in the Parks as Classrooms experiences for my students.</td>
<td>4.59</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>29. The Parks as Classrooms coordinator plays an important part in the Parks as Classrooms experiences for my students.</td>
<td>4.79</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>30. The learning environment is orderly and serious during the Parks as Classroom field experiences.</td>
<td>4.39</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
**Part II of the Teachers’ Survey**

<table>
<thead>
<tr>
<th>Part II. Teachers’ Perceptions Of Parent/Community Involvement With Parks as Classrooms (PaC)</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Parents seem to feel welcome on the PaC field trips.</td>
<td>4.69</td>
<td>5</td>
<td>0.47</td>
</tr>
<tr>
<td>2. Parents/Community members are encouraged to participate on PaC field trips.</td>
<td>4.72</td>
<td>5</td>
<td>0.46</td>
</tr>
<tr>
<td>3. The school keeps parents informed about PaC events.</td>
<td>4.66</td>
<td>5</td>
<td>0.09</td>
</tr>
<tr>
<td>4. Parents/Community members have input into the PaC planning process.</td>
<td>3.69</td>
<td>4</td>
<td>0.76</td>
</tr>
</tbody>
</table>

**Part III of the Teachers’ Survey**

<table>
<thead>
<tr>
<th>Part III. Teacher Perceptions of Collaboration on Parks as Classrooms</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. High levels of trust and mutual respect exist between the Park staff and the School staff.</td>
<td>4.38</td>
<td>5</td>
<td>0.78</td>
</tr>
<tr>
<td>2. The principal works collaboratively with all stakeholders (parents, teachers, park staff, etc.)</td>
<td>4.66</td>
<td>5</td>
<td>0.48</td>
</tr>
</tbody>
</table>
In general, I am satisfied with the efforts of these Stakeholders to improve the Parks as Classrooms project:

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Students</td>
<td>4.39</td>
<td>5</td>
<td>0.63</td>
</tr>
<tr>
<td>b. Teachers</td>
<td>4.69</td>
<td>5</td>
<td>0.54</td>
</tr>
<tr>
<td>c. Parents</td>
<td>4.35</td>
<td>4</td>
<td>0.61</td>
</tr>
<tr>
<td>d. Support staff</td>
<td>4.6</td>
<td>5</td>
<td>0.49</td>
</tr>
<tr>
<td>e. Principal</td>
<td>4.76</td>
<td>5</td>
<td>0.44</td>
</tr>
<tr>
<td>f. Park staff</td>
<td>4.69</td>
<td>5</td>
<td>0.54</td>
</tr>
<tr>
<td>g. Gatlinburg Board of Education</td>
<td>4.17</td>
<td>4</td>
<td>0.76</td>
</tr>
</tbody>
</table>
**APPENDIX U**

**Terra Nova Scores**

**Table U 1**  
*Sevier County School Academic Achievement 2002-2003*

<table>
<thead>
<tr>
<th>Academic Achievement</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 year average NCE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NRT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td>57</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Above Average</td>
</tr>
<tr>
<td></td>
<td>57</td>
<td>B</td>
</tr>
<tr>
<td>Reading</td>
<td>54</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>B</td>
</tr>
<tr>
<td>Language</td>
<td>54</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>56</td>
<td>B</td>
</tr>
<tr>
<td>Social Studies</td>
<td>53</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>54</td>
<td>C</td>
</tr>
<tr>
<td>Science</td>
<td>54</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>B</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)

**Table U 2**  
*Pi Beta Phi Academic Achievement 2002-2003*

**Student Performance**  
*Pi Beta Phi Elementary School*  
*Grades K-8: Academics*  

<table>
<thead>
<tr>
<th>Achievement</th>
<th>2001 Grade</th>
<th>2002 Grade</th>
<th>2003 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>A</td>
<td>60</td>
<td>A</td>
</tr>
<tr>
<td>Reading</td>
<td>A</td>
<td>62</td>
<td>A</td>
</tr>
<tr>
<td>Language</td>
<td>A</td>
<td>61</td>
<td>A</td>
</tr>
<tr>
<td>Social Studies</td>
<td>A</td>
<td>60</td>
<td>B</td>
</tr>
<tr>
<td>Science</td>
<td>B</td>
<td>57</td>
<td>A</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>B</td>
<td>3.8</td>
<td>B</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>B</td>
<td>3.8</td>
<td>A</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)
Table U 3

