Development and Pilot-Testing of a
Model Residential Environmental Education Curriculum
Infusing Cross-cultural Perspectives

Kenneth R. O’Brien

A Thesis
Submitted in partial fulfillment of the
Requirements for the degree of
MASTER OF SCIENCE

In
Natural Resources –Environmental Education
College of Natural Resources

UNIVERSITY OF WISCONSIN
Stevens Point, Wisconsin

September 1999
APPROVED BY THE GRADUATE COMMITTEE OF:

[Signatures and names]

Dr. Daniel J. Sivek, Committee Co-Chairperson
Associate Professor, Human Dimensions of Natural Resource Management
College of Natural Resources

Dr. Joseph Passineau, Committee Co-Chairperson
Associate Professor, Human Dimensions of Natural Resource Management
College of Natural Resources

Dr. Paula DeHart
Associate Professor of Education
College of Professional Studies
Abstract

This study concerns the development and pilot-testing of a model curriculum for residential environmental education that infuses cross-cultural perspectives. Diverse cultural ideas and activities regarding human relationships with the natural environment were presented to a group of middle school students using a curriculum developed by the researcher. The curriculum was pilot-tested in a one-week long residential environmental education program using five experimental instructor/student groups and four control groups. Students were pre and posttested on their familiarity with diverse cultural ideas about the environment and on their degree of concurrence with 17 value statements about cultures, learning, and the environment. Observations of instructors and students participating in the pilot-testing of the model curriculum were made. Interviews with instructors took place during and following the administration of the experimental curriculum. Results showed statistically significant changes on five items of the pre and posttest for the Treatment Group, while no changes were seen in the Control Group. Changes included: 1) An increase in student abilities to identify diverse cultural beliefs about the environment; 2) An increase in student self-assessment about their knowledge of diverse cultural beliefs about the environment; 3) An increase in student self-assessment about their knowledge of diverse cultures; and 4) An increase in the degree to which student's felt they had learned valuable information about understanding the environment from diverse cultures. In accordance with expectations from previous research, no changes were seen in student attitudes. Data from observations and interviews with instructors were analyzed and improvements to the model curriculum were suggested. Recommendations for the future use and evaluation of the model curriculum were also made.
Table of Contents

SIGNATURE PAGE ........................................................................................................ii
ABSTRACT .........................................................................................................................iii
LIST OF TABLES ................................................................................................................iv
LIST OF FIGURES .............................................................................................................v
LIST OF APPENDICES .....................................................................................................vi

CHAPTER I. THE PROBLEM AND ITS SETTING

THE IMPORTANCE OF THE STUDY ...............................................................................2
THE GOAL OF THE STUDY ................................................................................................7
THE OBJECTIVES .............................................................................................................7
THE DELIMITATIONS ......................................................................................................8
THE DEFINITIONS OF TERMS .........................................................................................9
THE ASSUMPTIONS ..........................................................................................................9

CHAPTER II. LITERATURE REVIEW

HISTORICAL OVERVIEW .............................................................................................12
MULTICULTURAL EDUCATION .....................................................................................13
MULTICULTURAL ENVIRONMENTAL EDUCATION .....................................................16
SUMMARY ......................................................................................................................17

CHAPTER III. METHODS

THE RESEARCH METHODOLOGY ............................................................................19
IDENTIFICATION OF CULTURAL CONTENT ............................................................20
  Objective 1: Methodology .........................................................................................20
a. Selection of Sources for Cultural Content...........................................21
b. Literature Search..................................................................................21
   1. Search for Resources in Library.......................................................21
   2. Search for Resources at Conferences..............................................22
c. The Criteria Governing the Inclusion of Multicultural Content..........22

DEVELOPMENT OF A MODEL CURRICULUM............................................23
Objective 2: Methodology.................................................................23
   a. Curriculum Development Plan.......................................................23
      1. Philosophy of Curriculum........................................................23
      2. Goal.......................................................................................24
      3. Objectives............................................................................24
      4. Procedure...........................................................................25

PILOT-TESTING OF MODEL CURRICULUM..............................................31
Objective 3: Methodology.................................................................31
   a. Identification of Residential Site for Pilot-testing........................32
   b. Development of Middle-School Group for Pilot-testing..............34
   c. Development of Survey for Pre and Post test............................34
   d. Prepare Field Instructors to Teach Using the Model Curriculum....35
   e. Pilot-testing Curriculum..............................................................35
      1. Pretest Administration..............................................................35
      2. Selection of Treatment and Control Groups............................36
      3. Selection of Instructors for Treatment Group..........................36
      4. Administration of Model Curriculum ......................................37
      5. Posttest Administration...........................................................38
      6. Interviewing Instructors..........................................................38

