RESIDENTIAL ENVIRONMENTAL EDUCATION
PROGRAM EVALUATION PRACTICES
AND NEEDS

by
NICHOLAS F. BOURKE

A DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Education
in the Department of Curriculum and Instruction
in the Graduate School of
The University of Alabama

TUSCALOOSA, ALABAMA

2011
ABSTRACT

The study examined the current program evaluation practices of residential environmental education centers (REEC) and the needs of the center program directors and other center stakeholders in regard to program evaluations. Presently, a lack of quality systematic evaluation has been noted in the area of environmental education. This is problematic given that evaluation is critical to the design of quality education experiences. This mixed methods case study involved a survey of 114 residential environmental education center directors across the United States, and a case study of a residential environmental center in the Southeast United States. The survey provided information regarding the program evaluation practices and needs of the center directors. Semi-structured interviews were conducted as part of a case study of a single residential center in the Southeast United States. Interviews of various stakeholders of the residential center provided a deeper contextualized understanding of their perspectives of program evaluation.

Analysis of survey data and narrative insights from the case study of “Camp Davis” revealed that residential centers evaluate programs using a variety of methods, but lack effective methods of evaluating important center goals. This study portrays the multi-dimensional needs REECs would like to address in their processes of evaluation, and expressed need for assistance to improve their evaluation practices.
DEDICATION

This dissertation is dedicated to my family who supported me throughout this process. My wife, parents, and children were my constant companions on this journey. Their encouragement helped me dedicate myself to completing this important project.
ACKNOWLEDGEMENTS

I am grateful for the guidance of many colleagues who have contributed to this study. The staff members of “Camp Davis” eagerly agreed to participate in the study in whatever way possible. Their insight guided the direction of this project.

My dissertation advisor and committee pushed me to develop as a researcher. I am grateful for their encouragement, guidance, suggestions, and editing assistance.
## CONTENTS

ABSTRACT ............................................................................................................................ ii

DEDICATION ......................................................................................................................... iii

ACKNOWLEDGEMENTS ...................................................................................................... iv

LIST OF TABLES .................................................................................................................. vii

1. CHAPTER 1: INTRODUCTION ......................................................................................... 1
   a. Background .................................................................................................................. 2
   b. Problem Statement .................................................................................................... 6
   c. Significance of the Study ......................................................................................... 7
   d. Methodology ........................................................................................................... 8
   e. Key Conceptual Underpinnings and Terms of the Study ............................................. 11
   f. Summary .................................................................................................................. 18

2. CHAPTER 2: LITERATURE REVIEW ............................................................................... 20
   a. Environmental Education ....................................................................................... 20
   b. Nonformal Science .................................................................................................. 26
   c. Program Evaluation ............................................................................................... 33
   d. Need for Additional Research ............................................................................... 44

3. CHAPTER 3: RESEARCH DESIGN AND METHOD ......................................................... 46
   a. Research Methodology ............................................................................................ 46
   b. Research Context .................................................................................................... 48
   c. Research Participants ............................................................................................ 52
LIST OF TABLES

Table 1-Center Demographics ..........................................................................................68
Table 2-Center Audience ................................................................................................69
Table 3-Funding Sources ...............................................................................................70
Table 4-Center Curriculum Focus ..................................................................................71
Table 5-Desired Program Impacts ................................................................................72
Table 6-Program Evaluation Administration ..................................................................74
Table 7-Program Evaluation Administration-Multiple Categories ...............................75
Table 8-Program Evaluation Methods ..........................................................................76
Table 9-Program Aspects Included in Evaluation .........................................................77
Table 10-Groups Participating in Program Evaluation .................................................77
Table 11-Evaluation Times ............................................................................................78
Table 12-Reasons for Evaluating ..................................................................................79
Table 13-Uses of Evaluation Results ............................................................................80
Table 14-Present Program Evaluation Meeting My Centers’ Needs .........................81
Table 15-Present Program Evaluation Meeting the Needs of the Center Stakeholders ....84
Table 16-Aspects of Program to Add to Program Evaluations ....................................90
Table 17-Groups/Individuals to Add to Program Evaluations ......................................91
Table 18-Comparison of Study Results .......................................................................140
CHAPTER 1: INTRODUCTION

Program evaluations are important parts in the function and successful operation of organizations that provide educational services to young people (Gall, Gall, & Borg, 2003). The ability of nonformal education providers to conduct effective program evaluations can mean the difference between success and failure, existence and nonexistence for these providers.

Residential environmental education centers (REECs) are important nonformal education providers. The nature of the service that they provide and the diversity of the centers across the United States make program evaluations a particular area of concern for the directors of these programs. What are these centers currently doing to evaluate their programs? What impacts of their programs are they attempting to document? Who constructs and administers their program evaluations? Are their present program evaluations meeting their needs? If not, what would be needed to help the program evaluations that they conduct better meet their needs? These are typical questions and concerns as administrators strive to maintain value given to their residential centers.

The purpose of this research study was to examine the current program evaluation practices of REECs and to document the needs of the center program directors and other center stakeholders in regard to program evaluations. The study incorporated a survey of residential environmental education program directors from across the United States and a case study of a single REEC. The first chapter of this dissertation presents the background of the study, the problem statement and research questions, the significance of the study, the conceptual underpinnings of the study, an overview of the methodology of the study, and definition of terms.
Background

Residential center directors have reason for concern in terms of sustaining the existence of centers as valued education sites. For various reasons, environmental education as a curriculum focus and place for educating learners has become a minor feature in education. The number of classes taking field trips has declined (Metha, 2008). Possible causes of this decline are the No Child Left Behind Act and the curriculum narrowing that has occurred as a result of the testing requirements that are part of the Act (Standen, 2005). The Alabama Course of Study for Science (Alabama State Department of Education, 2005) has reflected this trend as there is no specific emphasis on environmental education in the curriculum prior to grades 9-12, at which point it is only an optional curriculum offering. Researchers have documented that teachers cite a variety of reasons for eliminating field trips from the school experiences of children including a lack of funds and curriculum narrowing related to a focus on standardized testing in schools (Waltman, 2005). REECs are in a particularly precarious position because of the length of the stay (three or five days) and the expense involved with the trip. As stakeholders of residential centers look for information verifying the ability of these centers to meet the needs of the visiting teachers, program evaluations of residential centers are important.

The educational system in the US has been described as being in an “age of accountability”, which has had implications that have influenced most areas of education. Standards-based education has been one of the changes. This situation may be forcing many nonformal education providers including REECs to change the way that they conduct program evaluations. Residential environmental education providers are increasingly being asked by teachers and administrators interested in visiting the centers to “prove” that visiting students will master required grade level standards. The anecdotal evidence that the centers have used in the
past as a major portion of their program evaluations is no longer sufficient (Camp Davis Program Director, personal communication, 2008). In response to this, many center directors and their staffs are finding that their present program evaluations are not fully meeting their needs or the needs of their center stakeholders. It is critically important for REECs to be able to put into place evaluation practices that can justify and more fundamentally sustain the existence of these important educational spaces.

Revisiting Quality Environmental Education

Environmental education is receiving national attention. Richard Louv’s (2005) book, *The Last Child in the Woods*, sparked recognition of the lack of exposure to the environment that children experience. Increasing exposure to electronic media, possibly as much as four hours a day (Koch, 2006), and a fear of nature led Louv to coin the phrase *Nature Deficit Disorder* to describe children’s lack of exposure to nature and its negative consequences. Recognizing the importance of an environmentally literate society to make important decisions that will have an effect on our planet’s future, many educators are promoting a “No Children Left Inside” policy to correct this deficit (Koch, 2006).

Residential environmental centers are important because the type of environmental education that they can provide can be influential in exposing children to nature while providing environmental education in a unique setting (Cachelin, Paisley, & Blanchard, 2009; Knapp & Benton, 2006). Residential centers provide an important extension of the formal education of students in that they provide real-world, hands-on experiences for the students. These experiences have been recognized as important by the National Science Teachers’ Association (NSTA, 2003) and the National Research Council (NRC, 2009).
Environmental education programs have been criticized for their lack of quality program evaluation (Carleton-Hug & Hug, 2009; McDuff, 2002). A 2005 report to Congress by an agency within the Environmental Protection Agency listed recommendations for improving the success of environmental education programs. One of their recommendations was the development of a framework and tools for measuring the success of these programs (National Environmental Education Advisory Council, 2005). Within our present age of accountability, environmental education providers are frequently being asked by stakeholders to provide them with concrete evidence that they are effective providers of environmental education (McDuff, 2002).

Researchers have documented that few environmental education programs incorporate quality evaluation into their programs (Carleton-Hug & Hug, 2009). REECs share several factors with other nonformal education providers and other environmental education providers that make program evaluation difficult. These factors, as identified by the Department of Environment and Conservation (2004), include: center staff members have a limited background in designing program evaluations; there is a lack of a widely accepted evaluation model for these centers; there is a limited culture of acceptance of evaluation as being an integral part of everyday program activities; and there are limited resources and time available for program evaluations.

**Lack of REEC Program Evaluation**

Presently, the research literature does not contain a study describing the current evaluation practices of REECs or detailing the problematic areas in developing a program evaluation that will meet the needs of the center staff and the center stakeholders. The most recent study describing the current practices of REECs was published in 1985 (Chenery & Hammerman, 1985); this study summarized a survey sent to residential centers across the United States in order to gather information regarding their program evaluations. The 1985 study described the program
evaluation practices but lacked information related to whether the program evaluations were actually meeting the needs of the program directors. The research community is in need of a description of the current practices of residential centers.

McDuff (2002) conducted a needs assessment of an environmental education program in Africa (McDuff, 2002). McDuff concluded that a needs assessment was an effective way for building the capacity of the environmental education program staff to conduct an effective ongoing program evaluation. Few evaluation models have been proposed for these environmental education providers that could more extensively inform program evaluation (NEEAC, 2005; Thomas, 1990). An analysis of the current practices of the centers, the problems associated with the program evaluation development, and the needs of the center staffs and stakeholders regarding program evaluation may provide valuable information to the research community. If REECs are to continue to serve as important sources of environmental education for students, they must develop program evaluations that are both utilization focused and participatory (Monroe, 2009). The phrase “utilization focused evaluation” is defined later in this chapter but refers to evaluation that is focused on the intended use of the evaluation. “Participatory” refers to engagement of individuals who will be the primary users of the evaluation results in making decisions about the purpose, design, and focus of the evaluation. This study will be a means for the voices of center directors and center stakeholders to be included in the dialogue about program evaluations.

Participatory evaluation has been recognized as a potential solution to many of the factors that make evaluation difficult (McDuff, 2002; Powell, Stern, & Ardoin, 2006). Recently Monroe (2009) recommended that a key to improving the program evaluations of environmental education centers is building the evaluation skills of environmental education practitioners; this is a component of participatory evaluations. In order to assist residential centers in the development of
evaluations that are participatory in nature, it is important to assess the current state of program evaluations and determine needs of the various stakeholders of the center.

A brief description of evaluation framed as having a utilitarian purpose or as involving a participatory process introduces an important feature of evaluation design, namely—what is meant by “evaluation”? For some, evaluation takes place for particular purposes and conducted by particular persons. Is evaluation a momentary process involving the completion of a form? Is evaluation an impression? And what is the significant time frame for evaluating—before, during and after learning? Should program evaluation reach beyond student learning to encompass the physical aspects of the REEC? Given that there is little to no program evaluation information in the research literature, opportunity is needed to explore foundationally what “evaluation” means in the context of REEC program practices.

**Problem Statement**

The purpose of this study was to examine the current program evaluation practices of REECs and document the needs of the center program directors and other center stakeholders in regard to program evaluations.

Five research questions served as a guiding framework for this study:

1. What are the current practices of residential environmental education centers in regard to their program evaluations?
2. What factors or challenges influence program evaluation decisions?
3. To what extent do residential center directors feel that the program evaluation process meets the needs of the center stakeholders?
4. To what extent do residential center directors feel that the program evaluation process meets their needs and the needs of the center staff members?
5. What components are needed in a program evaluation for a residential environmental education center so that the evaluation could better meet the needs of the center director, the center staff members, and the center stakeholders?

**Significance of the Study**

This study is significant in several ways. In an interview with a residential center director, program evaluation was described as a significant concern and problem for the center. The director also stated that program evaluation is a major area of concern for other residential center directors. This study is important because it documents the present state of program evaluations in REECs across the United States and assesses the needs of these centers directors in designing and implementing program evaluations. This study is the first study in over 20 years to access a national pool of respondents.

In focusing on this topic, I hope to perform a service for residential centers by providing them with information that could help their program evaluations better serve their needs and the needs of the teachers and students who visit the centers. Interviews of key center stakeholders including visiting teachers, center staff members, and a school administrator provide those tasked with designing program evaluations valuable information to aid in the creation of utilization-focused and participatory evaluations. Because of the shared characteristics of residential centers and other nonformal education providers, this information may be applicable to other nonformal education providers.

This study also provides valuable information to individuals seeking to design effective program evaluations for residential centers and other nonformal education providers. The information gained from the survey and case study provides these individuals with insight gained directly from the program directors and other center stakeholders into how to make program
evaluations truly capable of meeting the needs of the center staff members and the center stakeholders. With the information gained from this study, evaluations can be designed that target the needs of residential centers.

This study addresses a gap in the research literature in that the state of residential center program evaluations in the United States has not been documented in over twenty years, and a needs assessment related to program evaluations for these centers has not been conducted involving more that one program. Residential centers have been identified as influential in developing environmental literacy in students, and it is essential that they incorporate quality program evaluation into their programs. The evaluation community has noted a lack of published research studies relating to evaluation of environmental education providers (Carleton-Hug & Hug, 2009; Monroe, 2009) which limit the ability of researchers focused in the area of program evaluation to build evaluation models based on a foundation of other researchers’ work.

Methodology

The study was a mixed methods case study and involved the use of a national survey of residential center directors from across the United States and qualitative insights gained about a REEC program located in a Southeastern state of the United States. Mixed methods are recommended by Yin (2003) in situations where a researcher is interested in identifying the prevalence or frequency of a given phenomenon and also interested in gaining a greater depth of understanding, conditions that applied to this study. The survey portion of this case study provided the researcher with an overall view of the phenomena under study from a national perspective, and the qualitative portion of the study allowed the researcher to contextually explore issues salient to the study at a particular REEC site.
Survey of Residential Center Directors

The last national survey of program evaluation practices of residential centers was conducted in 1985 (Chenery & Hammerman, 1985). The survey questions developed by Chenery and Hammerman were utilized and built upon in the construction of the survey developed for this study.

A database listing REECs across the United States and a national organization of residential environmental center directors was accessed for a survey administered via the Internet. The goal of the survey was to assess the population of program directors of REECs across the United States. The survey provided the researcher with background information on current program evaluation practices of the various centers. Two hundred-five program directors were included in the available pool of survey respondents. Surveys also gathered information regarding the extent to which the program evaluations were meeting their needs and the needs of the center stakeholders. Finally, surveys gathered information related to center director needs in designing and implementing program evaluations. Data gathered from these surveys was analyzed qualitatively and quantitatively to provide the researcher with an overall picture of program evaluations from program directors’ perspectives.

Interviews of a Residential Center Staff/Stakeholders and Other Qualitative Data

In the qualitative portion of the study the researcher drew upon qualitative research strategies to examine notions regarding program evaluation from the perspectives of center staff members and stakeholders of a single residential environmental education center. Semi-structured interviews were conducted with a program director, three center staff members, three visiting teachers, and a school administrator in an attempt to capture the experience of program evaluation from an insiders’ perspective. The researcher also made site visits in the course of obtaining and
conducting the interviews and shadowed a field trip group. Various documents (e.g., pamphlets, website documents, packets sent to teachers) created by the Camp staff, under the supervision of the Camp Director, were also reviewed to provide secondary insights regarding program evaluation. Interviews were coded and analyzed for themes as recommended by Merriam (2001). Detailed descriptions of the study methodology are located in Chapter 3 of this dissertation.

**Limitations**

Limitations of this study are those common to qualitative surveys and qualitative research. Several limitations are briefly discussed below.

Survey research was selected for the portion of the study involving program directors across the United States. This method of data collection was selected to reduce the time and cost needed to gain information from a group of respondents over a large geographic area. These surveys do not have the capacity to probe deeply into the inner experiences, beliefs, or attitudes of the respondents. The content of the questions asked on the surveys may not have been completely understood by the respondents, and therefore the information may be inaccurate. Measures taken to address these limitations are discussed in Chapter 3.

In qualitative research, the primary instrument of information gathering is the researcher. The quality of the data gathered is dependent on the skill of the researcher. The bulk of the data analysis is interpretive, and therefore also dependent on the skills of the researcher (Strauss & Corbin, 1998).

A criticism of qualitative research is that it is often difficult to establish the reliability or validity of the study because of the research methods (Merriam, 2001). Observation by the researcher can often influence the behavior of the group he or she is studying. Also, a researcher can consciously or unconsciously influence the outcome of an interview. To increase reliability
and validity in a qualitative study, the researcher can use multiple sources of evidence (triangulation), have key informants review the researcher’s analysis of the data, provide rich description of the phenomenon, clarify researcher bias, and detail procedures followed in the data collection and analysis (Yin, 2003). These design considerations are incorporated into the study design and are discussed in greater detail in Chapter 3. Further limitations include the following: the qualitative portion of this proposed study is limited to a single REEC in the Southeast United States, and the number of the site visits and interviews conducted for the study was limited to a period of several months.

Assumptions

The research is based on certain assumptions. The following assumptions undergird the study: Program evaluation is, in fact, an area of concern for REECs, the researcher will identify key stakeholders involved in the program evaluation process who will accurately describe their concerns and experiences, the site selected for study will provide information relevant to other REECs, the site under study is similar to other REECs in the United States in their overall purpose, and the center staff members and stakeholders who participated in the study openly and accurately described their experiences with the residential center and program evaluation.

Key Conceptual Underpinnings and Terms of the Study

Several concepts and terms underpin the purposes and design of this study. In this section, key concepts are briefly introduced and are further discussed in Chapter 2. These concepts include REECs, nonformal science education, and participatory evaluation. The section concludes as several key terms are defined operationally as they pertain to this study.
Residential Environmental Education Centers

Residential environmental education center staff members and stakeholders are at the heart of this study. These centers are unique places that teach children environmental education in a natural setting. Many centers are located across the United States and the world. Raincloud Publishing produces an online database of information on residential centers across the United States. Of these centers, six are located in Alabama, including the center that is the subject of the qualitative portion of this study (retrieved from http://guide.raincloud.com/information/list.shtml in July, 2009).

Teachers bring students to these centers for overnight trips to provide them with firsthand experiences related to the topics they are studying in class. These centers are organized in many different ways; some provide instructors for group environmental classes, while others provide facilities for teachers to lead their own class in instruction. Most facilities offer a variety of classes, and teachers are able to tailor their visits to the unique needs of their students or curriculum requirements.

Residential Environmental Education Centers are recognized as important sources of environmental education. The National Science Teachers’ Association (NSTA) mentions aspects of REECs in their position statement on environmental education. NSTA identifies environmental education as an essential component of a comprehensive science education program (NSTA, 2003). The goal of environmental education, according to NSTA, should be environmental literacy encompassing environmental awareness and knowledge to be fostered in both formal and nonformal educational settings.

Local Settings. Though REECs share many common characteristics, centers differ in many ways that can make program evaluation difficult. Centers focus their curriculum options on
the natural environment in which they are located. A center located near a coastal environment will be able to offer curriculum options involving beach walks and plankton collection trips. Another center located in a north Alabama forest will be able to have children collect invertebrates from a fresh-water stream and study the biodiversity of an old growth forest.

Children will leave these centers with different experiences. Though many centers will have common goals, many goals are more locally influenced. For example, the Tremont Institute in Tennessee and the Dauphin Island Sea Lab located on the Alabama Gulf coast share a common focus of environmental education but have different goals because of their locations. The Tremont Institute is located in the Great Smokey Mountains National Park. One of the goals of the institute is to “foster nature appreciation of the Great Smoky Mountains National Park” (retrieved from: www gsmit org October, 2009). Children visiting the institute can study an old growth forest and fresh-water streams first-hand. The Dauphin Island Sea Lab is located on an island off the coast of Alabama in the Gulf of Mexico. One of their goals is to “increase public awareness and understanding of the ocean” (retrieved from: www disl org October, 2009). A program evaluation of each facility would need to account for these local differences.

These differences enable the centers to provide students with unique experiences specific to the natural settings of the centers. Children learn first-hand about the ecological concepts specific to that environment while also learning broader ecological content and appreciation of nature. Though these differences are important, they make an evaluation of centers challenging. The evaluation materials for various centers must be developed specifically for that center and the center stakeholders, though commonalities exist in evaluation needs across the centers in the United States.
Nonformal Science Education

In regard to science education in nonformal settings like REECs, NSTA encourages the development of nonformal centers and links between centers and schools (NSTA, 1999). NSTA states that research has shown the importance of these experiences in sparking curiosity and encouraging interest in science during school years and extending later into adulthood. Also mentioned is that experiences like those provided by residential centers can accommodate different learning styles and benefit a full spectrum of student abilities.

The National Science Education Standards (National Research Council, 1996) also mention nonformal science education like the education provided by REECs. Specifically, nonformal science education experiences are said to supplement, deepen, and enhance the educational experiences that students have in the classroom (NRC, 1996). These experiences also have the ability to influence affective, cognitive, and social realms of learning and accommodate a variety of learning styles and intelligences.

Experiential learning and social learning theory may be important elements in the REEC experience for the students. During the trip, students are able to study nature in its actual setting. This natural classroom provides a powerful setting for environmental learning. Also, students are broken into field groups as part of their experience, and they participate in their learning activities with this field group.

Environmental education is an important part of science education. Nonformal science settings like REECs can provide unique settings for education leading to increases in the cognitive and affective domains of learning (Smith-Seasto & Cavern, 2006; Harding, 1997; Knapp & Benton, 2006). REECs are unique providers of environmental education in nonformal settings that teachers can access for their students.
Participatory Evaluation

As stated previously, program evaluation of environmental education providers has been criticized. Empowering environmental education (EE) providers with the skills necessary to conduct meaningful, useful program evaluations is receiving attention as a solution to this problem (Monroe, 2009; Powell, Stern, & Ardoin, 2006).

Powell, Stern, and Ardoin (2006) facilitated and helped implement a program evaluation for a REEC in the Great Smokey Mountains. The program they designed was intended to be utilization-focused, participatory, theory-driven, and consumer-based. The researchers reported several positive outcomes to the program evaluation process. These outcomes included clarification of the organizational goals of the center, enhanced commitment to the center from the staff, an increase in the professional development of the staff, and new prospects for adaptive management.

Though not a residential center, McDuff (2002) facilitated a program evaluation for an environmental education program in Africa. The needs assessment conducted by McDuff helped identify aspects of the program evaluation that were important to the center staff. Using this information, the researcher helped facilitate an evaluation process that met the organizational needs of the center and improved the chances of sustaining the evaluation process in the future.

Definitions of Key Terms

The following key terms are defined operationally as they pertain to this study.

1. Residential Environmental Education Centers

Raincloud Publishing is a web site devoted to environmental education publications and information. A useful definition of REECs is provided on this web site. REECs are defined as centers that have “environmental education and natural science as the primary program components in an outdoor setting, and where students stay at the site at least one night” (retrieved
from http://guide.raincloudpub.com/information.what.shtml in October, 2009). These centers are known by different names in their literature and in the science community. They are also known as residential outdoor schools, residential outdoor environmental education centers, and residential environmental learning centers.

2. Environmental Education

The North American Association for Environmental Education defines environmental education as formal and nonformal education directed at the “development of an environmentally literate citizenry” (NAAEE, 2004). Environmental literacy is the goal of environmental education.

3. Environmental Literacy

The North American Association of Environmental Education provides a definition of environmental literacy (NAAEE, 2004). Environmental literacy involves the understanding of environmental concepts and issues, the understanding of how environmental quality is impacted by human decisions, and the ability to use this understanding to make “informed, well-reasoned choices that also take social and political considerations into account” (p. 1).

4. Nonformal Education

A brief summary that captures the essence of nonformal education is provided by Combes, Prosser, and Ahmed (1973). They characterized nonformal education as an organized activity that is outside of the formal educational system. The activity may operate separately from the established formal system or as an important feature of some broader activity of the formal system. The intention of nonformal education is to “serve identifiable learning clienteles and learning objectives” (Combes, Prosser, & Ahmed, 1973). Several sources make a distinction between nonformal education and informal education. Informal education may include activities like visits to museums and zoos that are not necessarily organized in a particular manner.
5. Program Evaluation

Patton (1997) provides a definition of program evaluation. He defines program evaluation as the “systematic collection of information about the activities, characteristics, and outcomes of programs to make judgments about the program, improve program effectiveness, and or inform decisions about future programming” (p. 23).

6. Utilization-Focused Evaluation

Patton (1997) also provides a definition of utilization-focused evaluation as a process of “making decisions about evaluative purpose, data, design, and focus in collaboration with an identified group of primary users focusing on their intended uses of evaluation” (p. 22). A certain method or model of evaluation is not prescribed, but intended users are involved with the selection of the most appropriate evaluation methods.

7. Stakeholders

Gall, Gall, and Borg (2003) define stakeholders as “anyone who is involved in the program being evaluated or who might be affected by or interested in the findings of the evaluation” (p. 545). In this study, the stakeholders include several groups. The REEC staff members are stakeholders and include the program director, curriculum director, naturalist, and the instructors. Also involved are the classroom teachers and administrators who schedule trips to the REEC. The students who attend the center and their families are also stakeholders.

8. Camp Director

In most residential centers, the camp director is an individual, employed by the center year-round, responsible for the overall operation and maintenance of the camp. Directors typically oversee camp instructors, a maintenance staff, and a cooking staff. As REECs involve feeding and
housing groups of students for overnight trips, the responsibilities of the camp director are numerous.

9. Participatory Evaluation

Cousins and Earl (1992) defined this concept. Evaluation that is considered participatory evaluation empowers the staff of an organization throughout the entire evaluation process. The staff is involved in decision making through the development of the evaluation plan, selection of evaluation methods, implementation of the evaluation, and the application of the evaluation results.

10. Whole Child Education

The Association for Supervision and Curriculum Development (ASCD) describes education focused on the whole child as education that promotes the development of children who are safe, healthy, engaged in their learning, supported, and challenged (ASCD, 2007). ASCD further describes aspects of education focused on the whole child: students are actively engaged in learning and connected to the school and broader community, the learning environment is intellectually challenging and safe for the students and adults, and students have access to personalized learning and to qualified caring adults (ASCD, 2007).

Summary

At this critical period of time for environmental education, this study provides the research community with an overall view of the program evaluation practices of REECs across the United States and an insiders’ perspective of this topic. This study sheds light on the issues that are important to the center staff members and various center stakeholders and provides information that may help the evaluation design and process better serve the needs of the residential center staffs. This study provides a service to these centers and the research community
in that it is a resource for them as they develop program evaluations that better serve the needs of all involved with REECs.
CHAPTER 2: LITERATURE REVIEW

The purpose of this research study was to examine the current program evaluation practices of REECs and to document the needs of the center program directors and other center stakeholders in regard to program evaluations. The study utilized a mixed methods design and involved the use of a national survey of residential center directors from across the United States and qualitative insights gained about a REEC program located in a Southeastern state of the United States. This chapter is organized into several sections. The first section discusses the field of environmental education and the changes that this area of education has experienced. Subsequent sections detail the literature related to the areas of nonformal science education including research related to REECs and program evaluations.

Environmental Education

Environmental education is now receiving national attention as our society deals with environmental concerns (Wilson, 2002). The topics of global warming, species extinction and habitat destruction are frequently part of our national discussion. Children are experiencing a growing disconnect with nature and the problems associated with this disconnect (Louv, 2005). Products are frequently labeled as “green” or environmentally friendly to attract the growing number of consumers who are concerned about the environment and to open up new marketplace opportunities.

In response to this national attention to environmental concerns, many groups, including the National Science Teachers Association and National Research Council (NRC) are calling for the inclusion of environmental standards in state science standards (NRC, 1996; NSTA, 2003). A
recent study indicates that a large portion of the U.S. society is in agreement with these organizations. 95% of those surveyed support the inclusion of environmental education in the schools, and 85% agree that government agencies should support environmental education programs (Coyle, 2005).

Environmental education has been present in our educational system throughout the history of our country. It can be delivered in a wide variety of settings and in many ways. Formal instruction of a prescribed curriculum might be delivered in a classroom. A nonformal visit to a museum or to an environmental education center is a form of environmental education. Sources of EE can include “school, the media, personal reading, family members and friends, outdoor activities, entertainment outlets, and a wide range of other professional and personal experiences” (Coyle, 2005). REECs are one part of a body of sources that seek to provide environmental education to our society.