*Catons Chapel Academic Performance 2002-2003*

<table>
<thead>
<tr>
<th>Student Performance</th>
<th>Catons Chapel Elementary School</th>
<th>Grades K-8: Academics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2001 Grade</td>
<td>2002 Grade</td>
</tr>
<tr>
<td>Math</td>
<td>B 58</td>
<td>A 61</td>
</tr>
<tr>
<td>Reading</td>
<td>B 57</td>
<td>A 60</td>
</tr>
<tr>
<td>Language</td>
<td>B 59</td>
<td>A 60</td>
</tr>
<tr>
<td>Social Studies</td>
<td>B 58</td>
<td>B 58</td>
</tr>
<tr>
<td>Science</td>
<td>B 56</td>
<td>A 60</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>B 3.8</td>
<td>B 3.9</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>A 4.2</td>
<td>A 4.3</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)

Table U 4

*Jones Cove Academic Performance 2001-2003*

<table>
<thead>
<tr>
<th>Student Performance</th>
<th>Jones Cove Elementary School</th>
<th>Grades K-8: Academics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2001 Grade</td>
<td>2002 Grade</td>
</tr>
<tr>
<td>Math</td>
<td>D 48</td>
<td>D 47</td>
</tr>
<tr>
<td>Reading</td>
<td>D 46</td>
<td>D 48</td>
</tr>
<tr>
<td>Language</td>
<td>D 47</td>
<td>D 46</td>
</tr>
<tr>
<td>Social Studies</td>
<td>C 51</td>
<td>D 48</td>
</tr>
<tr>
<td>Science</td>
<td>D 48</td>
<td>C 51</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>C 3.3</td>
<td>C 3.3</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>B 3.8</td>
<td>B 3.8</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)
Table U 5

*New Center Academic Performance 2001-2003*

<table>
<thead>
<tr>
<th>Student Performance</th>
<th>New Center Elementary School</th>
<th>Grades K-8: Academics</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2001 Grade</td>
</tr>
<tr>
<td>Math</td>
<td>C 52</td>
<td>B 55</td>
<td>B 56</td>
</tr>
<tr>
<td>Reading</td>
<td>C 52</td>
<td>C 52</td>
<td>C 53</td>
</tr>
<tr>
<td>Language</td>
<td>C 54</td>
<td>C 52</td>
<td>C 53</td>
</tr>
<tr>
<td>Social Studies</td>
<td>C 53</td>
<td>C 52</td>
<td>C 52</td>
</tr>
<tr>
<td>Science</td>
<td>C 50</td>
<td>C 53</td>
<td>C 53</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>B 3.7</td>
<td>B 3.9</td>
<td>A 4.0</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>B 3.9</td>
<td>B 3.9</td>
<td>A 4.3</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)

Table U 6

*Pitman Center Academic Performance 2002-2003*

<table>
<thead>
<tr>
<th>Student Performance</th>
<th>Pitman Center Elementary School</th>
<th>Grades K-8: Academics</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2001 Grade</td>
</tr>
<tr>
<td>Math</td>
<td>B 59</td>
<td>A 61</td>
<td>A 61</td>
</tr>
<tr>
<td>Reading</td>
<td>A 61</td>
<td>A 60</td>
<td>A 61</td>
</tr>
<tr>
<td>Language</td>
<td>A 61</td>
<td>A 63</td>
<td>A 63</td>
</tr>
<tr>
<td>Social Studies</td>
<td>B 58</td>
<td>B 59</td>
<td>B 59</td>
</tr>
<tr>
<td>Science</td>
<td>B 58</td>
<td>A 60</td>
<td>B 59</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>A 4.1</td>
<td>A 4.0</td>
<td>B 3.9</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>A 4.1</td>
<td>A 4.1</td>
<td>A 4.2</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)
### Table U 7

**Northview Primary Academic Performance 2002-2003**

<table>
<thead>
<tr>
<th>Achievement</th>
<th>2001 Grade</th>
<th>2002 Grade</th>
<th>2003 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>D</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Reading</td>
<td>D</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Language</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Social Studies</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Science</td>
<td>D</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>N/A</td>
<td>B</td>
<td>3.7</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)

### Table U 8

**Northview Middle Academic Performance 2002-2003**

<table>
<thead>
<tr>
<th>Achievement</th>
<th>2001 Grade</th>
<th>2002 Grade</th>
<th>2003 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Reading</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Language</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Social Studies</td>
<td>C</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Science</td>
<td>D</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)
Table U 9