ANALYSIS OF RESULTS AND RECOMMENDATIONS.................................39
Objective 4: Methodology.................................................................40
a. Analysis of Pre and Posttest Results
b. Discussion on Interviews and Observations
  1. Observations of Student-Instructor Interactions
  2. Journal Entries
  3. Discussion on Instructor Interviews
  5. Discussion on Observations of Individual Lesson-Plans and Recommendations for Improvement
c. Recommendations for Future Evaluation of the Model Curriculum

CHAPTER IV. ANALYSIS OF RESULTS

SOURCES FOR CULTURAL CONTENT

a. Sources for Cultural Content
  1. Cultural Stories Published in the Literature
  2. Ethnographical Information Published in the Literature
  3. Cultural Information Gained from the Researcher's Experiences with Members of Diverse Cultures

b. Analysis of Results of Search for Sources for Cultural Content

DEVELOPMENT OF THE MODEL CURRICULUM

a. Brief Descriptions of Lesson-Plans Arranged by Lesson Type
  1. Simulations of Cultural Activities Relating to the Environment
  2. Adaptations of Existing Lesson-Plans by Infusing Cultural Content
  3. Lessons that Deal with Cultural Conflicts Relating to the Environment
  4. Lessons Presenting a Diversity of Cultural Ideas About a Particular Aspect or Facet of the Environment
  5. Lessons Featuring Cultural Song or Story Relating to the Environment
PILOT-TESTING OF MODEL CURRICULUM ......................................................... 60
  a. Results of Pre and Posttest ................................................................. 60
  b. Analysis of Pre and Posttest Results ................................................... 65
  c. Discussion on Interviews and Observations ........................................... 69
      1. Observations of Student-Instructor Interactions .............................. 70
      2. Discussion on Journal Entries ....................................................... 71
      3. Discussion on Instructor Interviews ............................................... 72
      4. Discussion on Observations of Individual Lesson-Plans and
         Suggestions for Improvements ..................................................... 92

CHAPTER V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY ...................................................................................................... 120
CONCLUSIONS ............................................................................................ 121
RECOMMENDATIONS .................................................................................. 122
  a. Recommendations for Future Use of Curriculum .................................. 122
  b. Recommendations for Future Evaluation of Curriculum ........................ 123
  c. Recommendations for Future Research in this Area ................................ 124
REFERENCES ............................................................................................. 126
### LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1. Lesson-Plans and Related Tbilisi Goals Addressed</td>
<td>48</td>
</tr>
<tr>
<td>Table 2. Statistical Data for Treatment Group Pre and Posttests</td>
<td>62</td>
</tr>
<tr>
<td>Table 3. Statistical Data for Control Group Pre and Posttests</td>
<td>63</td>
</tr>
<tr>
<td>Table 4. Instructor Identification of Opportunities for Improvement</td>
<td>74</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1. Approaches to Multicultural Curriculum Reform</td>
<td>15</td>
</tr>
<tr>
<td>Figure 2. Survey Used for Pre and Posttesting</td>
<td>64a</td>
</tr>
</tbody>
</table>
LIST OF APPENDICES

Appendix A. Model Curriculum
Appendix B. Pre and Post-Test Survey
Appendix C. Survey Results
Appendix D. Recorded Observations
Appendix E. Transcription of Interviews
Appendix F. Statistical Results of Survey
CHAPTER I
THE PROBLEM AND ITS SETTING
THE IMPORTANCE OF THE STUDY

Several authors in the twentieth century have called for a new relationship between people and the environment such that human ethics extend beyond valuing humans and include the environment (Leopold, 1949; Devall and Sessions, 1985; Shomon, 1964). Some argue that, unless the existing values, attitudes and beliefs regarding the environment in the United States are changed and improved, ecological catastrophe will result (Gordon and Suzuki, 1991; Kinsley, 1995; Pirages and Ehrlich, 1974). Both of these concerns imply the existence of a problem or problems regarding the nature of relationships between inhabitants of the United States and their natural environments. What has been advocated goes beyond a simple change in actions – it is a fundamental restructuring of our system of beliefs about the environment and our place in it.

A review of the literature reveals that very little work has been done in the field of environmental education regarding the study of diverse cultural ideas about human relationships with the environment. While culturally diverse ideas about relating to the natural environment have been noted by ethnographers and other scholars (Gordon and Suzuki, 1991; McLuhan, 1994; Wallis, 1939) they have, with few exceptions, been ignored by researchers and developers of environmental education curriculum materials (Henley, 1993; NEEAC, 1996; Spectrum Report for EETAP, 1998).