Development of Environmental Education

In general, this branch of education is guided by a definition and goals that have evolved since the early 1960’s. These sources of environmental education also share underlying assumptions that provide a framework on which their programs are based. Environmental education caught the attention of the nation in the 60’s and 70’s because of well-publicized concerns about the quality of the environment in the United States. The origins of environmental education go back much further, however, and may be traced to traditions in our country that include landholder stewardship, the conservation movement, and even Native American land ethics (McCrea, 2006). The idea that education should focus on a study of the environment and nature can be traced back even further to Rousseau and Agassiz in the early 18th and 19th centuries (McCrea, 2006).
During the 60’s and 70’s, environmental concerns forced our society to recognize the responsibilities that people bear in the preservation and overall quality of the environment. This recognition led to calls for education that would foster “citizen willingness and ability to participate in maintaining a clean and healthy environment” for all life (Archie & McCrea, 1996). From this recognition, common themes emerged that served as a foundation for definitions of environmental education.

The Tbilisi Declaration (UNESCO, 1978) established five broad objectives of environmental education that parallel the definition proposed in Belgrade Charter. These objectives are: awareness and sensitivity to the environment and environmental challenges, knowledge and understanding of the environment and environmental challenges, attitudes of concern for the environment and motivation to improve or maintain environmental quality, skills to identify and help resolve environmental challenges, and participation in activities that lead to the resolution of environmental challenges.

Present definitions of environmental education share common characteristics of the earlier definitions described above. A definition provided by researchers Archie and McCrea of the North American Association for Environmental Education (1996) provides a comprehensive view of the current thoughts on environmental education. They define EE as a process of helping individuals understand the environment, their place in it, and related issues. It is a life-long process through which persons can develop the knowledge, skills, and commitment necessary to live compatibly as part of nature, act equitably toward each other and future generations, and make informed and forward-thinking decisions. Environmental education envisions and promotes a society peopled by strong, effective, and environmentally literate citizens who are
capable of and inclined toward democratic participation, cooperation, creativity, and responsibility.

The Environmental Education Department is a division of the United States Environmental Protection Agency. This group published a mission statement and goals in 2006 that focus the efforts of our government in areas related to environmental education. The mission states that the agency wishes to “ensure that environmental education, based on sound science and effective education practices, is used as a tool to promote and protect human health and the environment and to encourage student academic achievement.” (Retrieved from http://www.epa.gov/Education/aboutus.html on October 25, 2009). The notable additions of sound and effective practices as the basis of environmental education and encouragement of academic achievement parallel ideas present in the No Child Left Behind Act.

The various definitions share notable similarities. Environmental education is seen as necessary for every member of the society in the definitions. It is not seen as a subject that selected students should be exposed to, but rather a subject that all members of our society should study. Content knowledge of the environment and environmental problems or issues is present in each definition. However, all definitions involve more than content knowledge. Attitudes, motivations, commitments, and skills are all mentioned as important aspects of EE. While early definitions mention the development of an individual’s motivation to correct environmental problems, later definitions specifically mention participation or involvement in working toward environmental solutions. Later definitions also recognize that EE is a life-long process and must include the development of problem solving and critical thinking skills.
Program Classification Schemes

Residential Environmental Education Centers are one part of an array of sources of environmental education. These sources include formal education and nonformal education sources. Some organizations label learning that occurs outside of the school as informal learning, though for this study these sources of learning will be called nonformal learning. Sources of EE for children include television, school, families, newspapers, magazines, radio, friends, and the internet (Coyle, 2005). The National Research Council (1996) lists several areas influential in science education including the media, museums, businesses, community organizations, and nature centers like REECs. EE in the schools across the United States is inconsistent. Not all states presently have environmental education standards as part of their science standards, and only one half of teachers report teaching environmental subjects during the school year (Environmental Literacy, 2005).

The National Science Teacher’s Association has created a position statement on environmental education that states the EE should be a part of the school curriculum and even calls EE a “core component of a comprehensive science education program” (NSTA, 2003). This position statement also calls for the use of formal and nonformal learning experience to foster environmental education. Many different sources of environmental education are mentioned in the NSTA position statement including museums, zoos, and nature centers. NSTA encourages the use of these centers to “broaden the availability of educational resources, engage the community,… and offer a variety of learning experiences and career education opportunities” (NSTA, 2003).
Underlying Assumptions

Environmental education can take many forms, as described above. Education can be formal or nonformal and the sources are varied. Quality environmental education programs have several characteristics in common and are guided by common underlying assumptions, regardless of the way that environmental education is delivered. The No Child Left Inside Coalition lists the following characteristics of quality environmental education: it includes learning in the field as well as the classroom; incorporates the teaching methods of outdoor education, experiential education, and place-based education; is inherently interdisciplinary; promotes school/community partnerships; develops awareness; increases knowledge; builds skills; and creates the capacity for stewardship and good citizenship regarding the environment upon which we depend for life support; is hands-on, student-centered, and inquiry driven; engages higher level thinking skills; and is relevant to students' everyday lives; helps address the causes of “nature deficit disorder”, and boosts student achievement in math, science, reading, writing and social studies.

These characteristics of quality environmental education programs reveal common underlying assumptions. These assumptions include the following characteristics: Environmental Education is participatory. The goal of quality programs in not simply knowledge. Programs seek to actively work toward resolving environmental problems. Environmental education is interdisciplinary. The best teaching of environmental education topics is not limited to a specific subject area. Environmental topics include aspects of science, economics, mathematics, language arts, and other subject areas as well. Environmental education is multicultural and multiperspective. The issues affecting the environment today cut across the borders of countries and involve the perspectives of varied stakeholders. Environmental
education is constructivist in nature. The best environmental education is based on first-hand experiences that lead learners to construct meaningful knowledge that is applied to real-life situations. It is a life-long process. Finally, environmental education is issues based. Present day issues are presented to the learners. Problem solving skills are applied to these situations, and the end product of the learning is motivation to act.

**Nonformal Science**

Program evaluation practices and needs of REECs (REEC) are at the center of this study. Centers of this type have been mentioned by the National Science Teacher’s Association as important sources of environmental education (NSTA, 1999). As these centers operate outside of the traditional school setting, they are seen as nonformal educational settings. The following section of this chapter discusses important aspects of this form of education and provides a review of the literature related to residential environmental centers.

Nonformal learning is defined as learning that takes place outside the formal structure of the classroom and includes a wide range of learning opportunities from clubs and organizations to museums and science centers (Norland, 2005). Attention is being focused in this area as individuals and groups seek to understand the way we learn science in nonformal learning environments. Focus in this area of science education was magnified when two influential groups, the National Research Council and the National Science Teachers Association, released position statements related to nonformal science education.

The National Research Council released the National Science Education Standards which highlighted the importance of resources outside of the classroom walls (NRC, 1996). This document recognized the fact schools should identify and use resources outside of the...
classrooms. Science centers like REECs were mentioned because they have the capacity to serve as natural laboratories for the study of natural phenomena.

The National Science Teachers Association published an official policy statement in 1999 confirming their belief that “informal science education compliments, supplements, deepens, and enhances classroom science studies” (NSTA, 1999). The use of the phrase “informal” includes structured sources of education like REECs and sources of learning without an organized structure like zoos and museums. NSTA references the fact that a growing body of research is revealing the importance of nonformal or informal science in sparking curiosity and engaging interest in science during an individual’s school years and throughout his or her lifetime. Several aspects of nonformal science mentioned in the position statement point out that this type of learning can accommodate many different learning styles and abilities and can work toward improvements in the social, affective, and cognitive realms of learning. Unique opportunities and resources that nonformal science providers like nature centers can provide are also mentioned in the position statement.

Many leaders in the field of nonformal science education have sought to identify a useful framework for research in this area of education and suggest research techniques or directions that would be especially beneficial to the research community (Anderson, Lucas, & Ginns, 2003; Dierking et al., 2003; Rennie & Johnston, 2004). Anderson et al. suggests that the physical setting of nonformal science is an important aspect of this type of learning. Therefore, research incorporating the learning setting is important. Investigations conducted within the setting of the nonformal science learning should be able to shed light on the important interaction of the learner with the learning setting. Anderson et al. further suggests that researchers use multiple creative methods for assessing learning in these nonformal environments (Anderson, at al.,
The cumulative nature and social nature of learning is also stressed (Dierking et al., 2003; Renie & Johnston, 2004), as well as the importance of motivation, interest, and emotion in learning.

The Informal Science Education ad hoc committee posed several areas of focus for the research community when they set a research agenda (Dierking et al., 2003). This committee suggested that researchers focus on the role of motivation, interest, and expectations of learners as they are involved in nonformal science learning. They also suggest that researchers explore social and cultural factors involved in these learning situations and include the role that conversations between participants play in the learning. They mention that the pre/post test format of much of the research in this area provides “little opportunity to look for or try to measure unexpected or additional learning outcomes” (p. 6). They suggest that researchers attempt to give the research community a detailed picture of learning that reflects the “multifaceted picture of learning” (p. 7) that is occurring in nonformal learning environments.

Nonformal environmental education centers possess several unique characteristics. Norland (2005) divides these characteristics into five groups. They are often not solely educational. Many programs focusing on environmental education also seek to provide social or recreational experiences for participants. Secondly, their target audiences vary in nature. The audience could be school classes, groups, or even walk-in visitors. It is usually difficult to describe the characteristics of the groups because of their variety. Also, the development of the program is often decentralized in nature. A fourth characteristic is that visitor satisfaction has been a major concern for nonformal evaluation personnel, often because centers depend on repeat visits of individuals or groups. Lastly, exposure of the participants to the program
offerings varies greatly because the experience of the visit may be from one single afternoon to a full week stay.

“Whole Child” Education

Education for the “whole child” embodies many of the elements important in nonformal and environmental education. In response to an overemphasis in education on academic achievement measured narrowly through high stakes testing, many education policy makers are advocating a shift to a whole child approach to education (ASCD, 2007). The Association for Supervision and Curriculum Development has brought this issue to the forefront of national debate in their report The Learning Compact Redefined: A Call to Action (ASCD, 2007). They maintain that traditional education paradigms have “marginalized the uniqueness of our children and eroded their capacity to learn in whole, healthy, creative, and connected ways” (p. 2). ASCD maintains that student achievement will only increase when “the whole child is invited and able to learn” (p. 2).

Fostering the development of the whole child requires learning environments designed for this purpose. Environments of this type are described by ASCD as weaving “together the threads that connect not only math, science, the arts, and humanities, but also mind, heart, body, and spirit-connections that tend to be fragmented in our current approach” (p. 2). Learning environments must be developed which recognize that the whole child develops through experiences and that children learn through direct observation and exploration (ASCD, 2007).

Learning environments of this type are described as important by the National Science Teachers Association and National Research Council. In its position statement on elementary education, NSTA describes the importance of involving students in first-hand inquiry of science (NSTA, 2007). In its National Science Education Standards (NRC, 1996), the NRC confirms
this directive to involve students directly in their learning when they state, “students develop an understanding of the natural world when they are actively engaged in scientific inquiry—alone and with others” (p. 29).

**REEC Research**

A great deal of research has been conducted on nonformal science education and environmental education in particular. However, relatively few studies have been completed that focus on REECs. Centers of this type have been identified as important sources of environmental education (Coyle, 2005). The National Research Council recognized several benefits of nonformal science centers like REECs in their recent publication *Learning Science in Informal Environments* (NRC, 2009). Centers of this type “grab learners’ attention, provoke emotional responses, and support direct experience with phenomena” (p. 2-10). Research has shown that early experiences in nature could make students more likely to choose a career in a science related field (Tai, Liu, Maltese, & Fan, 2006) or develop an appreciation for nature that could lead them to be more environmentally sensitive as adults (Coyle, 2005).

Despite their importance, these centers have been the subject of very few studies. A recent search of the ERIC data base using the phrase “residential environmental education” as a keyword showed only 15 studies related to these centers. Of these studies, only nine of the studies have been conducted since the year 2000. The research that has been published can be generalized into four categories including effects on students, teacher motivation and value of trips, long-term effects of the programs, and student perceptions of the programs.

Several studies have been conducted over the past few decades that seek to examine changes in students after a REEC experience. Changes in students’ attitudes toward the environment have been the topic of a number of these studies (Dettmann-Easler & Pease, 1999;
Gilbertson, 1990; Mittelstaedt, Sander, & VanderVeer, 1999; Raze, 1989; Smith-Sebasto & Cavern, 2006; Tung, Huang, & Kawata, 2002). Attitudes toward wildlife are specifically targeted in a study conducted by Dettmann-Easler & Pease, and the importance of pre and post trip experiences is emphasized by Smith-Sebasto and Cavern (2006). A doctoral dissertation by Raze noted the improvement of environmental attitude along with the social skills of the students involved in a REEC program. A study by Gilbertson compared residential programs with other common environmental education programs and found that the residential program surpassed the other programs in both student attitude gains and knowledge gains.

Other studies have focused on knowledge gains in students (Christy, 1982; Harding, 1997; Martin, 2003; Oberst, 1997; Smith-Sebasto & Semrau, 2004). Quantitative methods have been employed in pre/post test study designs and control group comparisons to demonstrate that REECs have the ability to increase students’ knowledge about the environment and ecological topics. In a study, Smith-Sebasto, used the Children’s’ Attitudes Toward the Environment Scale in a pre/post test format to assess affective and cognitive variables of the 6th grade participants. Changes in the cognitive domain were noted only. Pretests may have sensitized students to the post test, and the author suggests that the students may not have put their full effort into the testing which was done in the classrooms. A similar result of knowledge gains without attitude gains was noted by Harding (1997).

Other studies have focused on teacher motivation in scheduling REEC trips and perceived value in the trips (Detterman-Easler & Pease, 1996; Oberst, 1997; Schmitt, 2005). Teachers schedule trips of this type because of the positive effects that the trips have on their students. Teachers see the value of hands-on learning in a natural setting (Schmitt, 2005). Teachers see the experiences as truly unique and can offer their students experiences not possible
in a traditional classroom during the typical school day including extended visits to intact ecosystems and night-time hikes and stargazing (Ditterman-Easler & Pease, 1996). In addition to perceived knowledge gains, teachers also note improvements in their students’ emotional development, sense of community, and appreciation of the environment (Schmitt, 2005).

The effects of REEC programs have been shown to be long-lasting by several researchers (Knapp & Benton, 2006; Liddicoat, 2007; Ward, 1976). Ward found that individuals had vivid memories of their experiences and activities at REECs after 10 years. Participants also expressed that these early experiences led to an interest in outdoor activities as adults. Liddicoat (2007) found that REEC participant’s favorable memories of experiences continue as long as thirty years after the trip. Even after extended lengths of time, participants recall activities, facilities, and center staff favorably. Knapp and Benton (2006) investigated the recollections of 10 adults who participated in residential environmental education programs during their youth. They found that all subjects to varying degrees retained subject matter and emotional reactions to the experience were present to all.

In a final category, researchers have sought to examine the participant’s perceptions of their experiences as topics of studies or portions of studies (Ditterman-Easler & Pease, 1996; Martin; 2003; Smith-Sebasto & Walker, 2005). Students express positive feelings about their experience (Martin, 2003) and feel that they develop new interests because of the unique experiences that REECs can provide (Ditterman-Easler & Pease, 1996). Smith-Sebasto and Walker assessed student perceptions of a REEC program using the “minute paper” and “muddiest point” assessment techniques with over 2000 students. Students described the elements of the program that were the most enjoyable and most confusing to them.
Program Evaluation

As this study sought to examine the current program evaluation practices of REECs and to document the needs of the center program directors and other center stakeholders in regard to program evaluations, an understanding of the concept of evaluation is important. In a search of descriptions of evaluation, several definitions emerged. Educational evaluation can be described as the “process of making judgments about the merit, value, or worth of educational programs” (Gall, Gall, & Borg, 2003). Evaluation can also be described as “the systematic assessment of the worth or merit of some object” or “the systematic acquisition and assessment of information to provide useful feedback about some object” (Retrieved from http://www.socialresearchmethods.net/kb/intreval.php on July 15, 2009). The US Department of Education website defines evaluation as “the systematic collection and analysis of data needed to make decisions” (Retrieved from http://www.ed.gov/offices/OUS/PES/primer1.html on July 15, 2009).

These definitions share traits that are important to understanding the concept of evaluation. Most definitions include the idea that evaluation follows a systematic process. The purpose is described as assessing or making judgments. Determining the value, worth, or merit of some program is the eventual goal of the evaluation according to these definitions. The Department of Education adds the idea that an evaluation process requires data to help make decisions.

It is important to distinguish the concept of evaluation from educational research (Gall, Gall & Borg, 2003). Though these areas do overlap in some ways, they have some important differences. The basic purpose of evaluation and research differ. Evaluation is usually initiated by an individual’s or group’s need for a decision to be made concerning some aspect of their
program (p. 543). Research is usually initiated by a group or individual to develop an understanding of some phenomenon. Evaluation is specific to a certain situation only, where research may be generalizable. Evaluation also involves judgment of value or merit. Research studies discover characteristics of situations or examine relationships but rarely involve passing judgment.

The Communications Consortium Media Center (2004) published principals of evaluation that serve as guidelines for effective evaluation. These guidelines include the fact that no single evaluation method will be best for every evaluation situation. Different needs and capabilities will require different evaluation strategies to be used. The evaluation methods should fit the needs and resources of the sites stakeholders. Also, use of evaluation to determine the impact of a program is important. Evaluation for learning or improvement is equally important. Evaluations should identify their purpose and intended audience from the start. Finally, evaluation should follow methodological rigor whenever possible.

**Reasons for Evaluations**

Evaluations are conducted for a variety of reasons. Clavijo and others (2005) describe three primary types of evaluation use. They divide uses into the three categories. The first category is instrumental evaluation. Evaluation conducted for this reason involves using the evaluation results to make program decisions. In this category, findings directly impact the decisions of the program being evaluated. A second category of evaluation is conceptual. Conceptual evaluation occurs when the results of the evaluation are used to “inform or educate decision makers about matters related to the program or topic being evaluated” (p. 47). In some cases, the evaluation is conducted to have an effect on the perspectives of the individuals involved in the program being evaluated. A third category of evaluation is persuasive or
symbolic. In these cases, evaluation results are used to persuade or influence other individuals. At times, evaluations are “used to validate or legitimate a program” (p. 48).

A fourth category of evaluation is described by Patton (1997). The process use of evaluation involves the use of evaluation to influence the decisions and thinking processes of those involved in the program through their participation in the evaluation. By involving key stakeholders in the evaluation process, the stakeholders develop new skills and acquire new information. In many instances program staffs are changed after their participation in a program evaluation.

**Nonformal Education Evaluations**

Nonformal educational settings possess unique characteristics that can pose problems for conducting evaluations. Norland (2005) describes several of the issues related to nonformal centers that can make evaluations more difficult. She writes that there is little evidence that nonformal education centers embrace and recognize the importance of conducting evaluations to inform decisions. The overall understanding of the evaluation and “the significance and consequence of conducting evaluation as a regular part of program development and implementation is less clear the more the educational program deviates from a traditional structure, content, provider, or setting” (p. 5). When evaluations are conducted, there may be little structure in the organization to support an evaluation and even little encouragement or support from the leadership of the organization to conduct the evaluation (Norland, 2005).

**Challenges.** Clavijo and others (2005) described various challenges to evaluation that are commonly present in nonformal education programs. They detail three observations that set nonformal education settings apart from formal education settings. The first challenge they describe is the fact that many nonformal settings “lack an established infrastructure for
understanding and interpreting evaluation results” (p. 50). Most formal school settings have evaluation departments or research offices that have been charged with the task of conducting evaluations. Many times nonformal education settings staff have “little understanding of evaluation practice and use and little shared meaning relative to evaluation results” (p. 50). A second challenge that they note is that many nonformal education settings rely on staff members that are seasonal or temporary employees. This makes the use of evaluation results difficult. In many cases the staff that participated in an evaluation ends its term of employment after a year or part of a year. New staff members, unfamiliar with the evaluation results, must implement the decisions made by the previous staff members. These new staff members might not understand the reasons for the changes that they are asked to initiate. Staff instability can be a barrier to implementing evaluation results because “the buy-in generated from having initiated and participated in the evaluation process is difficult to maintain” (p. 51) with the new staff members. The final challenge noted is that many nonformal education centers rely on outside funding or grants for their existence. This fact can lead many nonformal organizations to conduct evaluations simply for symbolic or persuasive purposes. Therefore, evaluation results may be directed toward securing more funds to continue the program or the satisfaction of funding source requirements. The idea of program improvement may be overlooked if the evaluation team is focused on persuading a funding source of the program’s benefits.

As stated earlier, evaluation is a problematic issue for nonformal science centers and REECs in particular. Powell, Stern, & Ardoin (2006) maintain that few environmental education organizations “regularly undertake systematic and meaningful program evaluations themselves” (p. 231). They reason that the expertise, time, and expense of conducting meaningful evaluations are beyond what is typically available at most environmental education centers. Norland (2005)
identifies several constraints to evaluation decisions including money, time, and personnel. Norland, (2005) also mentions the fact that a lack of money available for evaluations hinders the quality of evaluation that a center is able to conduct. She states that the limitation of funds available may “require evaluators to analyze focus group data without transcriptions, rely on program staff to enter survey data, or use youth participants to collect systematic observation data” (p. 9).

Nonformal education providers are faced with a number of challenges to conducting evaluations because of their unique characteristics. A major hurdle to conducting evaluations for nonformal education centers is the fact that many of these programs have multiple goals (Christensen et al, 2005). Participants might also enter programs with additional goals in mind. Environmental center goals of developing ecological concepts might be secondary to a visiting teacher’s goals of increasing class camaraderie. According to Christensen and others (2005), “surveys may not address all of the program’s goals, and tests of knowledge may not measure the most important outcomes of the program” (p. 75).

Environmental education evaluations have been seen as inadequate by the research community (Carleton-Hug & Hug, 2009). The majority of programs don’t incorporate quality evaluation into their programming in a systematic way. Carleton-Hug and Hug (2009) suggest several challenges present in environmental education settings. They note that there is a tremendous amount of diversity in the field of environmental education. Debate exists in the environmental education community regarding the ultimate goals of EE. These factions debate whether EE is intended to influence an individual’s behavior, attitudes, knowledge, or future actions, and whether EE is intended to positively impact the physical location of the EE focus. They also point out that many EE programs lack clear program objectives. If a researcher is
attempting to identify the outcomes and structure an evaluation plan, this step is very important. Also, many of the evaluations conducted for EE programs are summative, occurring at the end of a program sequence. The research community is in need of more information detailing formative evaluations and research articles describing the mechanics of the evaluation. Also noted is the fact that most of the articles published relating to EE evaluation describe pre/post-intervention surveys. Changes in knowledge and attitude are frequently the focus of research. A greater diversity of research methods is needed. Mixed methods designs involving interviews and observations of the researcher will add greatly to the research base. Finally, they note that many of the evaluations conducted were compressed for time, not allowing for outcomes that may or may not be present in the future.

**Program Evaluations**

REEC directors and staff have a variety of reasons for conducting evaluations. These reasons match evaluation goals published by the North American Association of Environmental Education (NAAEE) for nonformal science centers in their publication, *Nonformal Environmental Education Programs: Guidelines for Excellence* (NAAEE, 2004). The goals include improving current programs, ensuring accountability, and maximizing the effects of future efforts. Centers may also be asked to justify the educational benefits of their programs to schools making decisions to take field trips to the centers. To attempt to answer these program questions, directors and staffs of REECs must make evaluation decisions related to their needs and the needs of other center stakeholders.

REECs are placed in a difficult position. Presently, many program evaluations of REECs consist primarily of satisfaction surveys completed by attending teachers and students. The staff and directors of a REEC want to make sure that the camp experience meets their own goals and
meets the expectations of the students, teachers, and parents of the students. Teachers and school administrators may need evaluation data to justify a field trip. This data could be related to student outcomes or the meeting of content goals or standards that teachers are required to cover. Teachers and administrators who approve field trips are likely to require evidence that these trips are worthwhile educational experiences. This can be particularly difficult for nonformal science centers like REECs.

The National Research Council (2009) concluded that good outcome measures for assessing learning goals for science centers like REECs were not available. Like many organizations, nonformal centers like REECs are grouped with other informal science centers in policy statements. They went on to state that “conventional achievement measures are too narrow and not well aligned to the goals of informal providers” (p. 9-10). Centers are also limited by the time and money that they are able to devote to assessing their programs (Thomas, 1990). Currently, an evaluation model that fits the needs of REECs and their stakeholders in a time and cost effective manner is not available. Powell, Stern, and Ardoin (2006) describe program evaluation for REECs as “a daunting task that often requires energy and expertise beyond what is typically available in-house” (p. 232).

Guidance for Environmental Education Evaluations. There is a growing awareness that environmental education providers must incorporate quality evaluation into their programs. In a report to Congress in 2005, the National Environmental Education Advisory Council outlined eight goals (NEEAC, 2005). One of the council’s recommendations was the development of a framework and tools for measuring the effectiveness of environmental education. It was suggested that individual initiatives measure outcomes and incorporate routine evaluation into their programs. They also suggested that the research community conduct
research “into what to evaluate, how to evaluate, and which evaluation tool is most appropriate” (p. 35).

A program evaluation needs assessment was conducted by Chenery and Hammerman in 1985 (Chenery & Hammerman, 1985). The authors used the results of a national survey to document the state of program evaluation for residential environmental centers in the United States. They found that most programs were conducting program evaluations of some type, but most described their evaluations as surveys determining the satisfaction of teachers and students with the programs they were offered and the camp facilities. The authors mention that they failed to include any questions related to the program directors’ satisfaction with their present program evaluation or have them rate the overall effectiveness of their evaluations in meeting their needs.

A program evaluation needs assessment was conducted more recently for an environmental education program. McDuff (2002) conducted a needs assessment for a national conservation education program in Kenya. The author used a variety of data collection methods in her needs assessment including document review, program observation, and interviews. McDuff found that the needs assessment was an important first step in developing an evaluation design for the organization. She reported success in using a participatory evaluation model and helped the center staff to design a program evaluation that would best serve the center needs.

There is evidence that there is growing interest in the EE community to incorporate quality evaluation into their programs (Carleton-Hug & Hug, 2009). In an effort to provide guidance to environmental education program evaluation, several organizations have published documents that can be used as guidelines as evaluations are conducted. An influential document was published by the North American Association of Environmental Education. Their Nonformal Environmental Education Programs: Guidelines for Excellence (2004) contains key
characteristics of effective program evaluations. These characteristics are broken into three categories. Determination of evaluation strategies is the first category. Evaluation should be both summative and formative. Evaluation techniques should be built into the program. Effective evaluation techniques and criteria is the second category of characteristics. The evaluation techniques should be able to show if the center is actually meeting their stated goals. A third category involves the use of evaluation results. Use of evaluation results should be an integral part of program development used to determine strengths and gaps. Results should be shared with the greater EE community.

Other organizations seek to assist EE organizations as they incorporate quality evaluation into their programs. Carleton-Hug and Hug (2009) mention several of these projects. They include The Applied EE Program Evaluation Course which is a computer based resource for EE evaluators to use as a guide when they develop and conduct evaluations. MEERA, which is an acronym for “My Environmental Education Evaluation Resource Assistant”, is another online resource detailing important aspects of the evaluation process for EE providers. The National Environmental Education Advancement Project also created an assessment aid, the Organizational Assessment Tool, which is a publication developed to guide EE providers through the process of conducting a self evaluation.

The Sustainable Evaluation Framework. An evaluation framework has been developed and used with reported success at a residential center in Tennessee. The framework was developed by Powell, Stern, and Ardoin (2006) and has been termed the Sustainable Evaluation Framework (SEF). This framework has been utilized with success at a REEC similar to Camp Davis. The SEF contains several approaches to evaluation that are complimentary to each other. Powell, Stern, and Ardoin (2006) describe the key framework components as “(1) a utilization-
focused approach that grounds the program in the needs of the organization; (2) a participatory approach that empowers organizational staff to engage in all aspects of the evaluation and explore issues of interest with confidence; (3) a theory-driven approach that draws on relevant literature and related research to ensure a methodologically rigorous system; and (4) a consumer-based approach that ensures the appropriateness of the system for program participants and other key stakeholders” (p. 233). The SEF was applied to a program evaluation conducted for Tremont Institute. The goal of these researchers in developing the framework was to create an evaluation system that “could be self-administered by the staff of an environmental education organization in perpetuity” (p. 231).

The steps involved in the SEF described by Powell, Stern, and Ardoin (2006) include a front end assessment of the center including stakeholder interviews, observation of the program, a goal setting workshop with the center staff, logic modeling with the center staff, the selection of the evaluation methods, a literature review, instrument development, pilot testing of the system, revision of the system, and staff training to implement the system.

Powell, Stern, and Ardoin (2006) noted several positive outcomes in their application of the SEF to the REEC subject of their study. They noted that the process helped the staff of the REEC clarify their program goals, increased the commitment of the center staff to the organizational goals, provided important professional development to the center staff in the staff commitment to, confidence in, and overall interest in evaluation.