_Pigeon Forge Middle Academic Performance 2002-2003_

<table>
<thead>
<tr>
<th>Achievement</th>
<th>2001 Grade</th>
<th>2002 Grade</th>
<th>2003 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>B</td>
<td>55</td>
<td>B</td>
</tr>
<tr>
<td>Reading</td>
<td>B</td>
<td>56</td>
<td>B</td>
</tr>
<tr>
<td>Language</td>
<td>B</td>
<td>58</td>
<td>B</td>
</tr>
<tr>
<td>Social Studies</td>
<td>C</td>
<td>56</td>
<td>B</td>
</tr>
<tr>
<td>Science</td>
<td>B</td>
<td>54</td>
<td>B</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>A</td>
<td>4.0</td>
<td>A</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)

Table U 10

_Sevierville Intermediate Academic Performance 2002-2003_

<table>
<thead>
<tr>
<th>Achievement</th>
<th>2001 Grade</th>
<th>2002 Grade</th>
<th>2003 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>C</td>
<td>53</td>
<td>B</td>
</tr>
<tr>
<td>Reading</td>
<td>C</td>
<td>53</td>
<td>C</td>
</tr>
<tr>
<td>Language</td>
<td>B</td>
<td>56</td>
<td>C</td>
</tr>
<tr>
<td>Social Studies</td>
<td>C</td>
<td>53</td>
<td>C</td>
</tr>
<tr>
<td>Science</td>
<td>C</td>
<td>51</td>
<td>B</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>B</td>
<td>3.8</td>
<td>B</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>N/N</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)
Table U 11

*Sevierville Middle Academic Performance 2002-2003*

<table>
<thead>
<tr>
<th>Achievement</th>
<th>2001 Grade</th>
<th>2002 Grade</th>
<th>2003 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>C</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Reading</td>
<td>B</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Language</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Social Studies</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Science</td>
<td>C</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)

Table U 12

*Seymour Intermediate Academic Performance 2002-2003*

<table>
<thead>
<tr>
<th>Achievement</th>
<th>2001 Grade</th>
<th>2002 Grade</th>
<th>2003 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Reading</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Language</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Social Studies</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Science</td>
<td>C</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>3.8</td>
<td>3.9</td>
<td>A</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)
### Table U 13

**Seymour Middle Academic Performance 2002-2003**

<table>
<thead>
<tr>
<th>Achievement</th>
<th>2001 Grade</th>
<th>2002 Grade</th>
<th>2003 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>B</td>
<td>55</td>
<td>B</td>
</tr>
<tr>
<td>Reading</td>
<td>B</td>
<td>58</td>
<td>B</td>
</tr>
<tr>
<td>Language</td>
<td>B</td>
<td>55</td>
<td>B</td>
</tr>
<tr>
<td>Social Studies</td>
<td>B</td>
<td>55</td>
<td>C</td>
</tr>
<tr>
<td>Science</td>
<td>C</td>
<td>54</td>
<td>B</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
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<td>4.1</td>
<td>A</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)

### Table U 14

**Wearwood Elementary Academic Performance 2002-2003**

<table>
<thead>
<tr>
<th>Achievement</th>
<th>2001 Grade</th>
<th>2002 Grade</th>
<th>2003 Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>C</td>
<td>52</td>
<td>B</td>
</tr>
<tr>
<td>Reading</td>
<td>C</td>
<td>53</td>
<td>C</td>
</tr>
<tr>
<td>Language</td>
<td>B</td>
<td>57</td>
<td>C</td>
</tr>
<tr>
<td>Social Studies</td>
<td>C</td>
<td>52</td>
<td>C</td>
</tr>
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<td>Science</td>
<td>D</td>
<td>49</td>
<td>C</td>
</tr>
<tr>
<td>Writing 4th/5th</td>
<td>3.7</td>
<td>B</td>
<td>3.8</td>
</tr>
<tr>
<td>Writing 7th/8th</td>
<td>3.6</td>
<td>B</td>
<td>3.9</td>
</tr>
</tbody>
</table>

(Note: Based on norm referenced test 3-year averages.)
VITA

Johnny M. Henry

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Martial Status: Married

Education: Carson-Newman College, Jefferson City, TN;
History, B.A.; 1989
Lincoln Memorial University, Harrogate, TN
Administration and Supervision, M. Ed
1997
East Tennessee State University, Johnson City, TN
Educational Leadership and Policy Analysis, Ed. D
2004

Professional Experience: Jefferson County School System, Teacher
1992 to present

Honors and Awards: Phi Alpha Theta member
Phi Alpha Theta historian
German Club
Outstanding College Students of America, 1988
Twenty-first Century Classroom, 1995
Jefferson Middle School Outstanding Teacher
Effect Recognition Award 2002, 2003