**Utilization-Focused Evaluation.** Important to the SEF process is the fact that the evaluation is utilization-focused or grounded in the specific needs of the organization conducting the evaluation. Powell, Stern, and Ardoin (2006) describe utilization-focused evaluation as evaluation that should “reflect what an organization’s staff and administration feel is most useful
and realistic” (p. 234). Patton (1997) describes this type of evaluation as having a focus of the intended use of the evaluation by the intended users. Patton (1997) describes several important elements of utilization-focused evaluation. He describes it as responsive to specific evaluation situations, incorporates methodological flexibility, requires the evaluation to assume multiple roles, is politically sophisticated, and involves creativity. Evaluators work with clearly identified primary intended users of the evaluation findings. These individuals have the responsibility and the ability to implement the evaluation recommendations. Evaluation decisions are made by the intended users with the guidance of the evaluation facilitator. The model, methods, and even reporting decisions of the evaluation process are made in this way.

Utilization-focused evaluation is informed by a psychology of use (Patton, 1997). Patton describes three benefits to the use of utilization-focused evaluation. Users will be more likely to use the evaluation data and recommendations if they completely understand them and feel an ownership in the overall evaluation process and findings. Secondly, users will be more likely to feel this ownership if they have been actively involved in the entire process of the evaluation. A final benefit is that through this active involvement of the users, the evaluation facilitator is training the users in the use and reinforcing the intended utility of the evaluation process.

**Participatory Evaluation.** Participatory evaluation can be defined as evaluation that is based on a partnership between a trained evaluator or evaluators and individuals with a vital interest in the program being evaluated. These participants may be individuals with decision making power or responsibility in program areas (Cousins & Earl, 1992). Powell, Stern, and Ardoin (2006) describe the SEF process as an example of participatory evaluation. They characterize the process as participatory because it “empowers organizational staff to engage in all aspects of the evaluation and explore issues of interest with confidence” (p. 223). Program
personnel share in the research process with the trained evaluator. Cousins and Earl (1992) note several characteristics of participatory evaluation. They note that this type of evaluation usually involves a somewhat small number of people in the evaluation process who will be the primary users of the evaluation data. The primary users are also involved in all aspects of the evaluation process from problem formation to recommendations and reporting of the evaluation results.

The role of the evaluator is different from that of an evaluator in the traditional sense. In participatory evaluation, the evaluator is more of a project coordinator rather than the principal investigator. The evaluator’s responsibilities include technical support for the participants, training, and quality control of the project. The evaluation is a joint project between the evaluator and the other participants.

One benefit of conducting participatory evaluation is an increase in organizational learning (Cousins & Earl, 1992). Organizational learning is seen when the actions of participants within an organization are improved through better understanding. Improvements in this area of an organization have been noted by Cousins and Earl (1992) in numerous studies and may be related to the involvement of the key primary users of the evaluation in all areas of a program evaluation process and the training participants receive.

**Need for Additional Research**

Program evaluation in the areas of nonformal education and environmental education has been shown to be problematic. A review of the research related to REECs and nonformal science evaluations shows a lack of research. The few research studies that have been published related to this topic have failed to provide a detailed look at the process of a nonformal education center staff and the evaluation decisions that they make. The last needs assessment conducted for residential environmental centers was completed over twenty years ago. The need for assistance
in this area is present in the REEC community. The present study, designed to examine the
current program evaluation practices of REECs and to document the needs of the center program
directors and other center stakeholders in regard to program evaluations, will greatly contribute
to the REEC research literature and will serve REEC program directors and the research
community as they seek to determine ways to design and conduct program evaluations that meet
the needs of center staff members and center stakeholders.
CHAPTER 3: RESEARCH DESIGN AND METHOD

The study examined the current program evaluation practices of REECs and documented the needs of the center program directors and other center stakeholders in regard to program evaluations. This chapter describes the methods used in conducting this study. The research perspective and overall organization of the study will be described. The context in which the study was conducted will be provided along with a description of the research site. This will be followed by a description of the research participants. Finally data collection instruments and procedures along with data analysis methods will be described.

Research Methodology

This section presents the research methodology which shaped the study methods. Whereas methodology articulates the underlying philosophical reasons for the study, methods are the specified procedures of the study. The basic framework for the study incorporated a mixed methods research design. The intent of the study design was to learn from broader national trends and richer contextualized insights in response to the study questions. Accordingly, the study utilized a survey of residential center directors across the United States to document the current program evaluation practices and needs of these centers. The study also incorporated a case study to contextualize insights based on the perspectives and experiences of a single REEC's staff and center stakeholders.

Survey Methodology

The quantitative method of data collection based on use of a survey was selected as part of this study for several reasons. Gall, Ball, and Borg (2003) recommend a survey for use in case
study when the researcher needs to collect data about phenomena that are not directly observable such as respondents’ inner experience and opinions. Surveys can also be used more conveniently than direct observation of phenomena in situations where a researcher is interested in accessing respondents over a large geographic area. These conditions were present in the structure of the research study. The number of residential centers involved in the study and the geographic distance between the centers would make personal interviews of the program directors impossible for the researcher because of the time and expense involved in such an endeavor.

**Case Study Methodology**

Yin (2003) describes several situations where a mixed method case study design is appropriate to inform research. One situation is where qualitative and quantitative methods compliment each other. In these situations, one portion of the case study seeks to describe a phenomenon, while another portion of the case study seeks an insider perspective into a phenomenon. This framework applies to the study as the researcher sought to conduct a needs analysis of residential environmental centers in regard to program evaluation that is wide in scope, while also conducting interviews with a local program director and stakeholders of a local center to reveal an insiders’ perspective on the issue.

Qualitative research methodology was selected as another portion of this case study because the research questions could be understood more fully through interviews with center staff members and other program stakeholders. Strauss and Corbin (1998) describe the fit of qualitative research methods with research that “attempts to understand the meaning or nature of experience of persons” (p. 11) and note that qualitative methods are best used “to obtain the intricate details about phenomena such as feelings, thought processes, and emotions that are difficult to extract or learn about through more conventional research methods” (p. 11).
Several characteristics of qualitative research are present in this study. Qualitative studies are based on the assumption that reality is constructed by individuals as they interact with their social environment (Merriam, 2001). The study sought to reveal the perceptions and realities constructed by the program director and key stakeholders of a residential center. This insider’s perspective, or understanding from the participants’ perspectives, is at the core of what this study sought to reveal. Also, this study employed an inductive research strategy. This is another characteristic of most qualitative studies. The study was not designed to test existing theory. Rather, it was an in depth look at the individuals associated with a residential center and shed light on issues and concerns of the center staff and the center stakeholders at a period in time when these issues are of particular concern.

**Research Context**

This study involved gaining insights through use of a survey distributed to residential center directors and a case study featuring a REEC in the Southeastern United States. Research data was collected during fall 2010. The research survey was conducted by means of the Internet, while the case study predominantly involved conducting interviews with various stakeholders on site at the REEC.

The target population for the research survey was REEC directors. The sample included all REEC directors located in the United States.

The research location for the qualitative case study was “Camp Davis.” For the purposes of confidentiality, pseudonyms are used in place of actual names for persons and places associated with the qualitative portion of this study. As with many qualitative case studies, the study site was not chosen at random. The selection of the research location was based on the proximity of Camp Davis to the researcher, the willingness of the center staff to participate in the
study, and the belief of the researcher that the sight participants would be able to provide valuable insight into the research questions. The description below of this center will provide context to the study details to follow.

**Case Study Context Selection**

Purposeful selection foremost guided the selection of Camp Davis for case study context of this study. Whereas random sampling is desirable to draw generalizations from a study, qualitative research seeks to generate insights about unique or specific contexts and thus may select participants or places most likely to render rich insights (Merriam, 2001). Purposeful selection was ultimately relied upon as it best met conditions for generating a “trustworthy” qualitative study. A trustworthy qualitative study attends to criteria including credibility, validity, transferability, thick contextual description, and prolonged engagement (Lincoln & Guba, 1985). Main factors that influenced purposeful selection of this site include the fact that it is a well established camp with a strong following of teachers, it is located near the researcher, the researcher has taken numerous class groups to the camp, and a strong collegial relationship exists between the researcher and camp director. For several years, in professional meetings such as conferences and during class visits to Camp Davis, the researcher and Director have exchanged concerns about sustaining REEC sites. The researcher anticipated the Camp Director would have a genuine interest to participate in this study; thus upon approval of the study proposal and the university’s Institutional Review Board, the Director welcomed and readily accepted to serve as the case site location for this study.

Camp Davis is a REEC located in the Southeast United States that has been in operation for 15 years. It is well established, and has had a consistent philosophy throughout its existence, and this philosophy has remained relatively unchanged throughout the tenure of several
directors. The program has been successful in developing a loyal following of teachers who visit the center with their students each year. The Camp Davis website describes the center as a “non-profit education organization” that strives to “increase the student’s awareness and understanding of environmental science, encourage responsibility for the environment; and foster cooperation and a community feeling” (retrieved from the camp web site, July, 2009).

Camp Davis is located in a rural area of a Southeastern state. The center was founded in 1995 and is located on 1100 acres of land. The camp is located in a forested area and includes a creek, natural spring tributaries, waterfalls, and a pond. Much of the forest is in an undisturbed state. The topography of the area includes bluffs and canyons created by the flow of the area creek, wetlands, and sharp changes in elevation common to this region of the Southeast U.S. The stratified sandstone bedrock of the area is visible in many areas. A reclaimed coal mine is located on the edge of camp.

The natural setting of the camp allows for a curriculum designed by the camp staff specifically for the unique areas of the camp that the students can explore. The sandstone bluffs and canyons provide first hand examples of erosion and the rock cycle. The pond and creek tributaries provide opportunities for study of freshwater organisms and water quality. The creek is also available for canoeing. The forest areas provide opportunities for the study of trees, other forest plants, and the wildlife that uses the forest as habitat. Orienteering and map skills are taught in the large open areas of the camp. A series of Native American curriculum opportunities is also related to the unique history of the area. A high ropes course allows the camp staff to organize team building and individual challenge activities.

The camp serves public and private schools from throughout the southeast United States. The target audience for the curriculum designed by the camp staff is third through twelfth
graders. Several curriculum models are available for groups visiting Camp Davis. The most common selection is a trip lasting three days. Single day visits and visits lasting five days are also available. Teachers select various curriculum offerings to fit class needs and the length of the trip. These courses can last from ninety minutes to the entire day. Davis instructors teach the courses and provide all necessary materials. School groups are broken into smaller field groups for instruction. Field groups usually consist of about twelve students and a parent or teacher chaperone.

The camp facilities include cabins, a cafeteria, a paved recreation center, and various meeting buildings primarily located at the center of the camp. The cabins are grouped into a boys and girls section on opposite sides of the camp center. The cabins typically house twelve students and a chaperone. The cafeteria is located alongside a full kitchen where camp meals are prepared by a cooking staff. The recreation area also contains a canteen area that serves snacks during a recreation period and offers camp souvenirs. Many paths are cut and maintained through the wooded areas of the camp. The facilities also contain a canoe launch along the creek, a high ropes course, and a Native American replica lodge.

The camp serves a dual purpose. The environmental education function of the camp operates from September through May. Schools and other groups schedule field trips for this time period. The facility also serves as a recreational summer camp from June through August. The environmental education center has several year-round employees including a camp director, a curriculum director, and lead naturalist. Between ten and fifteen instructors are employed only for the September through May period when school groups are visiting the center.
Research Participants

Study data were collected for the two aspects of this mixed methods study. Residential center directors were part of the survey portion of this study, and the staff and stakeholders of Camp Davis were part of the qualitative data collection portion of the study.

Survey Participants

The first part of the study involved a survey that was administered over the Internet. Invitations to participate in the study were sent to residential center program directors across the United States. Several methods were used in an attempt to develop a list of e-mail addresses of all residential program directors for participation in this study. A national database listing residential centers across the US was examined, and e-mail addresses were collected from this data base for center program directors or camp directors. Also, contact information for members of an organization of REEC directors was utilized. Invitations to participate in the study were sent to members of this organization through their member contact list.

A total of 205 program directors were added to the researcher’s database of program directors for participation in the survey portion of the study. Before e-mail addresses were added to this database, center web sites were examined to verify that the centers were in fact residential in nature and that the focus of the centers was environmental education. Centers which did not fit these criteria were eliminated from the researcher’s database. The 205 program directors were sent invitations to participate in the study.

Survey construction and administration methods are described later in this chapter. Demographic information related to the survey participants was not collected as part of the survey.
Case Study Interview Participants

Interviews were conducted with a program director from Camp Davis. Interviews were also conducted with three program staff members from the camp, three teachers who have brought school groups to the camp, and a school administrator whose school has sent a group to visit the camp.

Purposeful sampling was employed in the selection of the research site as suggested by Merriam (2001) based on the potential of participants to provide valuable insights into the research questions. The program director of Camp Davis was selected to participate in the research study because of the researcher’s familiarity and ease of access to the camp, the positive reputation that the camp enjoys in the area, and the Camp Director’s ready willingness to provide the researcher with valuable insights into the study questions.

The selection of various stakeholders, including teachers, camp staff, and other secondary case participants, followed a more randomized design process. The camp director of Camp Davis provided the researcher with a list of potential interview participants based on her knowledge of the insights that they could share with the researcher. The camp director provided the researcher contact information for camp staff members, visiting teachers, and school administrators. From this list of possible participants, the researcher assigned numbers to the camp staff members, visiting teachers, and school administrators. A random number generator was used to order the members of these three lists. The researcher contacted members of these three lists in the order dictated by the random number generator. In this manner, three visiting teachers, three camp staff members, and one school administrator were selected to participate in the research study.

Camp Director. The camp director began her association with Camp Davis at first as a teacher bringing school groups to the camp. She has a unique perspective in that she has
experienced the camp as a visiting teacher and as the camp’s director. She is well respected in
the residential environmental education community and is involved in many aspects of
environmental education. Her camp was chosen by the community of residential directors to host
their 2009 annual convention because of her leadership in the group. She is also involved in the
state initiative to develop environmental education standards for the state science curriculum.

The Camp Director and the researcher have shared a collegial relationship over a period
of five years. The director was eager to participate in the research study because it involved
program evaluation. She had stated that program evaluation is a primary concern of hers and of
the residential environmental education community. She provided the researcher with open
access to the camp and contact information for stakeholders who would be able to provide
valuable information.

**Stakeholders.** Staff, teacher, and the school administrator participant were also
purposefully selected. Staff members were recommended by the camp director based on their
ability to shed light on the research questions. Teachers were also recommended by the camp
director who had visited the camp. The school administrator was randomly selected from a group
of school administrators suggested by the camp director because of their ability to shed light on
the research questions. The experiences that these individuals have had with Camp Davis
provided a true insiders’ perspective into the program evaluation at Camp Davis.

Six research participants were female, and one was male. Specific ages were not
collected for the participants, though all participants had earned college degrees and were over
19 years of age. The camp staff members had various levels of experience. The novice of the
group had been teaching for only five months, and the most experienced of the group had been
involved with the camp for seven years.
Each of the teacher participants had over ten years of teaching experience had have brought student groups to the camp for over five years. The school administrator had five years of experience as a school administrator. More specific demographic information related to the research participants was not collected.

**Data Collection Processes**

This section presents more detailed descriptions about each process regarding the design and processes of data collection for the study.

**Survey of Residential Center Directors**

The goal of the survey was to assess the population of residential environmental center directors. An invitation to participate in the research study was sent to program directors of residential centers across the US. The survey invitation was sent to 205 center directors. The selection of these survey participants was described earlier in this chapter.

**Survey construction.** The survey design was based on a 1985 survey developed by Chenery and Hammerman. This survey documented the current practices of REECs. In addition to the survey questions from this earlier study, questions were added to the survey to address the research questions proposed for this study. Questions were added relating to the program directors overall satisfaction with their program evaluations, barriers to constructing and conducting program evaluations, their needs regarding program evaluations, and desired characteristics in a program evaluation. A complete survey is located at Appendix A of this study.

**Survey field testing.** Steps detailed by Gall, Gall, and Borg (2003) were followed in the construction of the survey. The research objectives were defined, a sample was selected, and the questions were pilot tested by an independent researcher and a residential center program
director. Comments made by the independent researcher and the program director were recorded and changes were made in the survey to address the comments. Corrected surveys were sent to the independent researcher and program director a second time for further pilot testing. Again corrections were made in the survey based on comments sent to the researcher from the independent researcher and the camp director. A final version of the survey was deemed acceptable by the independent researcher and the program director.

The final version of the survey was posted on the web hosting site SurveyMonkey. A link to the completed survey was created by the hosting site, and this link was sent to the independent researcher and program director for a final field test. Only after the Internet version of the survey was field tested was the survey link sent to the research participants.

**Case Study**

The case study design was primarily informed through semi-structured interviews, although secondary qualitative sources also provided insights. The researcher drew on his own experiences—memories of class field trips, professional meetings with the Camp Director and other staff over the years. The camp website also featured many documents for review. Shadowing a class group that had taken a field trip to Camp Davis provided an opportunity for making “field observation” notes and informal conversations with the teachers and students. Examination of evaluation forms typically completed by class groups also provided insights.

An interview was conducted with the Camp Director of Camp Davis. The interview was semi-structured in nature. Interviews of this type, as described by Gall, Gall, and Borg (2003), involve “asking a series of structured questions and then probing more deeply using open-forum questions to obtain additional information” (p. 240). Several structured questions served to direct the discussion. Additional questions were added by the researcher based on the respondent’s
initial responses to the structured questions. The question protocol is located in Appendix B of this study. The questions were pilot tested by an independent researcher to ensure that they would provide the desired information and that the questions were worded in a way that could be easily understood.

The interview with the program director took place at Camp Davis in the office of the program director. The interview was digitally recorded. The researcher recorded comments and observations in a research journal during the interview. The interview lasted forty-seven minutes.

**Semi-Structured Interviews: Camp Staff**

Interviews were conducted with three staff members of Camp Davis. The interviews were semi-structured in nature. Again, several structured questions guided the discussion. Additional questions were added by the researcher to obtain additional information. The questions were developed using the procedures described for the camp director. A sample question protocol was developed by the researcher and pilot tested by an independent researcher. The final question protocol for the camp staff is located in Appendix C of the research study.

The researcher traveled to Camp Davis to meet with the interview participants. Semi-structured interviews were conducted with the three staff members individually. The interviews were digitally recorded. The researcher recorded comments and observations in a research journal during the interviews. The interviews lasted between sixteen and forty-two minutes.

**Semi-Structured Interviews: Teachers and School Administrator**

Interviews were conducted with three teachers that have participated in visits to Camp Davis and one school administrator from a school that has attended the camp. Interviews were semi-structured in nature. The questions were developed and tested in a manner similar to the
previous interviews. Final interview protocols are in Appendices D (teachers) and E (school administrator) of this study.

Interviews of the teachers and school administrator were conducted over the telephone. Distances between the homes or workplaces of the research participants and the researcher made travel directly to the participants difficult because of the time and the cost of travel. Initial contacts were made with the research participants to arrange an interview time. With the consent of the participants, the researcher contacted two participants at their homes and two of the participants at their place of employment during the day at prearranged times for the telephone interviews. The interviews were digitally recorded. The researcher recorded comments and observations in a research journal during the interviews. The telephone interviews lasted between nine and twenty-six minutes.

**Study Methods**

This section describes specific details regarding processes associated with data generation and analysis. It is important to note that the researcher obtained Institutional Review Board approval from The University of Alabama prior to the start of this study. Research participants read and signed consent forms before their participation in the study. Copies of the consent forms are located in the Appendix section of this study. Appendices F-J contain the various consent forms utilized in the study. Interviews were digitally recorded and transcribed by the researcher.

**Survey procedures.**

Research participants were contacted via e-mail in fall 2010 and invited to participate in the research study. A link to the survey location on SurveyMonkey was provided in the e-mail invitation. Through the survey link provided to the participants, they were able to view the study consent form. A copy of this form is located in Appendix F. Only after completing the electronic
consent portion of the form were participants allowed to proceed with the survey on SurveyMonkey. As surveys were completed, the SurveyMonkey web site stored the data for download at the conclusion of the study period.

After three weeks, a second e-mail reminder was sent to the program directors’ e-mail addresses requesting their participation in the research study. A third e-mail reminder was sent to the centers one week before the end of the survey period. The survey was open to the center directors for a period of five weeks which began with the first e-mail invitation. At the conclusion of the five week period, the survey was made inactive, and survey data were downloaded from the SurveyMonkey web site.

**Interview procedures.**

Semi-structured interviews were conducted with the research participants in fall 2010.

**Data Analysis**

Data analysis consisted of both quantitative analysis and qualitative analysis. The methods of data analysis for the survey and the Camp Davis interviews are described in the following sections of this chapter. The chapter highlights the analysis of survey data and semi-structured interviews as the primary data sources used to inform the study. The use of secondary qualitative data sources, such as documents and researcher’s field observation notes are woven into the narrative insights featured in the second half of Chapter 4.

**Survey Analysis.**

At the conclusion of the survey period of five weeks, the survey data was downloaded from the SurveyMonkey web site. The data were downloaded as a Microsoft Excel spread sheet file. Survey data were coded to prepare the data for entry into the SAS analysis program. The researcher determined the types of survey responses that were to be analyzed quantitatively and
these data were input into the SAS analysis program. Descriptive statistics were generated and organized into tables including frequencies and percentages for the survey responses. Survey responses that were open ended and involved completion of text boxes by the participants were not input into the SAS analysis program but were analyzed qualitatively.

The constant comparative method of data analysis as described by Merriam (2001) was used to analyze the survey open-ended responses. This method uses the continuous comparison of descriptions, interview responses, and other information to achieve the goal of finding commonalities, or what Merriam (2001) describes as recurring regularities, in the data.

Open ended survey responses were separated by question and input into a word processing program. Responses were numbered. The information provided by the participants in each response was coded. In this process, the researcher gleaned the focus of the response. Index cards were used to record code information for each response. Responses with similar codes were grouped together and categories were developed from these groupings of similar responses. An example of the index cards used in the analysis of the responses is in Appendix M. An independent investigator was used to review the conclusions drawn by the researcher.

**Interview Analysis.**

The analysis of the interview data followed case study analysis suggested by Merriam (2001). Category construction was again used to analyze the interview data. Using this process, the researcher developed categories or themes that were derived from the data. The categories were concepts that were brought forth from the data. Merriam describes the process of devising categories as “largely an intuitive process, but it is also systematic and informed by the study’s purpose, the investigator’s orientation and knowledge, and the meanings made explicit by the participants themselves.” (p. 179).
The constant comparative method was used to analyze participant interviews. The construction of categories began with the reading of the first interview. Notes, comments, and observations were noted in the margin of the interview transcript. These notes point out parts of the interview that struck the researcher as being relevant to the focus of the research study. The notes were then divided into groups that shared something in common. These groups of information were given representative names. A running list of these groups was kept in the researcher’s journal.

Subsequent interview transcripts were analyzed in a similar manner. Groupings for interviews were compared with the groupings from previous interviews. Commonalities were noticed between the groupings, and these groups became the themes derived from the interviews.

An iterative process of checking and rechecking the perceptions and conclusions of the researcher with the study participants is suggested (Gall, Gall, & Borg, 2003). This process was employed during the course of data analysis. Drafts of the narratives, category construction, and conclusions were shared with the research participants for correction, amendment, or editing. In this way, the participants’ perceptions were more likely to be accurately represented. An independent investigator was also used to review the conclusions drawn by the researcher.

Further description regarding the translation of data analysis into interpretive insights is provided in Chapter 4. The mixed method approach of this study involved taking quite different directions to best re-present study “findings”. It was decided that the reader would find it helpful to follow explanations regarding quantitative and qualitative data analysis and interpretations explained alongside the “findings” in Chapter 4.
Ethical Considerations

Great care was exercised to ensure the study was being conducted in an ethical manner. “The best the researcher can do is to be conscious of the ethical issues that pervade the research process and to examine his or her own philosophical orientation vis-à-vis these issues” (Merriam, 2001, p. 219). With this in mind, measures were taken throughout the study to increase the validity and reliability of the research study.

Validity and Reliability

Philosophical differences exist between researchers using qualitative methods and those using quantitative methods. These differences bring forth different ways of looking at the issues of validity and reliability. Even though qualitative and quantitative researchers view these issues differently, steps can be taken that can strengthen the trustworthiness of a qualitative case study.

The overall selection of program evaluation as a focus for the case study was based on research sources discussed by Strauss and Corbin (1998). They state that careful listening and observing of the study participants, “then analysis should lead (the researcher) to discover the issues that are important or problematic in the respondents’ lives. This acid test of paying attention to respondents’ concerns is the key to where the focus of a research project should be” (p. 38). In the researcher’s preparations for this study, preliminary discussions were held with the program director of Camp Davis. In these interviews the director emphasized that program evaluation was an issue that was problematic for them. The director further discussed the fact that program evaluation is a frequent area of concern for residential center directors throughout the United States.

Several design controls were present in the research study. The survey was pilot tested by an independent researcher and a residential center program director to provide the researcher
with a level of assurance that the questions asked would provide the desired information and would be worded in a clear manner. Interview questions were reviewed and pilot tested in the manner described earlier in this chapter. Recognition and disclosure of the bias of the researcher and awareness of the impact that this bias can have on data interpretation was present. Interview contents and analysis were reviewed using member checks to assure that the conclusions accurately represented the intent and meaning of the respondents. And, triangulation of data was utilized involving survey results, the analysis of the interview of the Camp Davis program director, and interviews of other key center stakeholders.

**Triangulation.** Triangulation can help increase internal and external validity and reliability (Gall, Gall, and Borg, 2003; Merriam, 2001). This involves the use of multiple sources of data as a way to check the validity of the findings of the case study. The use of triangulation can help eliminate biases that might result form relying on one type of evidence exclusively. In the present study, the researcher utilized data from multiple sources to confirm research findings. Survey results, interview analysis from the Camp Davis program director, interview analysis from the camp staff members, interview analysis from the camp stakeholders, document analysis, and field observations were included in the research findings.

**Member Checks.** Member checks were also utilized. To do this the researcher interpreted information from an interview source, and returned the interpretation to the individual interviewed to check how plausible or valid the researcher’s interpretations were. Interview data analysis was shared and screened by the interview sources for their comments.

**Independent Investigator.** Having an independent investigator examine the categories generated during the analysis of data is another way that the researcher helped ensure the reliability of the analysis. A peer examiner was asked to comment on the findings or
interpretations of the original researcher. This occurred during the data analysis phase of the study.

**Recognition of Bias.** The researcher recognized that bias (or as in qualitative terms expressed as researcher subjectivity) influenced decisions that were made as the study progressed. The study contains a personal statement in which the researcher identifies different aspects of experiences or background brought to this study. Accordingly, the Statement of Researcher Bias is located in Appendix N of this study.

**Description of Research Process.** Furthermore, the research process is described in detail in this chapter. The researcher described in detail the research processes and how conclusions were drawn. A detailed journal was kept during the research process capturing the various steps taken as part of the study and the perceptions of the researcher.

**Purposeful Sampling.** The study contains purposeful sampling to obtain interviews with information-rich residential center stakeholders. Earlier in this chapter, the researcher described the sampling methods for the administration of the survey. The purposeful sampling of the staff and stakeholders of Camp Davis was also described.

**Context of the Study.** This description of the context of the study will help the reader make judgments about how the data can be applied to other situations. Through the descriptive analysis of the data collected in the study, the reader can determine the extent to which the re-conceptualized lived experience of the research participants can be related to other situations.

**Conclusion**

This study employed a mixed methods research design. A quantitative questionnaire provided the researcher with data representing residential centers across the US. This enabled the researcher to document and examine current program evaluation practices and determine the
needs of the program directors as they design program evaluations. Interviews with the Camp Davis program staff, teachers, and a school administrator provided the researcher with an insider’s perspective regarding program evaluation. The next chapter of the research study presents the results obtained through the study.
CHAPTER 4: STUDY RESULTS

This mixed methods study examined the current program evaluation practices of REECs and documented the needs of the center program directors and other center stakeholders in regard to program evaluations. This chapter is organized into two main sections based on the research method used to analyze the data.

The first portion of the chapter reports the results of the online survey of REEC program directors. It includes a description of the participating residential centers, a description of the evaluation practices of the centers, and a summary of the satisfaction and needs of the program directors regarding their centers’ program evaluations. This sequence follows the question order of the survey itself. Quantitative and qualitative means were employed in the analysis of the survey data. The second section of the chapter presents the qualitative data analysis of the interviews conducted with a residential center staff and other stakeholders of the center. Themes generated form the analysis of the interviews include science education for the whole child, long-lasting “remembered” learning, and evaluation constraints.

The mix of qualitative and quantitative analyses enabled the researcher to present an overall picture of the current program evaluation practices and needs of center directors in the United States through the directors survey and insight into the lived experiences of a center staff and its stakeholders regarding program evaluation through the semi-structured interviews.

Survey Data Analysis

A survey (See Appendix A) was developed by the researcher and sent to residential environmental education program directors via an e-mail link to a web hosting sight as described
in Chapter 3. The survey invitation was sent to 205 program directors from across the United States. At the conclusion of the survey period of five weeks, 129 of the program directors started the survey by agreeing to the information on the consent page for a 62.9% response rate. Of these directors, 107 of them completed the survey for a 52.2% survey completion rate. Fifteen program directors completed the survey consent page but did not answer any survey questions. For the analysis of the survey data, the 15 directors who did not answer survey questions beyond the consent page of the survey were not included in the data analysis.

Survey data were downloaded from the web hosting site. Quantitative survey responses were input into the SAS analysis program. Descriptive statistics were generated and organized into tables including frequencies and percentages for the survey responses. The interpretation of quantitative data was organized into sections reflective of the study questions, accordingly describing: the participating residential centers, the evaluation practices of the centers, and finally the satisfaction and needs of the program directors regarding program evaluation following the order of the survey questions. Qualitative responses to open-ended survey items were analyzed as described in Chapter 3. Qualitative interpretations of survey responses are likewise represented in this chapter, grouped to correspond with trends reported from the quantitative data analysis.

**Description of Residential Centers**

Questions 2 through 8 of the survey were used to collect background information describing the residential centers. Table 1 presents background information including the geographic locations of the centers, center settings, years centers have been in operation, and number of center staff members. Frequencies and percentages for each variable are summarized in Table 1.
Table 1: Center Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Center Location n=114</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northwest</td>
<td>19</td>
<td>16.7</td>
</tr>
<tr>
<td>Midwest</td>
<td>30</td>
<td>26.3</td>
</tr>
<tr>
<td>Northeast</td>
<td>21</td>
<td>18.4</td>
</tr>
<tr>
<td>Southeast</td>
<td>28</td>
<td>24.6</td>
</tr>
<tr>
<td>Southwest</td>
<td>16</td>
<td>14.0</td>
</tr>
<tr>
<td><strong>Center Setting n=114</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>89</td>
<td>78.1</td>
</tr>
<tr>
<td>Suburban</td>
<td>15</td>
<td>13.2</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>8.8</td>
</tr>
<tr>
<td><strong>Duration of Operation n=111</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-2 years</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3-5 years</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>6-10 years</td>
<td>7</td>
<td>6.3</td>
</tr>
<tr>
<td>11-20</td>
<td>24</td>
<td>21.6</td>
</tr>
<tr>
<td>Over 20</td>
<td>78</td>
<td>70.3</td>
</tr>
<tr>
<td><strong>Staff Members-Mean n=112</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Time</td>
<td>Mean=8.1</td>
<td></td>
</tr>
<tr>
<td>Part Time</td>
<td>Mean=15.6</td>
<td></td>
</tr>
</tbody>
</table>

**Center Demographics.** Centers were located throughout the United States with the largest percentage of centers from the Midwest (26.3%) and Southeast (24.6%). Center directors were asked to describe the setting of the residential center. Most of the centers described their locations as rural (78.1%). Regarding the duration of operation, the overwhelming majority of center directors operate centers that have functioned for over 10 years (91.9%).

Center directors were asked to indicate the number of educational staff members employed by the center. Means were calculated for the staff numbers indicated by the directors. Centers employed a mean of 8.1 full time staff members and almost twice as many part time staff members (15.6%).
**Center Audience.** Program directors were asked to describe the intended audience of the environmental education program. Categories in this question represented age categories from Kindergarten through adults. Frequencies and percentages for each audience category are presented in Table 2. Further analysis was conducted related to this question to determine the breadth of intended audience categories. Statistics were generated to indicate the number of audience categories to which centers offer programming.

Table 2: Center Audience

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Audience n=112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kindergarten-3rd Grade Students</td>
<td>52</td>
<td>46.0</td>
</tr>
<tr>
<td>4th-6th Grade Students</td>
<td>105</td>
<td>92.9</td>
</tr>
<tr>
<td>7th-8th Grade Students</td>
<td>86</td>
<td>76.1</td>
</tr>
<tr>
<td>High School Students</td>
<td>65</td>
<td>57.5</td>
</tr>
<tr>
<td>College Students</td>
<td>44</td>
<td>39.3</td>
</tr>
<tr>
<td>Adult</td>
<td>41</td>
<td>36.6</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>8.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Center Audience-Number of Audience Categories n=112</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Audience Category</td>
</tr>
<tr>
<td>2 Audience Categories</td>
</tr>
<tr>
<td>3 Audience Categories</td>
</tr>
<tr>
<td>4 Audience Categories</td>
</tr>
<tr>
<td>5 Audience Categories</td>
</tr>
<tr>
<td>6 Audience Categories</td>
</tr>
<tr>
<td>7 Audience Categories</td>
</tr>
</tbody>
</table>

Audience categories included kindergarten through third grade students, fourth through sixth grade students, seventh and eight grade students, high school students, college students, and adults. An option of “other” was also available. The largest percentage of centers offers programming for 4th-6th grade students (92.9%). Middle school aged students are also a major focus of these centers (76.1%). Percentages for young elementary aged students and high school and college students decrease.
Centers frequently offer programming to a variety of audience grade levels. Most centers offer programming to more than one category of visitors (84.8%), and 23.2% of the centers indicated that they offer programming to six audience categories serving a very wide range of age groups.

**Funding Sources.** Program directors were asked to describe the centers’ funding sources. Frequencies and percentages for this question are presented in Table 3. Further analysis was conducted to determine the extent to which centers utilize multiple sources for their funding. This multiple funding source information is also located in table 3.

Table 3: Funding Sources

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding Source n=112</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self Funded</td>
<td>89</td>
<td>79.5</td>
</tr>
<tr>
<td>Religious Organization</td>
<td>9</td>
<td>8.0</td>
</tr>
<tr>
<td>Government Organization</td>
<td>27</td>
<td>24.1</td>
</tr>
<tr>
<td>School/University Funded</td>
<td>15</td>
<td>13.4</td>
</tr>
<tr>
<td>Corporate/Private Donations</td>
<td>24</td>
<td>21.4</td>
</tr>
<tr>
<td>Non-Profit Organization</td>
<td>4</td>
<td>3.6</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>8.9</td>
</tr>
</tbody>
</table>

| Multiple Funding Sources n=112   |    |         |
| One Source                       | 61 | 54.5    |
| Two Sources                      | 36 | 32.1    |
| Three or More Sources            | 15 | 13.3    |

Most centers indicated they are self-funded (79.5%) relying on the collection of fees from visitors to fund the centers. Frequently centers are associated with a National Park or receive government grants (24.1%), and 21.4% of the centers receive corporate or private donations for at least a portion of their funding. Regarding the utilization of multiple funding sources, nearly 45% of the centers receive funding from more than one source.
Curriculum Focus. Another survey question related to the curriculum focus of the center and was an open ended question. Responses to this question were coded and grouped into categories as described in Chapter 3. Frequencies and percentages for each category are presented in Table 4.

Table 4 Center Curriculum Focus

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Curriculum Focus</td>
<td>112</td>
<td></td>
</tr>
<tr>
<td>Personal Growth</td>
<td>34</td>
<td>30.4</td>
</tr>
<tr>
<td>Recreation</td>
<td>16</td>
<td>14.3</td>
</tr>
<tr>
<td>Science</td>
<td>109</td>
<td>97.3</td>
</tr>
<tr>
<td>Social Studies</td>
<td>24</td>
<td>21.4</td>
</tr>
<tr>
<td>Creative Expression</td>
<td>6</td>
<td>5.4</td>
</tr>
<tr>
<td>Agriculture</td>
<td>3</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Most of the center directors’ comments described a range of center foci rather than a single focus. Centers indicating more than one center focus were grouped into multiple categories. Six categories were developed. They are personal growth, recreation, science, social studies, creative expression, and agriculture.

The personal growth category included centers that described foci as communication skills, team building, respect for others, leadership skills, community building, lifestyle changes, and behavior change. The recreation category included centers that listed various recreational activities, outdoor living, or adventure as the center focus. The science category included centers that described their focus as environmental education, outdoor science, sustainability education, inquiry, ecology, stewardship, wildlife conservation, and environmental awareness. The social studies category included centers that listed native cultures, local history, cultural history, and historical awareness as the focus of the center. Creative expression included centers listing art
and craft activities, and agriculture was grouped with centers listing farming or gardening as a center focus.

Science was an area of curriculum focus for nearly all of the centers (97.3%). Of the 112 respondents to this question, only three of the center directors did not include a science related curriculum focus. Each of these center directors included an area of personal growth as a center focus. The survey next moved to questions related to the program evaluation practices of the centers.

** Desired Program Impacts.** A final question detailing background information about the residential centers asked the program directors the following question: “Do you hope to document any changes in participant knowledge or behavior as a result of your program? If so, what are these changes?” Sixty-nine program directors responded to the question. These open-ended responses were recorded and coded as described in Chapter 3. Five categories emerged from the responses. Frequencies and percentages for each category were computed and organized into Table 5. The categories are knowledge, behavior, attitudes, not specified, and none. Comments may have been placed in multiple categories based on the nature of the response.

Table 5: Desired Program Impacts

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in Participants n=69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>25</td>
<td>36.2</td>
</tr>
<tr>
<td>Behavior</td>
<td>25</td>
<td>36.2</td>
</tr>
<tr>
<td>Attitudes</td>
<td>21</td>
<td>30.4</td>
</tr>
<tr>
<td>Not Specified</td>
<td>19</td>
<td>27.5</td>
</tr>
<tr>
<td>None</td>
<td>2</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Program directors indicated that knowledge was a desired outcome in 25 responses.

Responses grouped into this category included those describing content knowledge, connecting
the classroom to the outdoors, and learning science content. Environmental literacy and
developing an understanding of natural connections were also mentioned and included in this
category. Program directors described their desire to document, “learning-especially science and
ecological principals”, “knowledge of the environment”, and “knowledge gain among students.”
Knowledge of the local environment was described by a director who wrote, “We hope to see
participants’ knowledge of the local ecosystems improve.”

Behavior was also frequently included as a response topic. Twenty-five directors
included behavior related topics in their responses. These responses included ideas related to care
for nature, environmental responsibility, improved decision making, stewardship, and making
sustainable choices. A director wrote that it would be beneficial to document that students “take
action to care for nature” after their visit to the center. Another wrote that it would be important
to “document changes in participant actions.”

Attitudes were specified in twenty-one responses. Responses included in this category
described respect for nature, awareness of surroundings, appreciation for nature, feeling a
connectedness and comfort with nature, and an interest in further learning. A director responded,
“Yes-increases in environmental attitudes.” Other directors wrote, “We hope for an improvement
in their attitudes towards the environment,” and “We hope to see a deeper appreciation of the
natural world.”

Nineteen directors indicated that they did desire to document changes in students but
didn’t specify the nature of the change. One director wrote, “We would hope to document
changes but don’t have concrete plans to do so.” Two directors indicated that they did not want
to document changes in students as a result of participating in their programs.
Program Evaluation Practices

The next section of the survey documented the current evaluation practices of the residential centers. As with the previous survey questions, frequencies and percentages of choices were computed and summarized in tables. These questions contained an option of “Other” as a choice. A text box was provided after the “Other” choice so that program directors could better report their answer to the survey question. When appropriate, frequencies were taken for these comments. In other instances, the length of the comments made qualitative analysis a more appropriate method of data analysis. Instances in which qualitative analysis were utilized are noted in the discussion of the specific survey question.

Program Evaluation Administration. Program directors were asked to indicate who determines the program evaluation content and who administers or conducts the program evaluation. Choices included a range of center employees and independent researchers. The choice of “Other” was also available to the program directors. Frequencies and percentages for each variable are located in Table 6.

Table 6: Program Evaluation Administration

<table>
<thead>
<tr>
<th>Variable</th>
<th>Determines Evaluation</th>
<th>Conducts Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Percent</td>
</tr>
<tr>
<td>Program Director</td>
<td>94</td>
<td>84.7</td>
</tr>
<tr>
<td>Advisory Board</td>
<td>16</td>
<td>14.4</td>
</tr>
<tr>
<td>Board of Directors</td>
<td>15</td>
<td>13.5</td>
</tr>
<tr>
<td>Full Time Staff</td>
<td>53</td>
<td>47.7</td>
</tr>
<tr>
<td>Center Instructors</td>
<td>26</td>
<td>23.4</td>
</tr>
<tr>
<td>Independent Researchers</td>
<td>5</td>
<td>4.5</td>
</tr>
<tr>
<td>Other</td>
<td>19</td>
<td>17.1</td>
</tr>
</tbody>
</table>

Program directors indicated that they are frequently involved in determining the content of program evaluations (84.7%) and conducting program evaluations (77.5%). Full time staff
members frequently contribute to determining evaluation content (47.7%) and conducting the evaluation (43.2%). Independent researchers were the least likely to determine evaluation content (4.5%) or assist in conducting program evaluations (7.2%).

**Other responses.** The choice of “Other” was available for this question. These open-ended responses were grouped and placed into categories to further illuminate the evaluation practices of the centers. Nineteen directors chose the category of “Other” and added a comment in the text box provided. The largest grouping (9 respondents) of these responses indicated that program evaluations are determined by an administrator other than the program director. These administrators were identified as executive directors, organizational administrators, campus directors, and site principals. Regarding who administers or conducts the program evaluation, 20 center directors choose the option of “Other” and left a response. Other administrators appeared again (6 responses), but visiting teachers appeared most frequently (8 responses).

**Multiple Categories.** Further data analysis was conducted to document the extent to which evaluation administration is shared. Frequencies and percentages were computed to indicate the number of variables selected by the program directors for the survey questions related to determining evaluation content and conducting the program evaluation. These statistics are presented in Table 7.

Table 7: Program Evaluation Administration-Multiple Categories

<table>
<thead>
<tr>
<th>Who Determines and Conducts Evaluation? n=111</th>
<th>Determines Evaluation</th>
<th>Conducts Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>n</td>
<td>Percent</td>
</tr>
<tr>
<td>No Variables Selected</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>One Administrative Category</td>
<td>41</td>
<td>36.9</td>
</tr>
<tr>
<td>Two Categories</td>
<td>46</td>
<td>41.4</td>
</tr>
<tr>
<td>Three Categories</td>
<td>17</td>
<td>15.3</td>
</tr>
<tr>
<td>Four or More Categories</td>
<td>7</td>
<td>6.3</td>
</tr>
</tbody>
</table>
The majority of the centers indicated that the content of the program evaluation is shared and not determined by a single individual or group (63.1%). Program directors may involve full-time staff members in evaluation decisions but still remain primarily responsible for conducting and administering the program evaluation.

**Program Evaluation Methods.** Program directors were asked what evaluation practices are present in the program evaluations conducted for their centers. Various evaluation practices were listed along with an option of “Other”. Frequencies and percentages are listed in Table 8.

Table 8: Program Evaluation Methods

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Evaluation Methods- n=110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation of Program</td>
<td>90</td>
<td>81.8</td>
</tr>
<tr>
<td>Discussions w/Students</td>
<td>49</td>
<td>44.5</td>
</tr>
<tr>
<td>Discussions w/Chaperones</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>Discussions w/Teachers</td>
<td>77</td>
<td>70</td>
</tr>
<tr>
<td>Written Surveys Students</td>
<td>53</td>
<td>48.2</td>
</tr>
<tr>
<td>Surveys of Teachers</td>
<td>100</td>
<td>90.9</td>
</tr>
<tr>
<td>Surveys of Chaperones</td>
<td>62</td>
<td>56.4</td>
</tr>
<tr>
<td>Pre/Post Test of Knowledge</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>Interviews of Parents/Students</td>
<td>16</td>
<td>14.5</td>
</tr>
<tr>
<td>Standardized Tests</td>
<td>3</td>
<td>2.7</td>
</tr>
<tr>
<td>Independent Evaluator</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Centers frequently utilize more than one evaluation method with program observation (81.8%), and surveys of teachers (90.9%) used most often. Nearly half of the centers indicated that evaluation methods include discussions with students (44.5%) and written surveys of students (48.2%). Independent evaluators (10%) and standardized tests (2.7%) are infrequently utilized as part of program evaluations.

**Aspects of Program Included in Evaluations.** Program directors were next asked to indicate what aspects of the programs are included in the program evaluations. The choices
included various program outcomes, operational aspects of the camp, and overall satisfaction of
the students and teachers. Frequencies and percentages for this question are listed in Table 9.

Table 9: Program Aspects Included in Evaluation

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elements of Program Included in Evaluation n=109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Satisfaction</td>
<td>80</td>
<td>73.4</td>
</tr>
<tr>
<td>Teacher Satisfaction</td>
<td>102</td>
<td>93.6</td>
</tr>
<tr>
<td>Operational Aspects</td>
<td>96</td>
<td>88.1</td>
</tr>
<tr>
<td>Student Attitudes</td>
<td>44</td>
<td>40.4</td>
</tr>
<tr>
<td>Student Knowledge</td>
<td>53</td>
<td>48.6</td>
</tr>
<tr>
<td>Student Achievement</td>
<td>21</td>
<td>19.3</td>
</tr>
<tr>
<td>Other</td>
<td>21</td>
<td>19.3</td>
</tr>
</tbody>
</table>

Regarding aspects of the program that are included in program evaluations, teacher
satisfaction (93.6%), student satisfaction (73.4%) along with operational aspects of the camp
(88.1%) were cited most frequently.

Twenty-one program directors chose “Other” for the question described in Table 8. These
responses were coded and grouped as with previous “Other” responses. Staff performance was
listed by 6 of the program directors, while student behavior was listed 4 times. Meeting schools’
goals was listed 3 times as was chaperone satisfaction.

**Groups Participating in Evaluations.** Center directors indicated what groups complete
at least some part of the program evaluation materials. Frequencies and percentages for this
question are located in Table 10.

Table 10: Groups Participating in Program Evaluation

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups Who Participate in Evaluation n=109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>61</td>
<td>56.0</td>
</tr>
<tr>
<td>Parent Chaperones</td>
<td>72</td>
<td>66.1</td>
</tr>
<tr>
<td>Visiting Teachers</td>
<td>102</td>
<td>93.6</td>
</tr>
<tr>
<td>Visiting Administrators</td>
<td>57</td>
<td>52.3</td>
</tr>
</tbody>
</table>
Table 10 Continued: Groups Participating in Program Evaluation

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Instructors</td>
<td>48</td>
<td>44.0</td>
</tr>
<tr>
<td>Program Staff</td>
<td>50</td>
<td>45.9</td>
</tr>
<tr>
<td>Independent Researchers</td>
<td>6</td>
<td>5.5</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Most centers utilize information from multiple categories of visitors. The groups most frequently participating in the program evaluations are visiting teachers (93.6%) and parent chaperones (66.1%). Students participate in close to half of the center program evaluations (56.0%). Again, independent researchers are infrequently participants (5.5%).

Nine program directors entered comments into the “Other” category for the survey question dealing with the groups that participate in the program evaluation. Responses included parents of all students and other organizational or association supervisors.

**Evaluation Times.** The timing of program evaluations was the topic of a question on the survey. Frequencies and percentages for this question are located in Table 11.

Table 11: Evaluation Times

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Times Evaluation Conducted n=109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Than Once/Stay</td>
<td>16</td>
<td>14.7</td>
</tr>
<tr>
<td>End of Stay</td>
<td>101</td>
<td>92.3</td>
</tr>
<tr>
<td>Weekly</td>
<td>17</td>
<td>15.6</td>
</tr>
<tr>
<td>Monthly</td>
<td>5</td>
<td>4.6</td>
</tr>
<tr>
<td>Seasonally</td>
<td>27</td>
<td>24.8</td>
</tr>
<tr>
<td>End of Semester</td>
<td>7</td>
<td>6.4</td>
</tr>
<tr>
<td>End of Year</td>
<td>10</td>
<td>9.2</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>10.1</td>
</tr>
</tbody>
</table>

Program directors indicated that program evaluations are most likely to occur at the end of a group’s stay (92.3%). Semester (6.4%), monthly (4.6%) or yearly (9.2%) are not commonly chosen as evaluation times.
Data from the question dealing with evaluation times included 11 choices of “Other”. Responses were grouped into categories. Prior to students attending the camp was listed 3 times, while other centers listed “Every five years”, “Yearly”, “As needed”, and “After staff training”.

**Reasons for Conducting Evaluation.** Program directors were asked to indicate their reasons for conducting the program evaluations. Frequencies and percentages for this question are located in Table 12.

Table 12: Reasons for Evaluating

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reasons for Conducting Evaluation n=108</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Improvement</td>
<td>107</td>
<td>99.1</td>
</tr>
<tr>
<td>Make Program Decisions</td>
<td>85</td>
<td>78.7</td>
</tr>
<tr>
<td>Inform Camp Staff</td>
<td>69</td>
<td>63.9</td>
</tr>
<tr>
<td>Inform Camp Participants</td>
<td>14</td>
<td>13.0</td>
</tr>
<tr>
<td>Persuade Teach/Administrators</td>
<td>65</td>
<td>60.2</td>
</tr>
<tr>
<td>Validate Program Existence</td>
<td>72</td>
<td>66.7</td>
</tr>
<tr>
<td>Secure Funding</td>
<td>43</td>
<td>39.8</td>
</tr>
<tr>
<td>Required of Funding Source</td>
<td>24</td>
<td>22.2</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Program evaluations serve a number of purposes for the program directors. Program improvement (99.1%), making program decisions (78.7%), and validation of program existence (66.7%) were frequently chosen as reasons for conducting program evaluations. Informing camp staff was also frequently chosen as a reason for conducting program evaluations (63.9%). Informing camp participants was not often selected as a reason for conducting program evaluations (13.0%).

**Use of Evaluation Results.** Directors indicated how the evaluation results are used. Frequencies and percentages for this question are located in Table 13.
Program evaluations are used in a variety of ways by the program directors. Program directors indicated that evaluation results are used for reasons including program improvement (91.7%), planning for future programs (85.2%), and ensuring adequate accommodations for visitors (75.0%). Evaluations are also used frequently used for staff purposes. Staff improvement (79.6%) and staff evaluation (73.1) were frequently chosen by program directors.

**Program Evaluation Satisfaction**

The remaining survey questions related to the satisfaction and the needs of the program directors as related to their centers’ program evaluations. Questions 19 and 20 of the survey asked the program directors to indicate the degree to which their present program evaluations are meeting their center’s needs (question 19) and the needs of their center stakeholders (question 20). Both questions consisted of Likert scales with a range from 1 to 5 and an open ended text box in which directors could provide further information. The Likert categories were: 1-Strongly agree, 2-Agree somewhat, 3-No opinion or neutral, 4-Disagree somewhat, and 5-Strongly disagree. The directors also had the choice of “NA”.
Meeting the Needs of the Program Director. Directors were asked their level of agreement with the statement, “The present program evaluation is meeting my center’s needs.” Frequencies and percentages of directors’ responses are recorded in Table 14.

Table 14 Likert Scale-The Present Program Evaluation is Meeting My Center’s Needs

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>16</td>
<td>15.1</td>
</tr>
<tr>
<td>Agree Somewhat</td>
<td>55</td>
<td>51.9</td>
</tr>
<tr>
<td>Neutral</td>
<td>12</td>
<td>11.3</td>
</tr>
<tr>
<td>Disagree Somewhat</td>
<td>19</td>
<td>17.9</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>N/A</td>
<td>1</td>
<td>0.9</td>
</tr>
</tbody>
</table>

The majority of the program directors strongly agreed or agreed somewhat that their present program evaluations are meeting their needs (67%). 20.7% of the directors disagree somewhat or strongly disagree that their evaluation is meeting their needs. Table 4.5 presents the frequencies and percentages of each choice of the Likert Scale for this question.

Open-Ended Responses. In addition to the Likert Scale, the question included an open-ended text box asking program directors what change in their program evaluation would help them better meet their needs. Forty program directors responded to this additional question. These responses were coded and evaluated for themes. Three inclusive groups eventually emerged from the responses. Several responses were included in two of the groups because of the content of the responses. The groups included those that indicated a need to identify specific program impacts, those that saw a need for more effective evaluation methods, and those that were unsure of what was needed.

Need to identify specific program impacts. The need to identify specific program impacts appeared often in the responses. This group of responses included directors who indicated that
they needed a program evaluation with the ability to help them identify changes in students. These changes included increases in science content knowledge, environmental attitude, responsible environmental behavior, and group behavior. A response typical of these comments indicated that directors need a program evaluation that can, “…document changes in learner attitudes or behavior toward the environment, and his/her community”.

Other responses specifically listed “knowledge” and “science content knowledge”. Academic achievement was also included in this group of responses. One response described the need for an evaluation that could “…be used to document that the experience the students receive is helping them do better in school, and better against the state standardized tests”. Another director described the need for “…a more rigorous investigation of the academic impact of our program on both science content knowledge and attitudes”.

*Need for more effective evaluation methods.* Another theme that emerged from the director comments was the need for more effective evaluation methods. This group of responses included descriptions of the specific evaluation instruments that are needed and descriptions of the overall depth of the evaluation. A general area of interest of the directors is that the evaluation information collected be more in depth. Various directors asked that program evaluations be “more specific”, “more rigorous”, “comprehensive”, and provide “more in depth information”.

A large group of the respondents indicated a need for quantifiable information. Along this line, one director wrote that he/she needed, “something that is based more on real academic assessment rather than just opinion”. Responses included calls for pre/post testing of students. The pre/post test format of testing for students was listed for evaluation of science content learning and the evaluation of students’ attitude toward the environment.
The need for assistance in collecting and organizing data was described by a group of directors. Several directors described the need for an outside evaluator. “External evaluation”, “external observers”, and an “outside researcher” were listed in responses. Organizing and summarizing data was also described as a problem area in program evaluations. One director described needing “some way to better analyze the data and comments. Ours is just a paper evaluation that we use in the moment.”

Some directors indicated that their evaluations would be more effective in helping them meet their goals if they could include students in their evaluations. An earlier survey question indicated that 56% of the program directors have students complete some portion of the center’s program evaluation. One director wrote, “We are looking to ask students questions to better evaluate the effectiveness of our program.” Another director indicated that they needed to “find a way to get more constructive feedback from the kids.”

Earlier in the survey, it was noted that 93.6% of the center directors include teachers in some portion of their centers’ program evaluations. Though teachers are frequently included in the evaluation data collected, several directors indicated that the feedback that they are receiving from the teachers would be more helpful to them if it were more in depth. Teachers, as important stakeholders of the centers, often complete a “quick evaluation at the end of their stay” according to one director. Teacher input would be a more effective contributor to evaluation information if it was “more detailed feedback”. Directors commented on the need for an evaluation instrument that “required more in depth information from the teachers”, or “would elicit thoughtful answers rather than ‘yes’, ‘no’, or ‘always’.”

Unknown or unsure. A final theme that emerged from the responses was that directors are unsure about what needs to take place for their evaluations to better meet their needs. One
director wrote, “I’m not sure if we have the best student assessment. Knowing what format/questions are best to collect data would be helpful.” Other directors wrote, “I don’t know what we ought to be doing”, “We are still figuring that one out”, and “too early to know yet.”

**Meeting the Needs of the Center Stakeholders.** Question 20 presented the program directors with a Likert Scale and a text box to add additional comments. Directors were asked their level of agreement with the statement, “The present program evaluation is meeting the needs of your center stakeholders like teachers, administrators, students, and their parents.” The frequencies and percentages for each Likert Scale category are presented in Table 15.

**Table 15: The Present Program Evaluation Is Meeting the Needs of the Center Stakeholders**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting Needs of Program Stakeholders-Likert n=106</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly Agree</td>
<td>15</td>
<td>14.2</td>
</tr>
<tr>
<td>Agree Somewhat</td>
<td>47</td>
<td>44.3</td>
</tr>
<tr>
<td>Neutral</td>
<td>25</td>
<td>23.6</td>
</tr>
<tr>
<td>Disagree Somewhat</td>
<td>13</td>
<td>12.3</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>4</td>
<td>3.8</td>
</tr>
<tr>
<td>N/A</td>
<td>2</td>
<td>1.9</td>
</tr>
</tbody>
</table>

A small percentage of the directors strongly agreed with this statement (14.2%). When the categories of “Strongly Agree” and “Agree Somewhat” are collapsed together, the percentage climbs to 58.5%.

**Open-Ended Responses.** As with the previous question, a text box was provided after the Likert Scale asking the program directors the question, “What is preventing you from conducting a program evaluation that would truly meet your needs?” Thirty-one directors added responses to the open-ended text box. Their responses were analyzed in the method described for the previous question.
The analysis of the open ended responses revealed three themes: evaluation background, documenting program outcomes, and resources. Based on their content, responses may have been grouped into more than one of the categories.

Evaluation Background. A theme that was present in the directors’ responses was the idea that they or their staff are in need of background knowledge related to program evaluation. Directors described a need for personal and staff instruction, training, or guidance in conducting a program evaluation. One director wrote, “We need better training in creating objective evaluation protocols.” Another director described a need for training to help them develop, “the skill set required to put together a thoughtful and effective evaluation plan.”

Documenting Program Outcomes. Many directors perceive that better or more effective means are needed to evaluate the program outcomes or changes that occur in students as a result of their visits to the centers. As one director wrote, “We can not provide them (teachers) information on the outcomes of their students or any evaluation results to help them justify their time at the center.” Directors perceive the need for evaluation practices that can help them answer questions related to changes in students after visits. Student learning, relation of the experience to standardized test scores, program effectiveness, knowledge changes, and attitude changes are all areas of change listed by program directors. Another director wrote that teachers would “value information regarding our effectiveness as it would help them defend their choice to attend.”

Several directors perceive the present evaluation practices to be too opinion based, writing, “Too much of our feedback is subjective.” Numerous directors described the need for evaluation data to be more objective. Directors wrote that evaluation tools need to be “rigorous
and standardized”, and provide “hard data regarding student learning.” A pre test/post test format was suggested by several directors.

*Resources.* Limited resources were also described as a limiting factor in conducting program evaluations. Time was the most frequently described resource. The factor of time was listed in regard to staff time to develop and administer the program evaluations and in regard to the time available for students and teachers to contribute to program evaluations in meaningful ways. Limited staff time was described in numerous responses. Limited teacher time was also described. One director wrote of the evaluations that, “not a lot of time and thought are given to them.”

Money and limited staff members are also described by the directors as limiting factors. In many instances, staff members are not available to administer the evaluation instruments or to make sure that they are completed by the teachers. Funding is often not available to conduct meaningful evaluations.

**Program Evaluation Needs: Challenges and Changes.**

Questions 21 through 25 were open response questions. These questions sought to capture the directors’ perceptions and opinions regarding challenges to conducting program evaluations and changes in program evaluations. Analysis of the questions follows the order of the questions in the survey.

**Program Evaluation Challenges.** Question 21 asked the directors the question, “What challenges are unique to REECs in conducting a program evaluation?” Ninety-two directors responded to question 21. Their responses were compiled and coded in a manner similar to other open ended response questions in the survey. Comments were analyzed for themes and grouped into categories. As one director wrote:
With school districts cutting budgets and becoming more strict with teacher time and requirements and increased testing of students, the time of a teacher is at a premium. This makes it incredibly hard to get schools to commit to spending three days at a retreat center, let alone ask teachers to take more time for evaluation or have time, with a bare bones staff, to process the evaluations.

This quote voiced several of the themes present in the overall comments. The themes include Limited Access to Students, Visit Time Constraints, and Program Variety.

**Limited Access to Students.** Camp directors noted that they are provided limited access to the students who visit their center for evaluation purposes. The experiences of the students while at the environmental centers are very important to visiting teachers and the residential centers. As earlier described, pre/post testing of students was mentioned by many program directors as a means to inform others about changes that are occurring in students while they are visiting camps. Also, many of the camp goals relate to changes in knowledge, attitude, and behavior that the students would exhibit after their visit to the center.

Frequently, directors wrote that the students are not available for testing or questioning before or after their visits. As one director wrote, a challenge is “accessing students and teachers on a longitudinal basis-It’s expensive and time consuming, and yet that is where the value of evaluation really kicks in.” On a similar note, another director wrote, “I believe the true benefit of a residential program and learning that has happened doesn’t become obvious for months or even years.” This is a problem for camp directors because they don’t feel that the teachers who visit their centers are willing to add further testing of their students to their already full schedules.

**Visit Time Constraints.** In addition to having limited availability of students for pre or post testing or other evaluation experiences, program directors also voiced concern that the time that the students are at the camp itself is also at a premium. A director expressed this concern
when he or she wrote, “The students are here for such a short amount of time that I wouldn’t want to take time from activities and experiences to do evaluation.” Another director wrote, “Time seems to be a challenge. Residential groups are so busy the whole time they are here, it is hard to pin down chaperones and teachers to take the time to fill out the evaluations.”

Program directors and teachers want the students to have the full benefit of their time on their visits. Directors wrote that they would rather have the students “spend their time at the outdoor school on the trail, not conducting tests.” The students’ days are filled with activities that they can’t experience in their regular classrooms. Therefore, many program directors are not willing to take evaluation time away from time available for outdoor learning experiences.

Teachers and chaperones are also very busy while at the environmental centers. They have many responsibilities related to the safety and care of the students under their charge. Therefore, time available for the teachers and chaperones to complete evaluation materials is extremely limited. One director voiced this challenge in writing, “neither center staff nor visiting teachers/chaperones have much time to put toward evaluation. Their priority, as it should be, is the students’ experience”. Other directors wrote, “lack of time”, “not enough time”, “it’s a very busy time”, “time to sit together and discuss and improve programs”, and “it is difficult for the teacher to dedicate time to fill out evaluation forms or surveys.”

Program Variety. Like many nonformal educational experiences, teachers bring students to environmental centers with a wide range of expectations. One director wrote, “Groups come to our facility with different goals in mind. Some could want the group to just be able to play together and bond a little bit, and others may want them to learn our science curriculum.” Sometimes environmental centers host hundreds of groups each season. Each group could possibly have different goals for their visit. The environmental centers offer a wide range of
programming in order to tailor a school’s visit to the needs of a particular teacher. Program directors perceive this attribute of their centers as a challenge to conducting program evaluations. A director wrote, “Each school may have a different set of goals or set of knowledge they would like for their students.” The directors perceive that the variety of school goals and the variety of programming options that they provide make using a single form of evaluation difficult. Directors wrote, “matching group expectations”, “variety of groups”, and “each group is different-each evaluation must be tailored to their specific courses, activities, etc.” Present program evaluation practices don’t provide the directors with the flexibility that they require.

Other Challenges. Other less frequently mentioned challenges included areas related to resources and lack of background knowledge in evaluation practices. Several directors mentioned that lack of money kept them from properly conducting program evaluations. Lack of staff members was also mentioned occasionally. In some instances, staff members were not available for processing evaluation materials or even making sure that evaluation documents were handed out to visiting teachers and chaperones. Directors wrote that they lack the background to know “what types of questions to ask of the students that will provide good data”, and, “how to put together an effective evaluation of the programs.”

Changes in Program Evaluations. Question 22 asked program directors the following question: “What changes (if any) in your program evaluation would you like to see?” There were 69 responses to this question recorded. Two main categories emerged from the responses to this question. The categories are student impacts and efficiency.

Twenty-one of the program directors wrote responses describing changes needed allowing them to better assess the impacts of the center visit on the students. These impacts included changes in student knowledge, behavior, and attitudes. Pre/post testing was included in
several of the responses. A director specified the need to, “document the effectiveness of the program for the school district.” Another wrote that, “Funders like to see the impact of the program.” Long term impacts of the program are also important to program directors. Directors comments regarding this area include, “We are looking to capture the long-term impact of this program on its participants.”

Thirty directors described changes needed in the efficiency of their program evaluations. This area included directors who specified a need for more funding for program evaluation and more staff time for evaluation construction and administration. This area also included directors who expressed a need to change program evaluations to make them easier to complete or less time consuming. Electronic or on-line evaluations were frequently included in responses. One director mentioned a “user-friendly online survey.”

**Aspects to Include in Program Evaluations.** Program directors were asked if there were any aspects of their programs not included in their present evaluations that they would like to include. Seventy responses were recorded and were organized into categories. Frequencies and percentages for each category are recorded in Table 16.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspects of Program Evaluation to Add n=70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>5</td>
<td>7.1</td>
</tr>
<tr>
<td>Student Impacts</td>
<td>38</td>
<td>54.3</td>
</tr>
<tr>
<td>Program Details</td>
<td>6</td>
<td>8.6</td>
</tr>
<tr>
<td>Teacher Opinions</td>
<td>4</td>
<td>5.7</td>
</tr>
<tr>
<td>None</td>
<td>17</td>
<td>24.3</td>
</tr>
</tbody>
</table>

The largest group of responses related to changes in students as a result of their participation in the residential program (54.3%). These responses included impacts of the program on student learning, retention of knowledge, student attitudes, behavior, and emotions.
One wrote, “What change does the learner intend to make in their daily life as a result of attending the program?” Others specified student environmental learning with comments like, “retention of knowledge taught”, “specific content knowledge”, and “knowledge of subject matter”.

Long term student impacts were mentioned by several program directors. Long term behavior of students was listed by a director who expressed a need for a “better understanding of post experience choices based on what was learned. How the experience impacts life over time.” Another expressed the need for, “evaluation of knowledge and behavior change over time.”

**Groups Inclusion in Program Evaluations.** The program directors were asked the following question: “Are there individuals or groups not included in your present evaluation that you would like to include?” The majority of the sixty-four responses to this question were rather brief. The responses were organized into categories, and frequencies and percentages were computed and are presented in Table 17. Several responses were placed into more than one category because of the length or content of the response.

Table 17 Groups/Individuals to Add to Program Evaluations

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals or Groups Not Included in Present Evaluation n=64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Families/Parents</td>
<td>6</td>
<td>9.4</td>
</tr>
<tr>
<td>No</td>
<td>29</td>
<td>45.3</td>
</tr>
<tr>
<td>School Administrators</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>Chaperones</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>Management</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>Other Stakeholders</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>Students</td>
<td>18</td>
<td>28.1</td>
</tr>
<tr>
<td>Teachers</td>
<td>2</td>
<td>3.1</td>
</tr>
</tbody>
</table>
The majority of program directors who responded to this question indicated that there were not groups or individuals that they desired to include in their program evaluations that they are currently not including (45.3%). Of the directors who did indicate a group they would desire to include, students appeared the most frequently (28.1%).

**Ideal Program Evaluations.** The final question on the survey asked the program directors to describe their ideal program evaluation. A text box was provided on the survey for the directors’ responses. Seventy directors responded to this question. Responses were coded and grouped as with other open-ended responses. Directors’ comments were organized into the five themes described below.

**Limited Time.** The most frequently appearing need in the directors’ comments was the need for a program evaluation that can be completed quickly. Phrases like “quick”, “short”, “only takes a few minutes to fill out”, “fast”, “doesn’t take a lot of time out of their schedule”, and “concise” were common in the directors’ comments. One director wrote that the ideal evaluation “would take no more than 15 minutes to implement or conduct.” Another expressed the limited time available for conducting evaluations with the comment that “The ideal evaluation takes about 2 minutes”.

**Ease of Use and Analysis.** Another frequently appearing comment was that the program evaluation needs to be easy to implement or use, and it should allow them to analyze the data that is collected easily. Several directors expressed the desire that the evaluations be “simple for the teachers and students to complete.” One commented, “If they are a burden for the participant they will only be filled out by a select few.” Several directors specifically mentioned a program evaluation that could be, “online”, “digital”, or “computerized.” Directors also expressed the belief that using the computer for program evaluation would provide them with results that could
be analyzed more easily. One director wrote that the use of a computer would provide them with results that “will automatically get compiled into a database for easy viewing.” Another wrote that results should be “easy to tally for larger overall perspective.”

**Comprehensive.** Program directors expressed a desire that their program evaluations be able to evaluate all areas of their program operations. A director wrote that evaluations should include “all aspects of program and life at the residential center.” Another wrote that the program evaluation must “evaluate from registration through post impact.” Another mentioned that the program evaluation must involve “students, teachers, chaperones, and staff.” Directors have a wide range of areas that they supervise, and the program evaluation would need to include areas as diverse as food, facilities, and student impacts. One director expressed this need with the comment that the program evaluation needs to be “one that measures outcomes as well as customer satisfaction.”

**Document Program Impacts.** Directors expressed a desire that their program evaluations be a mix of qualitative and quantitative inquiry methods designed to document the impacts of their programs on the students. The educational content was mentioned frequently represented by the comment that directors need “more information regarding the specific educational content learned by the students.” Pre/post-testing was seen by several of the directors as a means to document changes in student learning. Other directors wrote similar responses expressing their need for an “evaluation of what the students learned”, and to have the ability to assess the “academic success of the program.”

Knowledge isn’t the only student change that program directors need to document. One director wrote that the program evaluation needs to be able to document the program’s
“effectiveness related to knowledge acquisition, understanding, motivation, behavior change, and commitment to action.”

Changes in behavior and attitude of the students were listed numerous times by the program directors. Throughout the responses, comments like, “measureable”, “document”, “free from bias”, “scientifically rigorous”, “quantitative” appeared.

**Longitudinal.** Many directors expressed a desire to include long term program impacts in their evaluations. The experience of the students after they leave camp is an area that directors would like to access. Comments like, “long term assessment”, “measure long term changes in participants”, and “short term as well as long term” frequently appeared in the directors’ responses.

Several directors specified intervals for post-trip evaluations when they wrote that student evaluations should occur “at the time of the program, six months, and six years later”, and evaluations should include “another survey that goes out 3-6 months later”. One director summed up this concern writing, “We are missing the long term evaluation piece - much of our current practice is using the evaluation as a check and balance to make sure we have met the immediate request for a good program. Yet we hear about great stories about the class valedictorian commenting on the 6th grade trip to our site on graduation day. So I guess we are missing a way to evaluate the ‘impact’.”

The quantitative indicators in this section have reported in tables and brief summaries of qualitative responses to open-ended questions. Possible trends are suggested by the many members of the residential environmental education community. The next section of this chapter explores the study findings from a different research perspective, drawing on qualitative
methodology to render insights that might also be useful toward understanding evaluation practices of the residential center staff members and the challenges toward improving these.

**Exploring a Local Context of Evaluation of Residential Environmental Education**

The second portion of the chapter takes a qualitative turn to represent study “findings” based on the study of evaluation at Camp Davis. The chapter begins with an interpretive description of a “School Visit” to the residential center to provide contextual background for the thematic qualitative insights which follow.

**School Visit**

Carpool groups arrive at the location of the residential environmental education center. Students, parent chaperones, and the students’ teachers unload their vehicles in an excited manner. They have been looking forward to this experience since the start of the school year. The idea of spending two nights away from home, in a cabin and field groups with their classmates, learning in the beautiful setting that the camp provides is intoxicating. From the moment the students unload the vehicles, the camp staff has them busy. Their first task is taking their luggage to their cabins quickly followed by a group meeting with the camp staff for introductions.

The visit of this 6th grade class to the REEC began with pre-planning that occurred months before the actual trip. School approval for such a trip is provided by the principal, permission slips and health forms are sent home and collected, parent chaperones are recruited, an itinerary of classes for the visit is selected by the teacher from a list of available camp offerings (See Appendix K), students are broken into field groups and cabin groups, and pre-trip instruction is conducted in the classroom. Though time consuming, this work helps the trip run more smoothly and ensures that the students receive the maximum benefit from the visit.
The students quickly move from the group meeting to their first field activity. Students divide into their field groups made up of about twelve students, a parent chaperone, and a camp instructor. They will participate in most of the classes selected for them by their classroom teacher in these field groups. These small-sized classes make group interaction easier. The camp staff instructor will be responsible for teaching the students during their classes.

The camp provided the teacher with a planning packet listing the various class offerings of the camp. Each of the offerings is in some way related to the *Alabama State Course of Study* Objectives. These correlations helped the teacher select camp activities that are related to topics that are already part of the regular classroom curriculum. In this manner, camp activities are tailored to the goals of each visiting teacher. The first class for the students is called *Down to Earth* (Camp Teacher Planning Packet, 2010).

For the next three hours, the field groups will hike through the deciduous forest of the area and visit a reclaimed strip mine. They will discuss soil, erosion, the geologic history of the area, coal, electricity, conservation, and human impacts on the environment. These topics are already part of the 6th graders Earth Science curriculum which guides their classroom instruction. Though students have studied these topics in their classroom, they seem to be seeing things in a new way as they examine a canyon cross section first hand. They experience biodiversity as they walk through the forest and the instructor points out the various trees and wildlife around them. They feel the organic material in the soil of the forest floor and the cool air that the forest canopy provides.

The camp instructor takes this opportunity to engage the group in a drama to enact the various parts of a tree. One child is asked to stand in the center of a cleared area-she is to be the “Heartwood”-pumping her arms to represent the strong core wood of a tree. The students gather
around her, each taking on a particular role: leaves making food, roots slurping up minerals, vascular tissues transporting food and water. Giggling as they simultaneously enact their roles, their separate parts become a whole tree!

Throughout the class, the camp instructor stops the students at various intervals to point out something or to have them share thoughts. The group discussion is much more involved than reciting science term definitions. The students share their feelings about the environment and the habitat that surrounds them. Students are attentive to each others comments and willingly participate in the discussion. By the end of the class, the group is working together.

When the field group returns to the main camp center to regroup with the others, the students excitedly share their experiences with their classmates. The adventure of the hike through the woods has given some a sense of accomplishment. They share their stories of the animals that they have seen. The sharing time ends as the students are gathered for their first meal at camp. This is followed by a change of clothing and the evening activity. The camp staff members make good use of the students’ time while they are visiting the camp. For some students, it will be their first time walking in the woods, sleeping in a cabin, or holding a snake. Teachers and camp staff try to fit as much as possible into this experience because they are aware of what a unique experience it is for the students.

The students leave camp exhausted but refreshed and filled with enthusiasm to share what they have learned with others. Some discuss starting recycling programs at their school or trying to waste less food at home. Others will mention that they would love to visit again. Teachers notice that most are changed in some way. The changes may be related to a deeper understanding of the science that they study in their classroom. The changes may be related to the way they treat their classmates. The changes also may be related to the way they view
themselves and their willingness to try something new. The teachers and parents leave feeling
the work they put into organizing and supervising the trip has been well worth the effort. A
teacher captured the change in her students when she stated that by the end of their visit to camp,
“they are just exuding true joy. They are so satisfied. They know they are different. They know
they are changed. They know they have grown.”

The Camp Director, who has been listening to the group preparing to leave, is not
surprised by the visitors’ expressions. Their experiences, for the most part, go as planned. Their
visit is designed to be more than a walk in the woods. The staff members are trained to carry out
the camp philosophy which highlights a “child-centered approach” to education. The director
waves goodbye to the last vehicle, and with a brown envelope given to her by the classroom
teacher, makes her way to the camp office. Seated at her desk, she opens the brown packet and
slides out a pile of evaluation forms given to the teacher and the parent chaperones when they
first arrived at camp. What could be written on these evaluation forms that could reflect the
energetic leaps, back pats, and smiles just minutes ago?

This portrayal of a class’s experience at Camp Davis is drawn from various data sources
used for this study and adheres to constructivist tenets underpinning qualitative research. An
important point to emphasize is that research “study findings” are not “found” as if they existed
outside of the researcher and were happened upon in the course of doing the study. Rather, study
insights are generated as a matter of the researcher’s interpretations of data. Taking on a
qualitative narrative re-representation of the data analysis and interpretation in this chapter
provides a mode of communication more resonant with human experience than the more
disembodied rhetorical practices of traditional social science presentation (Nichols, Tippins,
Morano, Bilbao & Barcenal, 2006; Zeller, 1995). Qualitative narratives represent insights about
problems as complexities and ambiguities of human experiences. Accordingly, a narrative account of study findings re-presents that dynamic and fluid wholeness of a phenomenon as it was felt and experienced in the researcher’s consciousness (Hellman, 1981). The three themes explored here are rather like “narrative nets”: drawing together the analyses of qualitative data to better understand the nature of learning as experienced by students and their teachers at a particular site, Camp Davis, and how this particular director and her staff think about issues of evaluation in light of what they deem to be of value in the mix of various stakeholders.

Science Education for the Whole Child

The Association for Supervision and Curriculum Development (ASCD) describes education focused on the whole child as education that “promotes the development of children who are healthy, safe, engaged, supported, and challenged” (ASCD, 2007). Active engagement in learning is a key component of education focused on the whole child. Active engagement in learning and its positive effects on children are concepts that are part of the experience of a visit to a residential center. The staff of Camp Davis and the center’s stakeholders who participated in this study described the first-hand and engaging learning experiences that children have while visiting the camp.

Engagement of the Child in Learning. Learners at the residential center are able to experience events first-hand and become active constructors of their knowledge. Camp instructors make efforts to help students make connections between the instruction and their everyday lives. A staff member vocalized this desire:

We try to incorporate relationships between classes to the outside world. That is something that we emphasize is making that connection from the class to what they are really doing in their real life. That is something that we focus on in our classes and the evaluations. If you don’t do that you are just teaching facts.
This valuable residential center experience leads to changes in the learners that are not easily measured using traditional quantitative methods. Interview participants note that the science related topics covered on their trips are taught in a way that is difficult or not possible in a traditional classroom. As one of the teachers noted, the center visits give students “the opportunity to experience hands-on activities that we cannot always do at school.”

A teacher described an extension of a classroom lesson that her students experienced while at the center. As a Physical Science teacher, her students had discussed simple machines in class and even completed several classroom experiments. While selecting activities for her class to participate in while at camp, she noticed an activity that involved having students lift another student in a harness with the help of pulleys. She selected this activity for her students because it involved the simple machines that were part of her normal science curriculum. She also selected the activity because it involved team work and the element of trust.

She described how excited the students were when they saw the pulleys and harness when they finally arrived at camp and how eager they were to try the activity. They worked as a group to lift each classmate to a comfortable height using the pulleys and then experienced the exhilaration as the harness became a swing, lowering the student back to the ground. This application of the use of pulleys was a unique experience for the students and a memorable example of how simple machines are used in the world around them. She described her enjoyment in watching the students learn as a group on the pulley apparatus:

I enjoy watching the kids when the light goes on in their heads. Wow this really is science out here in this world. This is what is in the book, but this is what is really happening. It is amazing when you talk to them about how pulleys reduce the effort, and when they are pulling this 200 pound kid up there-this really is right!

The teacher found that this pulley activity lead to an understanding of the topic that went beyond knowledge about the function of pulleys. The camp activity involved much more than
memorization of the benefits of pulleys in everyday life. The whole child was involved in the pulley activity. Students experienced first-hand the change in force needed to lift the other students as they used the pulleys. They felt the pull of the rope on their hands and saw the results of their efforts in a highly motivating manner.

She noted that her students were easily able to use their knowledge back in the classroom. She stated that the students “are actually taking those things that they have learned at Camp Davis and applying them to whole new situations.” Beyond basic knowledge of simple machines, students show a greater understanding of the topic.

A second teacher described her students’ experience on their visit to a reclaimed coal mine. She selected this particular program from the residential center’s listing of programs because the topics covered corresponded to those she covers in her 7th grade Earth Science curriculum. The fact that the kids can “look at the concepts that we study in Earth Science and actually see them” is one of the primary reasons that she takes her students to this residential center each year.

Students walked along a pristine creek and stopped for discussion breaks along the way. The camp instructor related topics like the geologic history of the area to energy production and consumption. He pointed out the fact that the area is rich in coal and related the importance of coal to the production of electricity. The instructor tied this fact to the students’ everyday lives and then led the class in a discussion about the impact the mining of coal has on the environment. Students visited a reclaimed coal mine and witnessed first-hand the effects that the mining has had on the natural environment. The discussion was handled carefully to balance the concepts of care for the environment with our need for energy. The teacher stated:

I find that it really sticks in their heads better because they got to experience it. They got to walk around and see it-most notably the things that we do on the coal
mine. When we go back and talk about that, they do remember both the content as well as the general experience.

A camp staff member discussed the unique learning opportunities available to students at the residential center:

In our classes we can explain things in words, and then take them out and show real examples of what we are talking about—before, after, and the effects in between. And that is something that you can’t get in the classroom. I think so often in today’s classroom, the kids don’t get a chance.

Again, the whole child was involved in the experiences described above. Students’ senses are fully involved as they walk through the forest. They are physically active as they travel as a group through along the challenging path. They are aware of the life in the forest through the sounds that they hear.

The “small group situations” and “hands-on activities” are credited as being major contributors to the learning that takes place at the residential center. Another teacher explained that students are changed after their experience. She notes that they “have a better understanding of the environment” and that the students easily refer back to the content of the visit when they return to their classroom. Phrases like “apply”, “understand”, “aware”, and “connections” appear frequently in conversations that teachers have as they describe the learning that they have observed in their students. It is notable how this language presents a contrast to the language of “aligned” and “standardized” frequently appearing in curriculum planning literature.

Frequently the experience at the center will lead students to become more involved in environmental issues in their own communities. The camp conducts a food waste awareness program after every meal. Students are made aware of the amount of food that they take but don’t eat, and this is related to environmental concerns like energy usage and habitat destruction. One teacher described how her students came back from camp enthused about changing their
wasteful behavior in the lunch room and encouraging others in their school to do the same. She stated, “They are more ready to take an active role in a lot of things…We bring those 50 kids back, and they come back with a whole different attitude about food and learning.”

Teachers and camp staff note the uniqueness of the camp visit. Students are able to walk in a deciduous forest and identify specific organisms. They are able to locate the homes of these organisms and identify their food sources. As a staff member noted, “In our classes, we can explain things in words, and then take them out and show real examples of what we are talking about. And that is something that you can’t get in the classroom.” Many of the experiences that the children have while at the residential center are experiences that the students have never had. A teacher explained:

Most of these kids have never been on a night hike in their life. Most of these kids have never sat around a fire. We do the night hike and then Stars Sparks and Stories. It isn’t just your lower income kids. We have a lot of upper income kids who have never had these types of experiences before.

These experiences actively engage the whole child in science. These experiences lead to an understanding of science. Also noted by the research participants are the benefits to their class community that occur as a result of their visit to the center. The visit helps connect their students into a community of science learners.

**Community of Science Learners.** Teamwork, communication, and the fostering of learning environments that develop these important skills are essential aspects of education focused on the whole child (ASCD, 2007). A group of students grows to become a community of science learners as these skills in children are developed. The development of a community of learners is a vital aspect of a visit to Camp Davis and one of their program goals (Camp Teacher Planning Packet, 2010). Research participants note changes in the students’ group cohesiveness.
and ability to work together. Many of the camp activities require cooperation. Activities also involve group work in which students are accomplishing goals with the help of classmates.

The concept of class cohesiveness was discussed by all of the teachers and the school administrator as an important goal in bringing students to the residential center. They noted that the experience “really galvanizes the community in your classroom,” and makes working together in the classroom easier. One of the teachers described the effects of an activity requiring cooperation when she stated, “It is really good to see them work through a problem that requires so much team work. A lot of school is very independent-everyone for themselves. Here is a chance to see them work together.”

Whereas competition may characterize how formal science is practiced, classroom re-representation of science as individualistic learning is actually a misrepresentation of how science is actually enacted.

An activity described by one of the teachers required students to accomplish a challenge with their field group. The field group was challenged to move their group from a wooden platform to another wooden platform several yards away using only a suspended rope to swing across the distance between the platforms. Though the platforms were low to the ground, the students were presented with a scenario in which they were not allowed to touch the ground between the platforms. This challenge motivated the group to work as a cooperative team. Though unsuccessful after several attempts to move their field group to the other platform, the group finally realized that planning and communication were imperative to accomplishing their goal. They eventually did successfully move their field group to the other platform and celebrated their accomplishment together. These lessons are remembered and built upon when
the students return to their classrooms. Capturing this idea, a teacher stated, “They are capable of working together as a group better because they understand the give and take more.”

This ability to work together is important to the teachers. One related the fact that she purposely plans her visit to the residential center in the fall to greater utilize the benefits of the trip during the rest of her school year. Her comments capture this idea:

We work together better. A lot of the students are intimidated by me because they know my class is hard. After we spend three days together at camp, and they see that actually I like to have fun while we are learning. And yes I make them learn, but it is a fun experience. We work better together, and I can actually get more work out of them later with a greater depth of understanding.

Teachers also noticed that students are often more willing to associate and work with students with whom they would normally not have associated. This observation reminds us that classroom teachers are teaching young people whose social practices impact their learning of science. One teacher noted that her class was less fragmented after their trip when she said, “they come back more as a group as opposed to cliques.”

Another teacher credited this change with the fact that students are placed into small field groups. These working field groups are often made up of close to twelve students. Students are purposely divided into groups to provide them with opportunities to work with a variety of their classmates. Groups are frequently made up of gifted students working along students with learning disabilities. The teacher pointed out these important changes in her description of the children working together:

They are all working together. This gives those kids the opportunity to see students in a different light. They see them in a totally different environment than at school, and they actually find that these kids that are nerds at school or that are dummies at school are actually pretty cool kids. It amazing! And they build bonds that you would not believe that they would build. I have seen them come back from camp, and I would see the kids that didn’t go try to make fun of the kids that don’t learn like everyone else. And I have seen that kids that go to camp
defending one another saying ‘Don’t make fun of him. Don’t ridicule him. He is a smart cookie. You just should have seen him at Camp.’

This change in students from a segmented group to a community of science learners provides benefits that the teachers can utilize throughout the school year. As one teacher summed up, “For the most part they come back a tighter knit group. Maybe some of them that weren’t quite sure if they wanted to get along have a new understanding for each other.” The camp director was originally a teacher who brought her students to visit the residential center. She shared this sentiment when she described her reasons for having her students visit in the fall:

As a teacher, that was a reason I liked to visit in the fall. The kids’ attitudes toward each other were completely different, and we could use that as an example all year. Remember what we did at Camp ‘Davis’? Well we can do that here.

The classroom community learns to become a community of science learners who grow in respect for each other and each others’ ideas and show a better ability to work together to solve problems and accomplish goals. In addition to finding that children develop into a community of science learners, research participants note that students also develop a sense of their ability to do science.

**Recognize a Sense of Place as a Learner in the Science Community.** The National Research Council recognizes the importance of a student’s sense of place in the science community in the *National Science Education Standards* (NRC, 1996). They state “An assumption of the *Standards* is that all students should learn science through full participation and that all are capable of making meaningful contributions in science classes.” This belief in students that they can make meaningful contributions in the science class is developed while at the residential center. ASCD also recognizes the importance of students’ coming to know themselves better in the development of the whole child (ASCD, 2007).
Interview participants note that the unique experiences provided at the residential center allow students to experience group situations and challenges that lead to personal growth. In some cases, a sense of independence that comes from being away from home for three days is attributed to this increase in self-confidence. In other instances, accomplishment of program activities or challenges gives children a greater sense of place within the science community.

One of the camp instructors described this situation:

There is a different set of rules at camp. They can push boundaries. I like to have the kids have kid time in my classes. I like to have them help lead the conversation. I want to hear what they have to say to teach them that their voice is important. At camp they get a chance to push those boundaries. Sometimes they will try to do things that they don’t normally get to do or say things that they don’t normally say, but I think that is important.

In many instances, children haven’t experienced a hike through challenging terrain. Working together as a group, children make their way along the many nature trails that are part of the residential center. They help each other up challenging sections of the hike to reach their destination as a field group. A particularly challenging activity selected by many school groups is the Power Pole (Camp Teacher Planning Packet, 2010).

In the Power Pole activity, students are safely fastened into support harnesses and climb to the top of a twenty-foot power pole. They then can leap to a trapeze suspended near the pole before they are safely lowered to the ground. This activity challenges students to try something new and to challenge themselves to accomplish a goal. They attempt the challenge one at a time while the rest of the field group encourages their progress and provides support. Students are challenged to set a goal for themselves, even if it is only climbing half of the way up the pole. They are also encouraged to respect the goals of others knowing that each person has a different comfort level with heights. A teacher described the important change in one of her students:
I meet kids now that have graduated because we have been going so long now. I have a young man—when he went to Camp ‘Davis’ and did the Power Pole and Climbing Wall—he came back and he told his mother that he was going to be a fire man. And his mother just thought he was crazy. And he said, ‘No, because at Camp I got a little bit of that climbing and a little bit of that jumping off of that power pole, and firemen have to have that kind of tenacity to do that.’ Do you know that he is a fireman today?

The overnight experience is important to the overall feeling of accomplishment with which some students leave camp. A teacher stated, “This is their first time away from home. Their confidence is really built up.” The residential center experience captures a goal of the whole child focus of education expressed by the ASCD in The Learning Compact Redefined: A Call to Action (ASCD, 2007). They describe a whole child focused learning environment as one that “integrates all the ways children come to know the natural world, themselves, and one another, so they can authentically take their place in creating a better future for all.” Children develop a sense of their place while at Camp Davis.

**Long-lasting “Remembered” Learning.**

Experiences which evoke an emotional response are more likely to be easily remembered by children (Jensen, 1995). Hands-on experiences, unique settings, and group involvement in learning are part of a visit to a residential center and can evoke strong emotional responses in the students. Visits to residential centers have shown to have long lasting results by researchers (Knapp & Benton, 2006; Liddicoat, 2007; Ward, 1976). Center visitors easily recall events that took place during visits to residential centers years after the visit.

Interview participants noted that the impacts of the learning received while on the visits shares this characteristic of long-lasting “remembered” learning. Because of the unique experiences that the students have had, they are actively able to construct knowledge that can be
easily called upon, applied in different situations, and expanded upon. A teacher noted this situation:

They remember those things that we did at Camp Davis much better than those that we do back at school where they don’t have the small group situations and they don’t have as many hands-on activities as they do. And I see that they can apply from the fall to the spring.

A teacher described the learning that takes place at the residential center as “very engaging.” It is this aspect of the experience that helps students easily recall the content of their programs there. “The more engaged they are the better they will remember,” she noted, and she added “they definitely refer back to the content.”

Often these long-lasting memories are noticed in areas that were not the intended focus of the activity. A research participant described a class hike while at the residential center. The rainfall that year had been particularly high. The class observed fresh-water springs coming from places along their trail. This first-hand discovery and observation helped the students easily recall the image of the springs later in the school year, and their teacher could use that mental image as part of class discussions. She described:

I can think of a Camp trip when the water table was high enough to actually create springs that we saw on our hike. Several months later, we got to the groundwater chapter, and it was much easier to recreate the scenario where streams occur.

A teacher who brings her 8th grade class to the residential center each year described the long-lasting nature of the learning the students develop as a result of their center visit. Her 8th grade students leave the local middle school to attend high school. She described conversations that she has had with the high school faculty. The classroom conversations of the high school freshmen who attended the residential center the previous year frequently involve experiences that they had at the residential center. Students relate these experiences to what they are doing in their science classes in high school. The high school teachers call the 8th grade teacher curious
for details about the experiences that the students had the year before. She noted, “The kids will go into the 9th grade still talking about things they learned at camp and how they can apply them.”

Another teacher made reference to long lasting memories developed at camp. She brings her 7th grade science students to the center. This particular teacher works at a small school which includes all grade levels, so she has contact with her students throughout their middle-school and high school years. She noted that students not only bring up camp experiences as points of discussion in 7th grade after their visit, but camp experiences are remembered long after their visit. She stated:

It often comes up in the graduation speeches actually-adventures that they had. So usually it is something funny that happened or something unusual that they saw. But even by the time they are seniors, they are still telling stories.

The shared experience of the visit to the residential center led to changes in students recognized by the staff of Camp Davis and the camp stakeholders. The residential center allows children to experience a learning environment that is consistent with environments that seek to develop the whole child. Children are immersed in an engaging learning environment, provided experiences that lead groups to develop into communities of science learners, and encouraged to develop recognition of their place as a learner of science in the science community, and develop long-lasting “remembered” learning. These impacts of the residential center visit present constraints as residential centers attempt to document student changes as part of their program evaluations. Several of these constraints are re-contextualized by the researcher in the next portion of the qualitative data analysis.
“Evaluation” Constraints

This study allows the researcher to bring into view various perspectives participants associate with “evaluation”. The quote marks around “evaluation” serve as a reminder that the study participants bring their own notions to this term. Interviews about evaluation with Camp Davis stakeholders took various paths-to discussions about learning, dealing with the center’s established program evaluation, and stories about students who had visited the camp site years ago. The data analysis yielded many colorful recollections and comments the participants associated with “evaluation”. Thus, in this section, constraints refer to the researcher’s efforts to bring into view these widely ranging perspectives and feelings.

In interviews conducted with the Camp Davis stakeholders, the study participants noted that the present program evaluation at the residential center serves its purpose and is adequate. A staff member described the evaluation as “fairly extensive.” Another staff instructor described his thoughts on the program evaluation when he stated, “I feel that I have a voice. I do feel that it is meeting my needs. I have already been thinking about my end of year evaluation and things that I want to make suggestions about.”

One teacher stated that she “feels like it is a good evaluation.” Another noted, “The evaluation is pretty thorough.” Teachers note that comments that they have made as part of their evaluation responses have prompted changes in the camp. One mentioned, “I do see that the program evolves based on the responses to these questionnaires.” Another teacher described the changes made because of suggestions that teachers had offered on their program evaluations:

I have seen several changes made, and the number one change was the food. The first time we carried our kids there our 8th graders liked to starve because they weren’t used to feeding growing kids. And now the food is OK. We have things that the kids will eat. There are a lot of things that I see they have changed because of suggestions from our evaluations.
Program staff echoes these sentiments. A staff member described changes that were made as a result of the program evaluations completed by visiting teachers:

We have seen a change in the quality of the instructors that we are hiring based on when I started three years ago. I think that we felt the need for instructors who had more science background. It was showing in our evaluations, that our instructors might not have been as knowledgeable as we had hoped. So we looked for more staff with more science background or staff with a broader range of experience in teaching. So the evaluations help us gage what kind of staff we have and what is working and what we should change.

Though their overall impression of the program evaluation was that it was adequate, the interview participants noted several limitations to the present program evaluation conducted at the residential center. These limitations include time and lack of student involvement.

**Time.** “Time” is a multi-dimensional problem to evaluation. There are the immediate problems of time— not enough time to fill out evaluation papers—and the longer term issue of when an experience becomes meaningful. The subtheme of time explores these sorts of issues that help to understand further the challenging nature of evaluating residential environmental education.

Time is a problem from beginning to end as camp staff try to utilize students’ time while they are visiting camp. Interview participants frequently mentioned the frantic pace of the camp visit. Students begin activities immediately after unpacking their luggage and are involved in activities almost constantly while at the camp. Teachers also mentioned the stress involved with organizing and supervising the trip. Constant demands of the teachers’ attention to student comfort and management of the many issues which arise during a three-day trip limit the time of the teachers. The camp director noted this phenomenon when she stated of the teachers, “When they’re visiting, they’re too busy. They’re trying to keep up with their kids and disciplining their kids.”
The primary means of collecting teacher input into the residential center evaluation is a survey instrument given to teachers when they arrive at camp. This instrument allows teachers the opportunity to evaluate many aspects of the center and is collected at the conclusion of the school visit. The teacher participation in the program evaluation was described by a camp staff member:

They have an evaluation that they have all adults fill out—that actually goes class by class—how did you feel about the instructor, how did you feel about the course content, and any other comments. This is very open ended. There is just a square that you fill in. And then they have some general questions about their facilities and areas like that. And then they have a separate form for the lead teachers to fill out that has some general questions about the facilities, what would you like to see changed, what were the strengths and weaknesses, did we meet the needs of your students.

This evaluation is given to teachers and chaperones as they arrive at camp. They are encouraged to write their opinions or critiques of the activities that they observe and the overall camp experience on these evaluation forms. The camp asks that the adults complete their evaluation forms during their time at camp. Evaluations are collected as the teachers and chaperones leave the camp. Very little time is available for reflection and recording thoughts after each activity because of the busy pace of the camp.

Time constraints are seen as a limitation by both teachers and staff members. A camp instructor recognized this constraint when he stated, “Teachers are so busy. A lot of them have trouble with paperwork and don’t finish their evaluations.” Another camp staff member recognized this same issue with this observation of teachers at the camp:

It is really more about time. I think sometimes teachers don’t have a lot of time. Between being in the cabins with the students, being in the middle of class with the students, and wanting them to participate—when are they going to fill those out? They don’t have much time. And that could be a limit to sometimes not getting in-depth answers.
Teachers also share this sentiment of time being very limited while at camp. A teacher summarized her experience with trying to complete her portion of the program evaluation this with the following comment:

Sometimes I don’t feel like that I have the time to reflect on the activity and record everything that I want to record because you are moving on to the next activity. Time has a tendency to get in my way.

Down time available to complete the teacher survey is very limited. This often leads to surveys not being turned in by teachers. Staff members mentioned this tendency noting that often school groups will leave without completing their program evaluations or turn in very superficial comments.

Several teachers commented on an aspect of the Camp Davis program evaluation known as the Teacher Advisory Board. Camp Davis invites teachers who have participated in the environmental program during the school year to return to camp for a gathering during the summer. This two-day event combines socializing, creative projects, and organized discussions about the teachers’ experiences at the camp. The teachers appreciated their opportunity to voice their concerns and opinions about the camp without the distractions of supervising a school group. One teacher mentioned that she feels the meetings are a “time when I feel I can give the most thoughtful input.”

**Student involvement.** A second area of concern revealed by the interview participants is the lack of student involvement in the formal program evaluation. The primary method by which students participate in the residential center program evaluation is through a suggestion box available in the center cafeteria. A camp staff member described the teacher/parent/student contribution to program evaluations:

The parents, chaperones, and students evaluate the food, the housing, the general camp property-appearance and ability to get around. We want them to evaluate
how our staff is doing-if our instructors are doing a good job... The students are allowed to write suggestions, but they don’t do a true evaluation. We encourage them to use the suggestion box.

Because students are important stakeholders of the residential center, center staff and visiting teachers recognize the need to include students in the program evaluation in a more formalized way. A teacher voiced her concern with the following comments:

I think one of the biggest weaknesses in their evaluation program is that they don’t get student feedback. I think that is a huge weakness. I know at school, if you make it anonymous, and let your students give you feedback, you will really learn a lot, and it will really impact your teaching. And they offer great suggestions a lot of times. A lot of times they offer things that you know that I wouldn’t have thought about.

Another teacher voiced a similar concern with this comment:

I think that that is a huge weakness that they don’t get any student feedback. Their feedback would be very different from the chaperones or teachers. They are looking for something different than we are.

Program staff voiced their desire to have more information about the impacts of their program on the student visitors to the center. A staff member noted his hope for a change in students after spending time at camp when he said, “The real hope is that after they spend time here there is some real change that happens within them.” Another staff member stated his desire to have a portion of the program evaluation that would involve students after their camp experience:

There is almost a longing to know what happens to these kids later. Something where we could see the kinds of changes the teachers are noticing. We do have some schools that come several times during their time at the school. I have had some kids that have been through our camp before that are much more on the ball. I can see that the information seems to stick better in the heads of the kids who have been through the program before. I think that it would be helpful to see even a few months down the road if it is sticking. I feel that if it is sticking a few months later, it is going to be something longer. If we have done our jobs, there will be signs of it a few months later.
Recognizing the importance of student feedback regarding their center experience, some teachers have taken it upon themselves to conduct informal evaluations with their students and share their results with the center staff members. A teacher described her informal evaluation in her comments below. She begins with her typical comments to the program director:

And I’ll say that the kids got together and this was the high spot, and they really felt that the instructors this time were all together and all in sync. I usually call them and give them what our kids think. Sometimes we will let the kids write. They will write and let (the program director) and (the program coordinator) know where they were and what their favorite thing was, and if they think they can improve anything.

Members of the camp staff commented on these informal evaluations from the students and the value they place in receiving them. The camp director described the follow up that she receives from visiting teachers after they return to their classrooms:

I hear a lot of things anecdotally. I get tons of e-mails and thank you cards from 50 children in an envelope, and they write in all the details of what they have learned and how much it meant to them.

These informal responses from the students provide the staff with anecdotal evidence of the outcomes that they are hoping to see in the students, but a more formal inclusion of these important changes would provide them with important information. The program director went on to explain her idea of inclusion of a follow-up assessment of students:

I think it would be awesome to have some instrument that the students’ did-even if you did it in three rounds. If you did it before the trip, one week after the trip, and then maybe 6 or 8 months later looking at what kinds of differences it made in the long haul.

**Conclusion**

The findings from this research study have shed light on the lived experiences of the camp staff members and other stakeholders of the residential center as they reflect on the changes that they experience in their students and their experiences with the center program.
evaluation. The next chapter will begin with a review of the research problem and study methodology. It will continue with a summary of the study results as they relate to each research question. The chapter concludes with recommendations based on the findings of the study and discussion of further research.
CHAPTER 5: STUDY CONCLUSION

Major sections of this concluding chapter include a review of the problem statement and study methodology, a summary of the results as they relate to each research question, recommendations based on the findings of the study, and implications for further research generated by this study. The chapter begins with a restatement of the research problem and summary of the methods used in the study to enable connections with final insights derived from the study.

Study Purpose, Questions, and Methodology

The purpose of this study was to examine the current program evaluation practices of REECs and documented the needs of the center program directors and other center stakeholders in regard to program evaluations.

Five research questions served as a guiding framework for this study, which included:

1. What are the current practices of residential environmental education centers in regard to their program evaluations?
2. What factors or challenges influence program evaluation decisions?
3. To what extent do residential center directors feel that the program evaluation process meets the needs of the center stakeholders?
4. To what extent do residential center directors feel that the program evaluation process meets their needs and the needs of the center staff members?
5. What components are needed in a program evaluation for a residential environmental education center so that the evaluation could better meet the needs of the center director, the center staff members, and the center stakeholders?

As explained in Chapter 3, the study reported here was a mixed-methods case study. The study incorporated a survey delivered by means of the Internet. The target population for the survey addressed program directors of REECs from across the United States. The study also incorporated semi-structured interviews of stakeholders of a single residential environmental education center. The interviews included the center program director, three center staff members, three classroom teachers who have brought student groups to the center, and a school administrator. The study was also informed by other qualitative data sources including document analysis and the researcher’s personal on site observations of the single residential environmental education center. Data collected for the study occurred during fall 2010.

Survey. Data was collected for the study by means of a survey of residential center program directors. This survey was based on an earlier survey of residential center directors conducted by Chenery and Hammerman (1985) developed to collect data regarding current evaluation practices of residential centers. The survey utilized in this study added to this earlier survey by including questions related to desired program impacts, factors influencing program evaluation decisions, directors’ satisfaction with present program evaluations, and directors’ needs regarding program evaluations.

All directors located in a national database of residential environmental education programs were invited to participate in the survey (n=205). Of the directors invited to participate in the survey, 114 answered survey questions beyond the consent page of the survey. Qualitative and quantitative data was gathered through means of the survey. Descriptive statistics were
generated for the quantitative portion of the data. Qualitative data was analyzed using category construction.

**Interviews and Other Qualitative Data.** Semi-structured interviews were conducted with stakeholders of a residential center to gain an insiders perspective of the phenomenon under study. Stakeholders included the residential center’s program director, three center staff members, three classroom teachers who have visited the center with their classes, and a school administrator of a visiting school. Interviews were analyzed qualitatively using category construction and the constant comparative method of data analysis. The study was also informed by other qualitative data sources including document analysis and the researcher’s personal observations of the residential center research site.

**Summary of Results**

In Chapter 4, the researcher’s interpretations from data analyses were reported. In this Summary of Results, the researcher has drawn from the data interpretations of Chapter 4 to directly respond to the five research questions that guided the study. Accordingly, key results from the national survey and local case study are explored in these responses.

**Research Question 1**

What are the current practices of residential environmental education centers in regard to their program evaluations?

**Determining Content and Administration of Evaluation-Directors’ Call.** Determining the content for program evaluation primarily rests with the program director. The program director of Camp Davis described her role. She stated, “As far as making a decision about what we are going to evaluate and what we are not, that is basically my call in the end, but I try to get a lot of feedback from staff-from teachers too.” This was consistent with the results of the
directors’ survey. Program directors were most frequently mentioned as responsible for determining the content of program evaluations on the directors’ survey (84.7%) and conducting the program evaluation (77.5%).

Many residential centers utilize other staff members when designing program evaluations. Full time staff members (47.7%) and center instructors (23.4%) were frequently selected on the directors’ survey as responsible for determining evaluation content. In regard to conducting program evaluations, full time staff members (43.2%) and center instructors (39.6%) were also frequently selected.

The program director of Camp Davis works cooperatively with a group of full-time staff in the administration of the program evaluation. These staff members include an assistant director, a senior naturalist, an education coordinator, and a project coordinator. The Camp Director stated:

I try to do everything by consensus. It doesn’t always work that way. Sometimes the circle becomes a pyramid and I have to make a decision, but usually I try to make sure that everyone, or at least permanent staff, are on board.

While the study pointed out that directors assume responsibility for program evaluation design, staff members may share a close working relationship with the camp director and be involved in various aspects of the program evaluation process.

**Evaluations Emphasize Physical Aspects of Learning.** Regarding what aspects of the camp program are included in program evaluations, survey results revealed that teacher satisfaction (93.6%) and student satisfaction (73.4%) were common focal points of evaluation designs. Operational aspects of camp operation were also commonly included (88.1%).

The program evaluation of Camp Davis mirrors these survey results. Overall satisfaction of the teachers with the camp experience and the operation of the camp are a focus of the
evaluation forms that the visiting teachers complete. The camp staff voiced the importance of teacher and student satisfaction when she stated, “Obviously our follow up is did they come back another year?” This comment was also echoed on the program directors’ survey. With 79.5% of the center directors indicating that their centers rely on funds generated from the student visitors, satisfaction of the teachers and students attending the camps is of great importance.

Operational aspects of camp directly relate to visitor satisfaction. Problems with food quality, food service, cabin cleanliness, and overall camp appearance have an effect on the experience of the group. One teacher mentioned her concern over the quality of the food during her first visit to the camp. She described this problem on her evaluation form and noticed a change the next year:

> The number one change was the food. The first time we carried our kids there our 8th graders liked to starve because they weren’t used to feeding growing kids. And now the food is OK. We have things that the kids will eat.

Program directors place high value on the physical satisfaction of their visitors. Though REECs articulate program design ability to increase environmental literacy in children, student outcomes like attitudes and knowledge are included less frequently in program evaluations than visitor satisfaction and camp operational aspects. The directors’ survey indicated that 48.6% of centers include program impacts on student knowledge and 40.4% include program impacts of student attitudes in their program evaluations.

Camp Davis program goals state that they strive to increase the students’ awareness and understanding of environmental science. Program impacts on students’ academic learning are not included in the formal evaluation forms used by Camp Davis. These important program impacts are assessed informally through post-visit contacts with the teachers, parent chaperones, or students.
The attention given to meeting learners’ immediate physical needs and efforts to later capture their learning of academic content objectives suggests an important view of evaluating environmental learning, that is to say, learning is more than meaning making in the mind. Learning also encompasses a physical dimension of meaning-making in light of the immediate sense of comfort and longer term memory associated with that experience.

**Evaluation as Anecdotal Methods.** Camp Davis employs a variety of evaluation tools as part of the overall program evaluation. They utilize forms in which teachers share their opinions of various aspects of the camp experience. Use of some form of a teacher survey was also noted frequently on the directors’ survey (90.9%). Parent chaperones also complete evaluation forms at Camp Davis, though this was noted less frequently on the directors’ survey (56.4%).

Student surveys were indicated as being part of program evaluations by 48.2% of the program directors. Camp Davis doesn’t formally survey students. Student comments are collected in a “comment box” located in the camp cafeteria. A staff member described this process when she stated, “The students are allowed to write suggestions, but they don’t do a true evaluation. We encourage them to use the suggestion box.”

Other common evaluation methods indicated on the directors’ survey were program observation (81.8%) and discussions with teachers (70%), chaperones (50%), and students (44.5%). These informal evaluation methods were described as important to the program evaluation by the staff of Camp Davis. These usually take the form of e-mails or letters from teachers, parent chaperones, and students. The program director described her experience with this important form of informal evaluation when she stated:

I hear a lot of things anecdotally. I get tons of e-mails and thank you cards from fifty children in an envelope, and they write in with all the details of what they have learned and how much it meant to them.
Teachers will frequently e-mail or call to share their comments with the program director after the field trip. A visiting teacher described her use of informal methods of evaluation:

I usually call (the Program Director) after we get back. And I’ll say that the kids got together and this was the high spot, and they really felt that the instructors this time were all together and all in sync. I usually call them and give them what our kids think. Sometimes we will let the kids write. The will write and let (the Program Director) know where they were and what their favorite thing was and if they think they can improve anything.

Overall, REEC evaluation practices regarding student outcomes are fairly anecdotal. Evaluation forms are completed and informal observations are made by REEC staff and visitors, yet these evaluative practices are not undertaken in any particularly systematic manner. One might consider that the primary emphasis of evaluation addresses the immediate physical comforts of learning. The study highlights practices of REEC evaluation as a momentary undertaking.

**Evaluation Data Generated With Limited Student Involvement.** Parents and teachers are the primary participants in REEC evaluations according to the directors’ survey. Survey responses indicated that adult visitors are participants in program evaluations often with teachers (93.6%) and parent chaperones (66.1%) participating frequently. As teachers are primarily responsible for bringing students to the centers, their participation in the program evaluation is of importance.

Students, as important stakeholders in the center, are much less likely to be included in program evaluations according to the results of the directors’ survey. Fifty-six percent of the directors surveyed acknowledged that students take part in their program evaluations. In the case of Camp Davis, the involvement of students in the program evaluation is limited to the suggestion box in the camp cafeteria and the follow-up letters or e-mails that are sent to the program director.
Fewer centers report the involvement of center instructors (44.0%) or full time center staff (45.9%) in program evaluations. These center stakeholders were acknowledged as an important part of program evaluations by the program director of Camp Davis. She described the involvement of instructional staff in the program evaluation:

At the part of their evaluation, they do a self assessment. They have to turn this into their advisor on the permanent staff. They are very lengthy and in depth. It gets into specifics about programmatic things like what you would change if you were the director or what classes need more work than others. We give a lot of responsibility to the seasonal staff. We teach them a basic way to teach it. But then we say make it your own. Once they feel comfortable with it, keep the general format, but make it your own. Then we ask them for feedback.

The feedback of the Camp Davis instructors is regarded as important to the quality of the instruction that the camp is able to provide the students. Evaluation data largely draws on adult input, primarily obtained from the visiting teachers’ perspectives. While less often practiced, the staff may also be invited to contribute evaluation data as self-assessment. There is an impression that evaluation data is generated but without any particular formal participation or plan for inclusion of the visiting students, who are the primary recipients of the camp programming.

**Evaluation Timing–An Atypical Cyclic Practice at Camp Davis.** The end of the class visit to the environmental center is the most frequently selected time for the conduction of program evaluations according to the results of the directors’ survey. 92.3% of the directors indicated that program evaluation occurs at the end of a group’s stay at the camp. This is also the case at Camp Davis. Evaluation materials are collected from teachers and parent chaperones as they prepare to leave the site.

Camp Davis includes portions of the program evaluation throughout the year, though this doesn’t appear to be a trend indicated on the directors’ survey. Only 24.8% of the directors
surveyed indicated that evaluation materials are completed seasonally, and even fewer (9.2%) indicated that evaluation materials are completed on a yearly basis.

The program director described the yearly cycle of evaluation that she supervises at the camp:

We have several different things. The main one … is the form that we hand out to chaperones and teachers. We ask them to fill it out, and we ask about classes, facilities, meals, that kind of thing. And then the lead teacher completes a form that is a little more detailed, and we ask about the planning aspects of the trip. We also [evaluate] the staff. They do a mid-season evaluation of the program and an end-of-season evaluation of the program. They do observations and evaluations of each other, and then [the permanent staff do evaluations] of the seasonal staff and give them the evaluations.

This cycle incorporates evaluation materials that are completed after each group leaves the center, mid-season evaluations, and end of season evaluations.

Camp Davis is atypical in comparison to most REECs regarding their cyclical approach for engaging in evaluation data generation. Why are other REECs apparently not engaging opportunities to generate data which might inform their program practices on a seasonal basis? Camp Davis program evaluation practices have been a part of the camp operation for over 10 years. The present program director at Camp Davis described the fact that a program evaluation was in place when she first began working at the camp, and she and her staff have made minor changes to the evaluation procedures. Perhaps this long-standing incorporation of evaluation practices at the camp has led to a staff culture of evaluation more likely to conduct evaluation practices throughout the various teaching seasons.

**Evaluation for Real People and Lives-Not Just “Programs”**. Program evaluations are conducted for a number of reasons. The survey of program directors indicated that program improvement was the most frequently chosen reason for conducting program evaluations (99.1%). Regarding evaluation use, 91.7% of the directors surveyed indicated that program
improvement was a primary use of evaluation results. The directors’ survey also revealed that program evaluations are also frequently conducted to make program decisions (78.7%). The concept of planning for future programs was indicated by 85.2% of the directors as a use of evaluation results.

When asked about her goal for the program evaluation, she stated:

**Improvement-to improve the program. I would like to find a way to make what we do apply to real life for the kids that come and for the teachers, and that it may be a learning experience. Not just spend three days in the woods and have a great time. Which that’s fine too, but I’d like to know that all the work we put into it is really helping them to achieve their goals.**

The Camp Davis director also added important details to her idea of program improvement. She mentioned application of learning experiences to the everyday lives of the students as well as the concept of helping the teachers meet the goals that they have set for their students.

The camp director of Camp Davis described the fact that elements of a formal program evaluation were in place when she first became the camp director. These elements included staff evaluation procedures, along with procedures to include visiting teachers and chaperones in the evaluation process. Evaluation forms and other evaluation instruments are part of the camp program evaluation. She described the program evaluation as “long established”, and a culture of evaluation exists in the program that is not necessarily common to nonformal environmental education providers (Norland, 2005).

Part of the program evaluation at Camp Davis is an evaluation form given to the visiting teachers and chaperones. These camp stakeholders have an opportunity to share their experiences regarding overall camp operation and the instructional aspects of the program. Evaluations are kept in binders and reviewed at the end of the week. Camp staff members eagerly await the
completion of these forms and their chance to view the responses of the adult visitors. A camp staff member stated, “Our staff does go through that pile of evaluations at the end of the week. And they look for their name or look for their class, and they hope that it is something good or seething they can use.” Another camp staff member shared his experiences with evaluation stating, “They are really helpful for personal growth in your classes. Sometimes it is constructive criticism, and sometimes it isn’t.”

Another portion of the Camp Davis program evaluation is a series of instructor evaluations conducted at different times in the year. Full-time staff members and the program director share the responsibility of evaluating the seasonal camp instructors. A staff member described the goals in evaluation of staff members when she stated:

We’re evaluating our staff for how they are performing as teachers and how we can help them, and how we can help them grow as professionals. We want feedback from them on what they think as well-community, housing, pay, benefits, anything.

The use of evaluation results for staff purposes was indicated frequently on the directors’ survey. The directors’ survey indicated that directors frequently use of evaluation results for evaluation of staff (73.1%) and staff improvement (79.6%).

The portion of the program evaluation that allows staff members opportunity to voice their opinions on aspects of the camp was described by a camp instructor. He mentioned his experiences with the utility of the camp program evaluation:

We set goals for ourselves, and we evaluate our goals. The evaluation continues off the page in my own head. It has gotten me to a place where I consider evaluation. I am evaluating throughout the day. I think of things that I will mention on the evaluation.

The qualitative insights yielded through interviews at Camp Davis opened up opportunities for participants to offer their own language in responses to questions. It is
interesting to note the human face brought into view through interviews with the Camp participants, language perhaps not afforded in the design of survey research.

**Research Question 2.**

What factors or challenges influence program evaluation decisions?

**The Multi-Dimensional Nature of Evaluation Challenges.** Research in the area of evaluation of nonformal education centers like REECs describe numerous challenges presented to these centers as they strive to conduct useful program evaluations. Powell, Stern, and Ardoin (2006) note that the expertise, time, and expense of conducting meaningful evaluations is beyond what is typically available at most REECs. Diversity of program offerings from residential center to residential center and the multiple goals that these centers have is also described as a challenge in conducting program evaluations (Carleton-Hug & Hug, 2009; Christensen, et al, 2005).

These multi-dimensional challenges were present in both the survey of center program directors and the comments of the Camp Davis interview participants. Main evaluation constraints revealed in the director survey included limited assess to students, time, program variety, and background knowledge of camp staff members. The issues of time and student involvement were also recognized as constraints by the Camp Davis interview participants.

**Limited Access to Students.** Students are important stakeholders of the residential centers. Their experiences while at camp and the impacts that the programs have on them are important to the camp staff and visiting teachers. Their participation in program evaluations should be an integral part of the evaluation.

Students’ time is at a premium while they are visiting the camp. The center staff tries to utilize every moment that the students are there. This limits the access that the camp staff has to the students for program evaluation. One camp staff member voiced this issue when she
described her desire to have time to talk with the students before they leave the camp. She described how beneficial it would be to, “sit down with them at the end of their trip and ask them a few questions.” Staff members do not want to take time from the students’ educational experience for program evaluation demands.

Demands on teachers’ time also limit their willingness to make their students available after a camp visit for evaluation participation. Camp staff members find that they have difficulty accessing students for camp follow-up evaluations. A center director responded on the survey that it is, “incredibly hard to get schools to commit to spending three days at a retreat center, let alone ask teachers to take more time for evaluation.”

The benefits of visits to residential centers may not be noticeable immediately. Researchers have reported this phenomenon in post-visit studies of center visitors (Liddicoat, 2007; Knapp & Benton, 2006; Ward, 1976). Program directors are aware of this and realize the dilemma. As a director commented in the directors’ survey, “Accessing students and teachers…is expensive and time consuming, and yet that is where the value of evaluation really kicks in.”

The involvement of students in the program evaluation at Camp Davis is limited. Students are allowed to place comments in a suggestion box located in the camp cafeteria while they are at camp. On occasion, students will send their comments to the program director. As a camp staff member voiced, “The real hope is that after they spend time here there is some real change that happens within them.” Another staff member noted, “There is almost a longing to know what happens to these kids later.” As important stakeholders in the centers and the target audience of the camp programming, their involvement in the program evaluation is imperative if residential centers truly wish to determine the extent to which they are meeting their objectives.
Time. The constraint of time was also discussed by the staff of Camp Davis and on the directors’ survey. This issue is seen as a limiting factor regarding program evaluations for a number of reasons. As stated above, the camp schedules the time while the students are visiting to ensure the maximum benefit of being at the center. Realizing that many students have very limited experiences in the outdoors and in a setting like a deciduous forest, the program director of Camp Davis described the following situation:

But there are so many kids that aren’t getting anything (exposure to the outdoors). On Friday we have a group of inner city kids from (large city) who probably haven’t played anywhere but on a sidewalk. They are coming to spend the day to take a nature hike. Having the opportunity to share nature and make those connections with kids who don’t normally have that opportunity…It’s awesome!

A director responded on the director’s survey, “I wouldn’t want to take time from activities and experiences to do evaluation.” Another stated that a better use of time would be to have students “spend their time at the outdoor school on the trail, not conducting tests.” Staff members at Camp Davis and directors responding to the directors’ survey note that they face a dilemma. The centers do not presently have the ability to include students in their program evaluations in a manner which would not distract from their important visit to the center.

Time constraints were also noted in regard to teachers, parent chaperones, and camp staff members. As a director noted on the directors’ survey of parent chaperones, “When they are visiting, they’re too busy. Parents don’t have enough time to thoughtfully complete the evaluations.” A Camp Davis staff member also noted this concern when she stated, “I think sometimes teachers don’t have a lot of time. Between being in the cabins with the students, being in the middle of class with the students, and wanting them to participate-when are they going to fill those out?”
In the case of Camp Davis, teacher and parent chaperone contributions to the program evaluation are primarily limited to forms completed while these individuals are visiting the centers. Down time between activities is rare, and adults are involved in the supervision and care of the students. Adult visitors to the camp are described as very tired after their experience. Camp Davis staff members lament the fact that in many cases, evaluation forms are completed without a depth of thought or not completed at all. As a staff member mentioned, “The teachers are so busy, a lot of them have trouble with the paperwork.” Another camp staff member mentioned, “We don’t always get the evaluations from the teachers or the adults because they forget to hand them in before they leave.”

An effective means of gathering thoughtful teacher input is the Teacher Advisory Board organized by the staff of Camp Davis. This group of teachers meets during the summer to make suggestions and share their camp experiences. This aspect of the Camp Davis program evaluation is discussed later in this chapter.

Limited time of camp staff members was also noted by the staff of Camp Davis. A staff member mentioned that having a staff member available to remind adult visitors to turn in their evaluation forms is often a challenge. Results of the directors’ survey also revealed time constraints related to camp staff members. Issues of finding time to conduct evaluations and process evaluation results were described.

**Program Variety.** Residential centers offer a wide range of programs tailored to the individual goals of the visiting teachers. Researchers have noted this aspect of programming present in environmental education and other nonformal education settings (Carleton-Hug & Hug, 2009).
This aspect of residential center programming was noted as an area of concern related to program evaluation by program directors on responses to the directors’ survey. A director noted that schools visit, “with different goals in mind.” Another wrote, “Each school may have a different set of goals or set of knowledge they would like for their students.”

Centers offer visits over a three day period, a five day period, and often will have groups come in for a single day. Centers also offer programming to a wide range of audience ages. According to the directors’ survey, 84.8% of the participating centers offer programming to more than one age group of visiting students. The variety of programming options available to visiting teachers (See Appendix K for examples of the Camp Davis programming options) make the establishment of a single evaluation model for residential centers difficult.

The program director of Camp Davis mentioned, “I’d like to know that all the work we put into it is really helping them (teachers) to achieve their goals.” Though residential centers are diverse learning environments, they share common goals and characteristics which may enable researchers to develop evaluation processes which will better meet their needs.

**Background Knowledge of Staff Members.** A final aspect of evaluation seen as a constraint is the lack of background knowledge of the program directors and staff members regarding program evaluations. The lack of an infrastructure for understanding and interpreting evaluation results has been noted in the research literature (Clavijo, et al, 2005).

The directors’ survey revealed the need for better staff training. A director wrote that the staff was, “in need of background knowledge related to program evaluation.” Another wrote, “We need better training in creating objective evaluation protocols.” Staff training in evaluation methods was shown to be beneficial for a REEC staff in a study conducted by Powell, Stern, and Ardoin (2006). This training did involve the service of an independent researcher.
It is of note that independent researchers were not often included in program evaluations according to the directors’ survey. Directors’ responses on the survey indicated that only 4.5% of the centers utilize an independent researcher to help determine evaluation content, and 7.2% involve independent researchers in conducting the program evaluation.

The multi-dimensional nature of constraints to REEC evaluation practices indicated in this study point toward understanding the extensive challenges to REECs in their evaluation efforts. Concerns about what, how, and when to evaluate are tremendously important to consider in design, yet the more daunting question is how to prepare or educate REEC directors for undertaking evaluation practices?

**Research question 3**

To what extent do residential center directors feel that the program evaluation process meets the needs of the center stakeholders?

**Meeting Stakeholder Needs-Marketplace Practices.** The third research question deals with the issue of the center stakeholder needs in regard to program evaluation. Overall, program evaluations are found to meet the centers’ needs, but with noted limitations. Limitations noted on the directors’ survey include the inability to effectively document program outcomes. Directors voiced concerns that they are not able to provide teachers information related to student outcomes. One director wrote that teachers would, “value information regarding our effectiveness as it would help them defend their choice to attend.” Program staff voiced their desire to be able to show teachers and school administrators that they are meeting their program goals. The camp director stated, “We need more ways to basically prove to administrators and people that make the decisions.”
Marketing to schools was noted on the directors’ survey as an important use of program evaluation results (58.3%). Validation of program existence was also noted on the directors’ survey as an important use of evaluation results (66.7%). Issues of marketing and validation of program existence are important to centers relying on fees collected by visiting students. The ability to impress upon stakeholders that the REEC program is reliably able to help the teachers and students attain targeted learning objectives is important to securing future camp visits by school groups.

Stakeholders of Camp Davis mirror the responses of the directors’ survey. The program evaluation at Camp Davis is seen as meeting their needs but with several limitations. Visiting teachers and the school administrator voiced an overall satisfaction with the program evaluation. One called it a, “good evaluation,” and another noted that she feels she has a chance to openly share her opinions. The school administrator also found the program evaluation to be satisfactory.

Important to their ability to justify field trips to Camp Davis was the fact that the camp relates their activities to the State Course of Study Science Standards. These standards are required teaching content for the visiting teachers, and the fact that the camp ties their activities to these standards helps the teachers convince parents and supervisors that the trip will involve the teaching of these required science standards.

One teacher voiced her concern that students were not involved formally in the program evaluation, stating that she feels this limitation is a, “huge weakness.” Another teacher also mentioned that she doesn’t feel that she has the ability to make anonymous comments on her program evaluation forms. This is due to the fact that she is the only teacher present on her class visit to the camp, and the camp staff could easily associate her with her written comments. As a
result, there is concern that teachers may not feel comfortable to offer their genuine critiques on evaluations given to visiting class groups. While teachers may want to provide evaluation insights useful to improve REEC programs, they may hesitate. What if their input undermines sustaining the REEC as a future place where they can bring their students to learn? They too are perhaps mindful of the care needed to promote or “market” the REEC as an important learning environment.

This aspect of the study suggests an interesting dimension of evaluation practice as requiring an artful and savvy approach as evaluation results need to help market or sell their program in order to sustain the site. What might this concern about marketing evaluation results mean in terms of helping or educating REEC directors to engage in meaningful and sound evaluation practices?

Research question 4

To what extent do residential center directors feel that the program evaluation process meets their needs and the needs of the center staff members?

Needs for Evaluation met-Further Evaluation Help Needed. The fourth research question deals with the issue of the center needs in regard to program evaluation. The directors’ survey asked the program directors to respond to the statement “The present program evaluation is meeting my center’s needs”. A Likert scale was provided as with the previous question. The frequencies and percentages for each Likert scale category are reported in Chapter 4.

In a manner similar to the previous question, a small percentage of directors strongly agreed with the statement that the program evaluation was meeting the center needs (15.1%), and a much larger percentage of directors agreed somewhat to the statement (51.9%). When the categories of “Strongly Agree” and “Agree Somewhat” are collapsed together, 67% of the
directors feel that the present program evaluations are meeting their needs. It is interesting to note that 20.7% of the program directors disagree somewhat or strongly disagree that their program evaluations are meeting their centers’ needs.

Open-ended responses illustrated limitations to the centers’ program evaluations in the eyes of the program directors. These limitations included the inability of program evaluations to identify program impacts and the need for more effective evaluation methods. McDuff (2002) notes that environmental educators “must present concrete evidence of their effectiveness and impacts.” (p. 25). Residential center directors noted their desire to document knowledge, attitude, and behavior impacts in students participating in their programs.

The directors’ survey revealed that many program directors are in need of administrative assistance in regard to program evaluations. The need for independent researchers was listed, along with more effective methods to compile and share evaluation data.

The program director and staff members of Camp Davis also note their overall satisfaction with the present program evaluation. Staff members stated that the program evaluation is useful and gives them an opportunity to voice their opinions. Feedback is provided throughout the season giving the staff members valuable information on areas of strength and areas for improvement. Knowledge of program impacts was mentioned as a weakness in the present program evaluation at Camp Davis. One staff member commented, “I would love to know what happens when they get home.” Another staff member added to this sentiment:

I would love to think that when they go home they actually turn their lights off when they leave their room, or they think about what food they are putting on their plate and wasting it. I don’t know if that really happens at that age. I’m not sure how much of that happens when they leave.

The program director responded when asked if the program evaluation was meeting her center’s needs, “It is meeting some of them but not all of them.” She voiced her concern that she
is not able to formally document important program impacts or show that the program is meeting program goals. That both the national survey and Director’s response indicate need for assistance with evaluation methods suggests opportunity for training in this area.

**Research question 5.**

What components are needed in a program evaluation for a REEC so that the evaluation could better meet the needs of the center director, the center staff members, and the center stakeholders?

**Power to Evidence Meaningful and Long-Lasting Learning.** Responses from the directors’ survey and Camp Davis interview interpretations reveal several components of program evaluations that would help these evaluations better meet the center and stakeholder needs. Responses from both data sources indicate commonalities.

**Student Impacts.** When asked what aspects of their programs directors would like to include in program evaluations, 54.3% of the survey participants indicated student impacts. Impacts indicated by directors included knowledge, behavior, and attitudes of students. This desire was mirrored by the staff and camp director of Camp Davis. A staff member described her desire talk with students before they leave camp:

> If we had a formal way to sit down with them at the end of their trip and asked them a few questions to evaluate, I think we would get a good response…because always have things that they want to say at the end of class. We do the sharing circles where they tell us something that they learned, but I think it would be cool to hear what they actually think, like what was your favorite part, what didn’t you like? I think that would be beneficial.

The program director of Camp Davis discussed her desire to document the impacts of the center on students:

> It would be nice to develop an instrument that would prove that (the camp program) is making a difference-to the kids-to the chaperones. I believe that we are. I know that we are because of my experience with my own students. But then
also to be able to prove it to those people who don’t know what we are doing.

_Ease of administration and analysis._ Whether informal discussions are utilized or more traditional testing measures are utilized, a method of assessing program impacts is needed. An important quality of these assessment techniques would need to be ease of use and analysis. Directors indicated in the survey that the measurement tools must have the ability to be used quickly to not take away from the instructional time of the students. Directors also indicated their need for results that could be compiled quickly.

_Longitudinal._ As discussed earlier, important program impacts may not be recognized immediately following a visit to a residential center. Often important impacts are seen weeks, months, or years after a group visit. The ability to assess impacts on a longitudinal basis was described as important to the staff of Camp Davis and the respondents to the directors’ survey.

One of the Camp Davis staff members voiced her desire to include a post-visit conference with visiting teachers. She stated, “Maybe we could have lead teachers do a follow-up. They have the students before and after camp. They are the only connection. Maybe we could have them respond a month later and ask ‘What is the difference?’” The program director of Camp Davis made a similar comment:

I’d like to be able to do more long-range evaluation. Not necessarily years, but I’d like to have a way—if I had a staff member with the time, to contact teachers 6 months later. The teachers that come in the fall could have some type of evaluation sent to them asking what differences have they seen in their children.

Overall, insights in relation to Question 5 point to the multi-dimensional needs REEC directors and stakeholders would like evaluation practices to meet. There is interest to see the immediate and longer-term impacts of learning. There is also desire to be able to easily, and without disruption to the students’ experiences of learning, conduct evaluation practices.
Ultimately, REECs feel concerned about being able to evidence that they have powerful impacts on students’ learning in order to sustain their sites.

**Implications**

The results of this study provide the research community and those tasked with developing program evaluations for REECs with important implications.

**Survey Comparison**

The last study regarding current evaluation practices of REECs was published in 1985 (Chenery & Hammerman, 1985). It is interesting to note the similarities and differences of directors’ responses to this earlier study to with directors’ responses to the present study. Responses of note are described in Table 18 below.

<table>
<thead>
<tr>
<th>Survey question and response</th>
<th>1985</th>
<th>Present</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation of program used as a method of program evaluation</td>
<td>90.4</td>
<td>81.8</td>
<td>-9.5</td>
</tr>
<tr>
<td>Classroom teachers complete some form of the program evaluation</td>
<td>78.4</td>
<td>93.6</td>
<td>19.4</td>
</tr>
<tr>
<td>Students complete some form of the program evaluation</td>
<td>76.1</td>
<td>56.0</td>
<td>-26.4</td>
</tr>
<tr>
<td>Evaluation completed at the end of a group’s stay</td>
<td>93.0</td>
<td>92.3</td>
<td>-0.8</td>
</tr>
<tr>
<td>Program director determines content of program evaluation</td>
<td>85.0</td>
<td>84.7</td>
<td>-0.4</td>
</tr>
<tr>
<td>Independent researcher is involved with administration of program evaluation.</td>
<td>1.6</td>
<td>7.2</td>
<td>350</td>
</tr>
<tr>
<td>Teachers’ satisfaction with program included in evaluation.</td>
<td>85.1</td>
<td>93.6</td>
<td>10</td>
</tr>
<tr>
<td>Students’ satisfaction with program included in evaluation.</td>
<td>86.6</td>
<td>73.4</td>
<td>-15.2</td>
</tr>
</tbody>
</table>

Notable similarities include the following: directors indicated that observation of the program is still the most commonly used method of program evaluation, program evaluations are
often completed at the end of a group’s stay, program directors are still most likely to be responsible for determining the content of program evaluations, and teacher and student satisfaction are still very important aspects of the program to be included in evaluations.

Notable differences include the suggestion that classroom teachers appear to be more likely to complete a portion of the program evaluation, while students may be less likely according to the directors’ responses. Also, independent evaluators are more likely to be involved in program evaluations of REECs. If future researchers desire to gain new insights beyond the similar limitations of the previous and current study, REEC evaluation processes will need to consider additional challenges, such as the involvement of children and preparation of those who design the evaluation programs, issues taken up in the following sections.

**Involvement of Children in Program Evaluations**

Given the length of time that has elapsed between these surveys, the question remains as to why means have not been developed to include students in program evaluations. The directors’ survey portion of this study indicated a decrease in the percentage of centers including students as part of their program evaluations (decrease of 26.4%). As important stakeholders of the residential centers, the lack of student participation in program evaluations is problematic.

Previous studies have indicated that teacher and student satisfaction has been a major concern for nonformal EE providers like REECs (Chenery & Hammerman, 1985; Norland, 2005). Given that many REECs are funded through participant fees, this remains a concern for center directors. However, center directors must be able to show stakeholders that they are meeting program goals. As the recipients of EE instruction at the REECs, students must be included in program evaluations.
Center director participants in this study’s survey and the stakeholders of Camp Davis identified the inclusion of students in program evaluations as a need. Inclusion of students in a manner that doesn’t take away from their participation in REEC activities or is not demanding of student or teacher time before, during, or after the visit to the REEC is essential. If REECs are to truly examine the extent to which they are meeting their program objectives, student inclusion in program evaluations in a meaningful way is necessary.

Program Directors’ Ability to Conduct Program Evaluations

McDuff (2002) indicated that many EE programs do not integrate ongoing evaluation into educational programming. She noted that to build the capacity of EE administrators to conduct meaningful program evaluations the EE community needed to invest resources in training. This study revealed that program directors are primarily responsible for developing and conducting program evaluations for their REECs. As important stakeholders in REECs, attention should be paid to providing directors with training in the area of program evaluations.

Involvement of independent researchers in REEC program evaluations has increased since the 1885 study was completed (increase of 350%). Though the involvement of independent researchers is an option for program evaluations for some programs, many program directors indicated that funding for program evaluations is limited, and therefore, this option is not available for many centers.

Program directors also expressed a desire to increase their background knowledge related to program evaluations. This study has brought forth the important aspect of providing program evaluation training to REEC program directors. Independent researchers can be utilized as in the example of Powell, Stern, and Ardoin (2006) to provide REEC staff members with program
evaluation training. McDuff (2002) noted that with the proper training the chances of enhancing the accountability and sustaining the program evaluation of EE programs is greatly increased.

Urgency of environmental issues could increase the demand for evaluation of EE programming. Providing program directors with the proper background and tools to conduct relevant program evaluations is needed if REECs are to be able to show that they are meeting their program goals. Several recommendations apparent from the results and implications of this study are next presented.

**Recommendations**

Recommendations related to the results of this study include issues of staff training, evaluation tool designs, online surveying, and use of teacher advisory boards.

**Staff Training in Program Evaluation**

The *sustainable evaluation framework* suggested by Powell, Stern, and Ardoin (2006) discussed in Chapter 2 had positive effects on the residential center staff involved in the training. This type of program evaluation is participatory in nature as it involves the input of the center staff members and program instructors. As many centers employ a full time staff beyond the program director (See Table 1 in Chapter 4), training of the this core group of staff members is likely to have positive benefits.

This form of staff training shares characteristics of a category of evaluation described by Patton (1997). Patton uses the phrase Process use of evaluation to describe evaluation that is used to influence the decisions and thinking processes of those involved in the program through their participation in the evaluation. By involving key stakeholders in the evaluation process, the stakeholders develop new skills and acquire new information. In many instances program staffs are changed after their participation in a program evaluation.
Powell, Stern, and Ardoin (2006) noted staff benefits of the staff training including clarification of the center’s goals, a commitment to the center’s goals, and a willingness to work to improve the organization’s goals. This form of staff training needs to be utilized by other residential centers to determine its effectiveness in other situations.

**Effective Evaluation Instruments.**

Residential centers exist in a wide range of environments and provide environmental education tailored to individual teachers’ goals. Though differences exist between REECs, they share the common goal of developing the environmental literacy of their student visitors. Evaluation tools must be developed that take into account the needs of these center stakeholders to determine program impacts on students the ability of the center to meet its goals.

These evaluation tools would have to have the ability to document program impacts that are not easily assessed using traditional evaluation methods. Survey participants and the staff at Camp Davis have shared program goals and impacts that are difficult to measure. Other important characteristics of these evaluation tools would be ease of use and analysis. Center staff members need to be able to assess impacts quickly and without disturbing the learning experiences of the students.

Non-traditional methods of assessing student impacts may be utilized in residential centers. Further research into the use of evaluation methods like semantic webs and other nonformal assessment tools is needed.

**Online System of Data Collection and Analysis.**

Program directors indicated on the directors’ survey the need for a quick method of collecting an analyzing evaluation data. Several directors indicated that a possible solution would be an online survey of visitors. The time constraint on teachers, students, and camp staff
members make the utilization of an online program assessment a possible solution to many of their concerns.

Online surveys are frequently used by researchers desiring information for a variety of reasons. The present study utilized an online survey of residential program directors. An online survey could be developed covering various aspects of the program operation, visitor satisfaction, and observed program impacts.

This survey could be made available to teachers after their visit to the residential center. Teachers who are stressed with the demands of organizing a trip to a residential center could complete the surveys from their homes or school with more time to reflect on their responses. Students with access to computers at school could complete online surveys in a matter of minutes. A longitudinal aspect could be added to the program evaluation as teachers and students could be sent further evaluations later in the school year.

These online evaluations could also be made available to parents of visiting students and school administrators. Limitations of the use of surveys to collect data were discussed in Chapter 3 of this study. Taking into account these limitations, online surveys could provide a voice to center stakeholders not presently included in program evaluations. Effective use of online evaluations of issues concerning REECs is a possible area of future research.

Teacher Advisory Boards

An important aspect of the Camp Davis program evaluation is their use of a Teacher Advisory Board. At Camp Davis, teachers are invited to spend two days at the residential center during the summer. This time is seen by the teachers who have participated in it as a chance to voice their opinions and concerns in relaxed atmosphere.
The Camp Davis director described her use of the advisory board when she stated, “We can ask more detailed questions and make them think some...It is so valuable. Teachers are your main stakeholders to advise us where we need to go.” As teachers are so preoccupied with the safety of their students and the overall experience of the group at the camp, feedback during or immediately after the stay is limited as discussed earlier.

The chance to visit the beautiful camp setting is a draw to the teachers. The staff at Camp Davis combines recreational activities available at the camp with time to discuss the camp. The camp benefits from the thoughtful comments of the teachers, and the teachers find an opportunity to voice their opinions and share their ideas.

The utilization of Teacher Advisory Boards at other residential centers needs to be explored and researched. Other centers may find the TAB meetings to be beneficial while not costing the center a great deal of money.

**Conclusion**

As stated at the onset of this study in Chapter 1, program evaluations are integral to the function and successful operation of organizations that provide educational services to young people (Gall, Gall, & Borg, 2003). The ability of residential center program directors and their staff members to conduct effective program evaluations can mean the difference between success and failure, existence and nonexistence for these providers.

This study points to the multi-dimensional needs REECs would like to address in their processes of evaluation, yet there is also an expressed need for assistance to improve their evaluation practices. Moreover, it is apparent that “evaluation” is a rather elusive concept to research. At one moment, participants may speak of evaluation as a form, while at other times evaluation may be a means to market the center, or evidencing the power of a program.
Ultimately, this study points to the need for more exploration of evaluation practices of REECs. For this researcher, there is a compelling desire to immediately undertake research to explore various approaches to effectively evaluate his own classroom’s visits to REEC sites, hopefully a study forthcoming soon.
REFERENCES


APPENDIX A
Directors’ Survey

THE UNIVERSITY OF ALABAMA
Individual’s Consent to be in a Research Study (Program Director)

You are being asked to participate in a research study that doctoral candidate Nicholas Bourke is undertaking for his dissertation research in science education at the University of Alabama. The study will document the present state of program evaluations at residential environmental education centers and assess the needs of the center staffs and program directors like you in regard to program evaluation.

Why is this study important—What good will the results do?
This study can help in developing program evaluations that can better serve the needs of the center and those who visit or support the center. This information can be a valuable resource to other center directors, and other educators and researchers that plan and direct program evaluations.

Why have I been asked to take part in this study?
You are being asked to participate based on your position as the program director of a residential environmental education center.

What will I be asked to do in this study?
If you agree to participate in this study, you will be asked to complete an online survey that will take approximately 15 minutes. Your responses will be confidential, and I will not collect identifying information such as your name, e-mail address, or IP address. The survey questions are about program evaluation which occurs at your center.

What will the study cost us? Will I be paid for participating?
There is no cost to you for participating in this study. You will not receive any money for your participation.

What are the risk (problems or dangers) from being in this study?
There are no foreseeable risks for your participation in this study.

What are the benefits of being in this study?
The researcher hopes that the information that you provide may help program evaluations better meet the needs of the residential centers and those that support or visit the centers. Results of the study will be made available to you at the conclusion of the study if you wish. An e-mail address for the researcher will be provided at the end of the survey.

What are my rights as a participant?
Being in this study is voluntary—-it is your free choice. You may choose not to be in it at all. If you start the study, you can stop at any time. You may choose to not answer an individual question or may skip any section of the survey. By clicking “next” at the bottom of the page of the survey, you will move to the next question.

Every effort will be taken to make sure that your information is confidential. All data is stored in a password protected electronic format. To help protect your confidentiality, the surveys will not
contain information that will personally identify you. The results of this study will be used for scholarly purposes only and may be shared with the University of Alabama representatives.

The University of Alabama Institutional Review Board (a committee that looks out for the ethical treatment of people in research studies) will study records from time to time. This is to be sure that participants in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?
If you have questions about this study please call the investigator Nicholas Bourke (334) 356-3551 or his faculty advisor, Dr. Sherry Nichols at (205) 348-5246. If you have questions about your rights as a research participant you may contact Carpantato Myles, The University of Alabama Research Compliance Officer, at (877) 820-3066. This research has been reviewed according to the University of Alabama IRB procedures for research involving human subjects.

1. ELECTRONIC CONSENT: Please select your choice below.

Clicking on the “agree” button below indicates that:
-you have read the above information
-you voluntarily agree to participate
-you are at least 19 years of age

If you do not wish to participate in the research study, please decline participation by clicking on the “disagree” button.
☐ Agree
☐ Disagree
2. Center geographic location (Drop Down Menu)
Northeast US
Southeast US
Midwest US
Northwest US
Southwest US

3. Number of years in operation-Choose one. (Drop Down Menu)
0-2 Years
3-5 Years
6-10 Years
11-20 Years
Over 20 Years

4. Type of setting for the center: Choose one-
☐ Rural
☐ Suburban
☐ Other (please specify) (Text Box)

5. Center curriculum focus-Please describe the curriculum focus of your center. (Text Box)

6. Number of Center Educational Staff: Insert number
Full time: 
Seasonal:

7. What is the intended audience of your program? (Check all that apply)
☐ Kindergarten-3rd grade students
☐ 4th-6th grade students
☐ 7th-8th grade students
☐ High school students
☐ College students
☐ Adults
☐ Other (please specify)

8. How is your center funded? (Check all that apply)
Please keep in mind the following definition of Program Evaluation as you complete this survey.
Program evaluation is a systematic method for collecting, analyzing, and using information to answer basic questions about projects, policies and programs.

9. Who currently determines the content of your program evaluation? (Check all that apply)
   - Program director
   - Advisory board
   - Board of directors
   - Full-time center staff
   - Center instructors
   - Independent researchers
   - Other (please specify)

10. Has the center always conducted program evaluations? (Check one)
    - Yes
    - No: Explain (Text Box)

11. Who currently administers or conducts the program evaluation? (Check all that apply)
    - Program director
    - Advisory board
    - Board of directors
    - Full-time center staff
    - Center instructors
    - Independent researchers
    - Other (please specify)

12. What practices below are parts of your program evaluation? (Check all that apply)
13. What parts of your program are included in the program evaluation? (Check all that apply)

- [ ] Students’ satisfaction
- [ ] Teachers’ satisfaction
- [ ] Operational aspects of the program (food quality, cabin cleanliness, etc.)
- [ ] Students’ attitudes toward the environment
- [ ] Students’ knowledge about the environment
- [ ] Students’ achievement in academic subjects
- [ ] Other (please specify)

14. What groups complete some form of evaluation of your program?

- [ ] Students
- [ ] Parent Chaperones
- [ ] Visiting teachers
- [ ] Visiting school administrators
- [ ] Program Instructors
- [ ] Program Staff
- [ ] Independent researchers
- [ ] Other (please specify)
15. At what time or times are any of the groups above completing parts of your program evaluation (Check all that apply)?

☐ More than once during a group’s stay
☐ At the end of each group’s stay
☐ Weekly
☐ Monthly
☐ Seasonally
☐ At the end of each school semester
☐ At the end of each school year
☐ Other (please specify)

16. Why do you conduct your program evaluation? (Check all that apply)

☐ Program improvement
☐ Make program decisions
☐ Inform camp staff
☐ Inform camp participants
☐ Persuade teachers/administrators (marketing)
☐ Validate program existence
☐ Secure funding sources
☐ Required of funding source
☐ Other (please specify)

17. How are the evaluation results used? (Check all that apply)

☐ Evaluation of staff
☐ Staff improvement
☐ Plan for future programs
☐ Determine program accomplishments
☐ Accountability/Justify need to overseers
☐ Program improvement
☐ Insure adequate accommodations/food/etc.
☐ Marketing to new schools
☐ Other (please specify)
18. Do you hope to document any changes in participant knowledge or behavior as a result of your program? If so, what are these changes? (Text Box)

Use the following scale to answer questions 19 and 20.
1-Strongly Agree
2-Agree somewhat
3-On opinion or neutral
4-Dissagree somewhat
5-Strongly disagree
NA-Question doesn’t apply to my situation

19. The present program evaluation is meeting my center's needs?  
☐ 1. ☐ 2. ☐ 3. ☐ 4. ☐ 5. ☐ NA
If not, what type of evaluation instrument would better meet your needs? (Text Box)

20. The present program evaluation is meeting the needs of your center stakeholders like teachers, administrators, students, and their parents.
☐ 1. ☐ 2. ☐ 3. ☐ 4. ☐ 5. ☐ NA
If not, what is preventing you from conducting a program evaluation that would truly meet your needs? (Text Box)

21. What challenges are unique to residential environmental education centers in conducting a program evaluation? (Text Box)

22. What changes (if any) in your program evaluation would you like to see? (Text Box)

23. What aspects of your program not included in your present evaluation would you like to include? (Text Box)

24. Are there individuals or groups not included in your present evaluation that you would like to include? (Text Box)

25. What would the “ideal” program evaluation look like? (Text Box)
APPENDIX B
Program Director Interview Protocol

Instructions: The researcher is interested in your experiences and opinions about the program evaluations that are conducted by residential environmental education centers. Please respond to the questions honestly and openly. There are no right answers, and the researcher is sincerely interested in your personal experiences and opinions. Also, please be assured that your name will not be associated with any of your comments. The researcher is committed to protecting your confidentiality and anonymity.

(Semi-Structured interview questions)
- What is the overall goal of your program evaluation?
- What guides the program evaluation decisions that are made at your center?
  - What factors influence or dictate your program evaluation decisions?
- What aspects of your program do you currently include in your program evaluations?
  - Are any of these program areas any more important to you than any of the other areas?
- Who usually participates in constructing the program evaluation?
  - If this is a joint process, who takes the leadership roles in this process?
- Who is usually asked to respond to the evaluation instruments?
- What are you hoping to learn through your program evaluation?
- How do you hope students will change as a result of their experience with you?
- Is your present program evaluation meeting your needs?
  - Have there been changes in how your center conducts evaluations?
    - If changes are occurring, what is causing these changes?
- What parts of your present evaluation process would you like to change?
- What would an ideal evaluation process look like?
APPENDIX C
Program Staff Interview Protocol

Instructions: The researchers are interested in your experiences and opinions about the program evaluations that are conducted by residential environmental education centers. Please respond to the questions honestly and openly. There are no right answers, and the researchers are sincerely interested in your personal experiences and opinions. Also, please be assured that your name will not be associated with any of your comments. The researcher is committed to protecting your confidentiality and anonymity.

(Semi-Structured interview questions)
-What aspects of your program do you currently include in your program evaluations?
  Are any of these program areas any more important to you than any of the other areas?
-Who usually participates in constructing the program evaluation?
  If this is a joint process, who takes the leadership roles in this process?
  How do you contribute to the program evaluation decisions that are made at the center?
-Who is usually asked to respond to the evaluation instruments?
-What are you hoping to learn through your program evaluation?
-How do you hope students will change as a result of their experience with you?
-Is your present program evaluation meeting your needs?
-What parts of your present evaluation process would you like to change?
-What would an ideal evaluation process look like?
APPENDIX D
Teacher Interview Protocol

Instructions: The researchers are interested in your experiences and opinions about the program evaluations that are conducted by residential environmental education centers. Please respond to the questions honestly and openly. There are no right answers, and the researchers are sincerely interested in your personal experiences and opinions. Also, please be assured that your name will not be associated with any of your comments. The researcher is committed to protecting your confidentiality and anonymity.

(Semi-Structured interview questions)
- Why do you bring students to Camp Davis?
- What is your favorite part of the camp experience?
- What do your students enjoy most about the camp?
- What do your students remember most about their experience throughout the school year?
- Are your students changed in any way after their experience?
- If you could change anything about the camp, what would you change?
- Did you participate in any form of evaluation related to your camp experience?
  Did this evaluation provide you with the opportunity to share your experience completely?
- Was the evaluation information gained by the camp shared with you? Is this something that you would want to have available to you?
- Are you being asked to justify your visit to camp? If so, did the camp provide you with information that would help justify your visit?
APPENDIX E
School Administrator Interview Protocol

Instructions: The researchers are interested in your experiences and opinions about the program evaluations that are conducted by residential environmental education centers. Please respond to the questions honestly and openly. There are no right answers, and the researchers are sincerely interested in your personal experiences and opinions. Also, please be assured that your name will not be associated with any of your comments. The researcher is committed to protecting your confidentiality and anonymity.

(Semi-Structured interview questions)
- Do you support teachers in bringing students to camp? Why or why not?
- What is the overnight field trip policy of your school?
- Are the students at your school changed in any way after their experience?
- If you could change anything about the camp, what would you change?
- Do you participate in any part of the program evaluation of the camp? If yes, what information did you share during the evaluation?
- Is the camp able to provide you with the information that you need to justify a trip there? If yes, what information was important to you? If not, what information is needed?
APPENDIX F
Directors’ Survey Consent
UNIVERSITY OF ALABAMA
Individual’s Consent to be in a Research Study (Program Director)

You are being asked to participate in a research study that doctoral candidate Nicholas Bourke is undertaking for his dissertation research in science education at the University of Alabama. The study will document the present state of program evaluations at residential environmental education centers and assess the needs of the center staffs and program directors like you in regard to program evaluation.

**Why is this study important—What good will the results do?**
This study can help in developing program evaluations that can better serve the needs of the center and those who visit or support the center. This information can be a valuable resource to other center directors, and other educators and researchers that plan and direct program evaluations.

**Why have I been asked to take part in this study?**
You are being asked to participate based on your position as the program director of a residential environmental education center.

**What will I be asked to do in this study?**
If you agree to participate in this study, you will be asked to complete an online survey that will take approximately 30 minutes. Your responses will be confidential, and I will not collect identifying information such as your name, e-mail address, or IP address. The survey questions will be about your program evaluation.

**What will the study cost us? Will I be paid for participating?**
There is no cost to you for participating in this study. You will not receive any money for your participation.

**What are the risk (problems or dangers) from being in this study?**
There are no foreseeable risks for your participation in this study.

**What are the benefits of being in this study?**
The researcher hopes that the information that you provide may help program evaluations better meet the needs of the residential centers and those that support or visit the centers.

**What are my rights as a participant?**
Being in this study is voluntary—-it is your free choice. You may choose not to be in it at all. If you start the study, you can stop at any time. You may choose to not answer an individual question or may skip any section of the survey. By clicking “next” at the bottom of the page of the survey, you will move to the next question.

Every effort will be taken to make sure that your information is confidential. All data is stored in a password protected electronic format. To help protect your confidentiality, the surveys will not contain information that will personally identify you. The results of this study will be used for scholarly purposes only and may be shared with the University of Alabama representatives.
The University of Alabama Institutional Review Board (a committee that looks out for the ethical treatment of people in research studies) will study records from time to time. This is to be sure that participants in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?
If you have questions about this study please call the investigator Nicholas Bourke (334) 356-3551 or his faculty advisor, Dr. Sherry Nichols at (205) 348-5246. If you have questions about your rights as a research participant you may contact Carpantato Myles, The University of Alabama Research Compliance Officer, at (877) 820-3066. This research has been reviewed according to the University of Alabama IRB procedures for research involving human subjects.

ELECTRONIC CONSENT: Please select your choice below.

Clicking on the “agree” button below indicates that:
- you have read the above information
- you voluntarily agree to participate
- you are at least 19 years of age

If you do not wish to participate in the research study, please decline participation by clicking on the “disagree” button.

○ Agree
○ Disagree
You are being asked to participate in a research study that doctoral candidate Nicholas Bourke is undertaking for his dissertation research in science education at the University of Alabama. The study will document the present state of program evaluations at residential environmental education centers and assess the needs of the center staffs and program directors in regard to program evaluation.

**What is the study about?**
This study is about program evaluations at residential environmental education centers. First, I want to find out what these centers are currently doing for their program evaluations. Second, I want to determine if the program evaluations are meeting your needs as the program director and the needs of those who support or visit the center.

**Why is this study important—What good will the results do?**
This study can help in developing program evaluations that can better serve the needs of the center and those who visit or support the center. This information can be a valuable resource to other center directors, and other educators and researchers that plan and direct program evaluations.

**Why have I been asked to take part in this study?**
You are being asked to participate based on your position as the program director of a residential environmental education center.

**How many other people will be in this study?**
Three classroom teachers, several camp staff members, and a school administrator will also take part in the interview portion of this study. An internet survey will also be sent to approximately 350 program directors across the US as part of this study.

**What will I be asked to do in this study?**
If you agree to be in this study, you will participate in an interview with the researcher that will last from between 30-60 minutes. The interview will be recorded.

**What will the study cost us? Will I be paid for participating?**
There is no cost to you for participating in this study. You will not receive any money for your participation.

**What are the risk (problems or dangers) from being in this study?**
There are no foreseeable risks for your participation in this study.
**What are the benefits of being in this study?**
The only benefit to you will be your knowledge that the information that you provide may help program evaluations better meet the needs of the residential centers and those that support or visit the centers.

**What are the alternatives to being in this study?**
The alternative to participate is not to participate.

**What are my rights as a participant?**
Being in this study is voluntary---it is your free choice. You may choose not to be in it at all. If you start the study, you can stop at any time.

All records of this study will be kept confidential. Your name or the name of your center will be replaced with pseudonyms so that no one will be able to identify you or your school.

The University of Alabama Institutional Review Board (a committee that looks out for the ethical treatment of people in research studies) will study records from time to time. This is to be sure that participants in research studies are being treated fairly and that the study is being carried out as planned.

**Who do I call if I have questions or problems?**
If you have questions about this study right now, please ask them. If you have questions about this study later on please call the investigator Nicholas Bourke (334) 356-3551 or his faculty advisor, Dr. Sherry Nichols at (205) 348-5246. If you have questions about your rights as a research participant you may contact Carpantato Myles, The University of Alabama Research Compliance Officer, at (877) 820-3066.

I have read this consent document. I am an adult of at least 19 years of age. I understand its contents and freely consent to participate in this study under the conditions described. I will receive a copy of this consent form to keep.

**I AM WILLING TO PARTICIPATE.**
Program Director Participant: ___________________________ Date: __________
Investigator: ______________________________ Date: __________

Nicholas Bourke
APPENDIX H
Residential Center Staff Interview Consent
UNIVERISTY OF ALABAMA
Individual’s Consent to be in a Research Study (Staff Participants)

You are being asked to participate in a research study that doctoral candidate Nicholas Bourke is undertaking for his dissertation research in science education at the University of Alabama. The study will document the present state of program evaluations at residential environmental education centers and assess the needs of the center staffs and program directors in regard to program evaluation.

**What is the study about?**
This study is about program evaluations at residential environmental education centers. First, I want to find out what these centers are currently doing for their program evaluations. Second, I want to determine if the program evaluations are meeting your needs as a center staff member.

**Why is this study important—What good will the results do?**
This study can help in developing program evaluations that can better serve the needs of the center and those who visit or support the center. This information can be a valuable resource to other center directors, and other educators and researchers that plan and direct program evaluations.

**Why have I been asked to take part in this study?**
You are being asked to participate based on your position as a staff member of a residential environmental education center.

**How many other people will be in this study?**
Three classroom teachers, the camp director, several camp staff members, and a school administrator will also take part in the interview portion of this study. An internet survey will also be sent to approximately 350 program directors across the US as part of this study.

**What will I be asked to do in this study?**
If you agree to be in this study, you will participate in an interview with the researcher that will last from between 15-30 minutes. The interview will be recorded.

**What will the study cost us? Will I be paid for participating?**
There is no cost to you for participating in this study. You will not receive any money for your participation.

**What are the risk (problems or dangers) from being in this study?**
There are no foreseeable risks for your participation in this study.
What are the benefits of being in this study?
The only benefit to you will be your knowledge that the information that you provide may help program evaluations better meet the needs of the residential centers and those that support or visit the centers.

What are the alternatives to being in this study?
The alternative to participate is not to participate.

What are my rights as a participant?
Being in this study is voluntary---it is your free choice. You may choose not to be in it at all. If you start the study, you can stop at any time.

All records of this study will be kept confidential. You were selected to participate in this study from a list of camp staff members, and your identity will be kept confidential. Your name will be replaced with pseudonyms so that no one will be able to identify you. Your camp director will not be able to identify you as a study participant.

The University of Alabama Institutional Review Board (a committee that looks out for the ethical treatment of people in research studies) will study records from time to time. This is to be sure that participants in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?
If you have questions about this study right now, please ask them. If you have questions about this study later on please call the investigator Nicholas Bourke (334) 356-3551 or his faculty advisor, Dr. Sherry Nichols at (205) 348-5246. If you have questions about your rights as a research participant you may contact Carpantato Myles, The University of Alabama Research Compliance Officer, at (877) 820-3066.

I have read this consent document. I am an adult of at least 19 years of age. I understand its contents and freely consent to participate in this study under the conditions described. I will receive a copy of this consent form to keep.

I AM WILLING TO PARTICIPATE.
Staff Participant: _______________________________ Date: ____________
Investigator: ______________________________ Date: ____________

Nicholas Bourke
APPENDIX I
Teacher Interview Consent
UNIVERISTY OF ALABAMA
Individual’s Consent to be in a Research Study (Teacher Participants)

You are being asked to participate in a research study that doctoral candidate Nicholas Bourke is undertaking for his dissertation research in science education at the University of Alabama. The study will document the present state of program evaluations at residential environmental education centers and assess the needs of the center staffs and program directors in regard to program evaluation.

What is the study about?
This study is about program evaluations at residential environmental education centers. First, I want to find out what these centers are currently doing for their program evaluations. Second, I want to determine if the program evaluations are meeting your needs as a teacher.

Why is this study important - What good will the results do?
This study can help in developing program evaluations that can better serve the needs of the center and those who visit or support the center. This information can be a valuable resource to other center directors, and other educators and researchers that plan and direct program evaluations.

Why have I been asked to take part in this study?
You are being asked to participate based on your school’s involvement in a visit to camp and your experience as a group leader of a visiting class.

How many other people will be in this study?
Two other teachers, the camp director, several camp staff members, and a school administrator will also take part in the interview portion of this study. An internet survey will also be sent to approximately 350 program directors across the US as part of this study.

What will I be asked to do in this study?
If you agree to be in this study, you will participate in an interview with the researcher that will last from between 15-30 minutes. The interview will be recorded.

What will the study cost us? Will I be paid for participating?
There is no cost to you for participating in this study. You will not receive any money for your participation.

What are the risk (problems or dangers) from being in this study?
There are no foreseeable risks for your participation in this study.
What are the benefits of being in this study?
The only benefit to you will be your knowledge that the information that you provide may help program evaluations better meet the needs of the residential centers and those that support or visit the centers.

What are the alternatives to being in this study?
The alternative to participate is not to participate.

What are my rights as a participant?
Being in this study is voluntary---it is your free choice. You may choose not to be in it at all. If you start the study, you can stop at any time.

All records of this study will be kept confidential. You were selected to participate in this study from a list of (Camp Davis) visiting teachers. Your name or the name of your school will be replaced with pseudonyms so that no one will be able to identify you or your school. The camp director will not be able to identify you as a study participant.

The University of Alabama Institutional Review Board (a committee that looks out for the ethical treatment of people in research studies) will study records from time to time. This is to be sure that participants in research studies are being treated fairly and that the study is being carried out as planned.

Who do I call if I have questions or problems?
If you have questions about this study right now, please ask them. If you have questions about this study later on please call the investigator Nicholas Bourke (334) 356-3551 or his faculty advisor, Dr. Sherry Nichols at (205) 348-5246. If you have questions about your rights as a research participant you may contact Carpantato Myles, The University of Alabama Research Compliance Officer, at (877) 820-3066.

I have read this consent document. I am an adult of at least 19 years of age. I understand its contents and freely consent to participate in this study under the conditions described. I will receive a copy of this consent form to keep.

I AM WILLING TO PARTICIPATE.
Teacher Participant: ______________________________ ______________________
Investigator: ______________________________________________________
Nicholas Bourke

Date: ________ Date: __________
APPENDIX J

Administrator Interview Consent
UNIVERISTY OF ALABAMA

Individual’s Consent to be in a Research Study (School Administrator Participant)

You are being asked to participate in a research study that doctoral candidate Nicholas Bourke is undertaking for his dissertation research in science education at the University of Alabama. The study will document the present state of program evaluations at residential environmental education centers and assess the needs of the center staffs and program directors in regard to program evaluation.

What is the study about?
This study is about program evaluations at residential environmental education centers. First, I want to find out what these centers are currently doing for their program evaluations. Second, I want to determine if the program evaluations are meeting your needs as a school administrator.

Why is this study important-What good will the results do?
This study can help in developing program evaluations that can better serve the needs of the center and those who visit or support the center. This information can be a valuable resource to other center directors, and other educators and researchers that plan and direct program evaluations.

Why have I been asked to take part in this study?
You are being asked to participate based on your school’s involvement in a visit to camp and your involvement in this experience.

How many other people will be in this study?
Three classroom teachers, the camp director, and several camp staff members, will also take part in the interview portion of this study. An internet survey will also be sent to approximately 350 program directors across the US as part of this study.

What will I be asked to do in this study?
If you agree to be in this study, you will participate in an interview with the researcher that will last from between 15-30 minutes. The interview will be recorded.

What will the study cost us? Will I be paid for participating?
There is no cost to you for participating in this study. You will not receive any money for your participation.

What are the risk (problems or dangers) from being in this study?
There are no foreseeable risks for your participation in this study.
**What are the benefits of being in this study?**
The only benefit to you will be your knowledge that the information that you provide may help program evaluations better meet the needs of the residential centers and those that support or visit the centers.

**What are the alternatives to being in this study?**
The alternative to participate is not to participate.

**What are my rights as a participant?**
Being in this study is voluntary---it is your free choice. You may choose not to be in it at all. If you start the study, you can stop at any time.

All records of this study will be kept confidential. You were selected to participate in this study from a list of (Camp Davis) visiting school administrators. Your name or the name of your school will be replaced with pseudonyms so that no one will be able to identify you or your school. The director of the camp will not be able to identify you as a study participant.

The University of Alabama Institutional Review Board (a committee that looks out for the ethical treatment of people in research studies) will study records from time to time. This is to be sure that participants in research studies are being treated fairly and that the study is being carried out as planned.

**Who do I call if I have questions or problems?**
If you have questions about this study right now, please ask them. If you have questions about this study later on please call the investigator Nicholas Bourke (334) 356-3551 or his faculty advisor, Dr. Sherry Nichols at (205) 348-5246. If you have questions about your rights as a research participant you may contact Carpantato Myles, The University of Alabama Research Compliance Officer, at (877) 820-3066.

I have read this consent document. I am an adult of at least 19 years of age. I understand its contents and freely consent to participate in this study under the conditions described. I will receive a copy of this consent form to keep.

**I AM WILLING TO PARTICIPATE.**
Administrator Participant: _______________________________ Date: ________
Investigator: __________________________________________ Date: __________

Nicholas Bourke
APPENDIX K
Sample-Camp Davis Teacher Planning Packet, 2010

CURRICULUM GUIDE

Mission Statement
"The Mission of Camp Davis is to connect people to the environment, teach respect for the Earth and its beings, and to promote a commitment to lifelong learning."

Program Objectives
- The students will increase awareness and understanding of the environment.
- The students will develop a sense of responsibility for the environment.
- The students will gain a better sense of cooperation and community.

Outdoor Environmental Education embraces teachable moments which happen regularly in an outdoor classroom. The instructors each have their own teaching style and choose activities for classes that best suit their philosophy and personality. Your students will not stay with the same instructor for the entire time. Because of this, your student groups will not have an identical experience in every class. Instructors will cover the key terms and principles of each class and classes are correlated to the Alabama Course of Study.

ROCK QUERY
(3 hours)

ACTIVITIES: Students explore rock types, the rock cycle, and the structure of the Earth. On a canyon hike, students use observation skills to understand how the geology of the land affects the present ecosystem, as well as gives clues about ecosystems of the past.

PRINCIPLES:
- The face of the Earth is constantly changing as rocks move through the rock cycle.
- Rocks can provide information about past environments in an area.
- Human behavior can cause processes such as erosion which affect the earth.
- Humans utilize rocks as natural resources in many ways.

KEY TERMS: geology, rock cycle, metamorphic, sedimentary, igneous, erosion, geologic time, stratigraphy, deposition, soil, crust, mantle, core, nutrient cycle, interdependence, weathering, groundwater

DOWN TO EARTH
(3 hours)

ACTIVITIES: On a canyon hike to a waterfall, students examine topics such as soil, groundwater, electricity, and the geologic history of the area. They also witness effects of surface coal mining and reclamation and explore the relationship between use of natural resources and conservation of our environment.

PRINCIPLES:
- Erosion occurs constantly and has a great effect on the landscape.
- Coal is one of Alabama’s natural resources, which is used to produce electricity.
- Human use of natural resources affects the environment and conservation of natural resources helps the environment.

KEY TERMS: ground water, spring, sediment, pollution, surface mining, reclamation, sandstone, erosion, layering, ironpan, coal, dragline, conservation, natural resource, electricity
POND & STREAM or POND

ACTIVITIES: Students will review the water cycle and the importance of freshwater environments to plants and animals. Students gather and observe life from both a pond and a stream, then participate in activities to help them better understand these aquatic ecosystems and the human impacts upon them.

PRINCIPLES:
- Ponds and streams, as parts of the water cycle, are important to all organisms, including humans.
- Aquatic creatures are diverse yet interrelated.
- Aquatic creatures have specialized adaptations for feeding, breathing and moving to help them survive in a specific micro-habitat such as the surface or bottom, the pool or riffle.
- Human actions can alter the health of a stream.

KEY TERMS: water cycle, food chain, adaptation, nymph, larvae, detritus, pollution, tolerance, tributary, erosion, sediment, species, indicator species, macro-invertebrate, sampling, habitat

Students should come prepared to get wet in these classes; however, students have the option to stay dry.

STREAM STUDIES

ACTIVITIES: Through biological sampling and chemical testing of a pristine stream, students gain an understanding of water quality parameters, learn how to assess water quality and become aware of the impact that humans can have on waterways.

PRINCIPLES:
- The physical and chemical properties of a body of water determine what organisms can live there.
- Aquatic creatures have different tolerance levels to pollution based on their physical characteristics and behaviors.
- Human actions can alter the chemical and physical properties of a stream and thus affect its health.
- Each of us can help to monitor and improve water quality.

KEY TERMS: aquatic, adaptation, nymph, larvae, species, indicator species, detritus, pollution, tolerance, tributary, erosion, sediment, titration, dissolved oxygen, pH, acid, base, turbidity, water molecule, watershed

Students should come prepared to get wet in this class; however, students have the option to stay dry.
APPENDIX L
Sample Qualitative Interview Coding

R-Are your students changed?

2-Some of them-the more introverted students, come out more and connect with the kids more when they get back. It kind of levels the playing field. This is true of any classroom that you have the popular kids, but it really levels the playing field. And they come back more as a group as opposed to cliques. Some of them have really built up their confidence. This is their first time away from home. Their confidence is really built up.

R-You mentioned some really important social things, but is knowledge important too?

2-Oh yes. I think they feel really smart. They will say, “Remember so and so, or remember we did that? That is what so and so did.” They definitely refer back to the content.

R-Can you describe any form of the program evaluation that you experienced while you were at camp?

2-I think it is great that the chaperones fill out the evaluations after each class, and I think it is great that they have the teachers do that. I think one of the biggest weaknesses in their evaluation program is that they don’t get student feedback. I think that is a huge weakness. I know at school, if you make it anonymous, and let your students give you feedback, you will really learn a lot, and it will really impact your teaching. And they offer great suggestions a lot of times. A lot of times they offer things that you know that I wouldn’t have thought about.

R-Chaperones complete a survey?

A-Chaperones complete something like the teachers do. They evaluate each class. It is very thorough. It is a great evaluation. What the teachers fill out is very similar about each class even for thought and evening programs. But they don’t get any student feedback. And I know with our numbers it might be too much. But I really don’t think so. I think that is a huge weakness that they don’t get any student feedback. Their feedback would be very different from the chaperones or teachers. They are looking for something different than we are.

R-And you complete a survey as the lead teacher?

2-Right. There is a lead teacher survey.

R-Do you feel like the part you fill out gives you the opportunity to share your experiences completely, or is it limited?

2-Because I’m the lead teacher, they know it is from me. I feel a little guarded.
Question 22

What changes (if any) in your program evaluation would you like to see? - Open-Ended

1. more diversity and specificity for each different program
   Variety of program offerings

2. More student input

3. efficiency and monitoring
   Staffing issue?
   Time issue?
   Students
   Longitudinal

4. none at this time
   No change

5. Greater pre and post evaluations for groups on educational experience and retention

6. I would like it to be more thoughtfully designed and consistently administered. I would like the outcome to be reliable, repeatable, and quantifiable.
   Quantitative data.

7. more open questions, as opposed to rating scales...more involvement of students in evaluation process.

8. We have a great variety of activities. Evaluation for each specific activity the group participated in
   Variety of activities

9. implement pre/post tests
   Students

10. Is our eval even doing us any good?
    Impacts? Use of results?

11. More consistent returns of evals
    Staffing issue; follow ups

12. N/A

13. longitudinal more alignment with our core educational framework, more effort to make it statistically useful
    Design issues?

14. We would like to see pre and post evaluations conducted in schools.

15. More resources dedicated to performing it
    Time, money, staff?? Administration issue.

16. An electronic evaluation system to save paper
    Design issue

17. It needs to be more embedded in the kids’ experiences, without feeling like a test.
Administration - Design

3. Efficiency & monitoring
6. Consistently administered, quantifiable,
7. Open questions
11. Consistent returns
13. Make statistically useful

Student Input

2. More student input.
5. Pre/Post evals. experience & retention
7. Involvement of students.
9. Pre/Post tests.
13. Longitudinal
14. Pre/Post evals.

Diversity + Variety for Eval.

1. Diversity for each different program
8. Eval. for specific activities Variety
One of my most memorable experiences as a student in elementary school was the time I spent with my class at an environmental center in Illinois. The center educators took us into the woods to identify different species of trees by looking at their leaves and bark. We waded into a creek to search for small fish and aquatic insects. We hiked at night and listened for nocturnal animals. Most importantly, we developed an awareness of the importance of our natural surroundings and appreciation for our natural environment.

This early experience in nature sparked my curiosity and led me to many other hikes in the woods and trips to the book store to buy animal and tree field guides. I developed a love for nature that continues to this day. I believe that my early experiences of learning about nature in an outdoor setting contributed in a significant way to an important part of my education—my environmental literacy. As a teacher, I want to develop the environmental literacy of my students and share my interest in nature and concern with our natural environment with them.