In light of the aforementioned call for a change in the nature of the relationship between inhabitants of the United States and the natural environment, it seems prudent
that consideration of diverse cultural ideas about such relationships be examined. The reasoning that supports this assertion follows.

In order for people to change their relationships with the environment, it is first necessary for them to understand them. World-views are transparent to people for the most part, as they are made up of many unconscious and often unquestioned assumptions and cultural beliefs. World-views are expressed in many ways in a culture, including through stories, social rules of etiquette, and treatment of plants and animals. The metaphors on which world-views are predicated exist deep inside the languages and experiences of individuals (Bowers, 1993). One way that differences between cultural world-views can be examined is by looking at the metaphors expressed in language or written symbols (Bowers, 1993). For example, a metaphor common to many American Indian cultures is the circle, which represents the unity, interdependence, and value of all life (Cajete, 1994). Many European cultures use the pyramid or triangle as their major metaphor of life, with a hierarchy of organisms ranging from the humans at the apex to the invertebrates and microorganisms or "lower animals" at the bottom. Such diverse metaphors indicate broad differences in how cultures see themselves in relation to nonhuman life and even the physical Earth. Our own world-views often become clear only when we learn the world-views of other cultures and are therewith able to compare them.

By looking at diverse cultural perspectives on how humans relate to their natural environments, students may gain greater perspectives on their own relationships with the environment. In addition an understanding of such diverse cultural perspectives would
provide students with a broader field of options in consciously choosing their own best relationships with the environment.

There are many cultures around the world that can provide useful studies of the diversity of ideas regarding human relationships with the environment, including some that have excellent models of an environmental ethic that is inclusive of all life (Campbell, 1989). For example, according to Bullivant (Banks, 1993) some of the Aboriginal people in Australia have a view of relationship to the land wherein the land is a part of themselves and the idea of becoming separated from it is very disturbing. Similar world-views have been expressed in North America by Chief Joseph of the Nez Perce nation in Oregon and Idaho and by Chief Seattle of the Duwamish nation in Washington (Waters, 1990). In the Druid culture of the Celts, trees are revered as living spirits. In much of India, animals are recognized as representatives of deities. In ancient Egypt, to kill the sacred ibis, the bird associated with the god Isis, was punishable by death (Attenborough, 1992). These are just a few examples of the many representations of cultural world-views that can be used to help students understand the concept, and to see the characteristics of their own world-views more clearly.

The ultimate goal of environmental education is to increase the ability and willingness of citizens to take actions that balance quality of life with quality of the environment (Engleson & Yockers, 1994). This requires a certain degree of “environmental literacy”, part of which is the ability to recognize, understand and evaluate different attitudes and values towards the environment and environmental issues. Although values are often studied in environmental education, the literature reviewed by the researcher indicates that it is relatively uncommon that any outside of our own
cultural mainstream are considered. Instead, environmental values, problems and solutions are typically examined from within the context of our own most prominent cultural world-views. The implication is that environmental educators are not utilizing what may be a very effective approach to help students understand the relationship between cultural values and environmental issues. Increasing this awareness could help to bring greater perspective to the analysis and resolution of environmental issues.

While diversity of perspective in cultural world-views towards the environment is commonly being left out of environmental education, there are indications that diversity is lacking in other ways as well. A recent federal report on the state of environmental education had this to say about diversity issues:

Important audiences...are being missed or inadequately reached, such as...people of color...In part, this is due to lack of materials, commitment and organizational support; uncertainties in knowing how to engage these audiences; and difficulties in adapting traditional teaching strategies to nonformal learning environments within communities and diverse cultures. (NEEAC, 1996)

The inference here is that there is a problem stemming from a lack of recognition of different world-views and the transference of ideas from one world-view to another. Although this concern is stated only in terms of audiences being missed, implying that these audiences have something to learn from environmental education, equally important is the fact that perspectives from diverse cultures are often absent in environmental education. The implication is that out of all of the existing cultural values and perspectives about the environment available to us for study and consideration, the ideas of a very small group of cultures are currently dominating the field of environmental education. This may be a product of the process through which the field has been
developing, assuming that the propensity of researchers and practitioners have historically come from a fairly homogenous background rooted in the western scientific tradition. It is natural that some degree of cultural and intellectual bias or limitation has been incorporated into the teaching of environmental education. However, it is both academically and culturally sensible to remedy any such biases or limitations with the inclusion of diverse cultural perspectives.

The United States is a cultural mosaic of many different traditions with differences in their world-views. While many of the cultures that make up our population share the "mainstream" assumptions about the environment, many do not. We live in a multicultural society, and unless we take an inclusive approach to the different needs of our diverse cultures and the interesting insights that they offer us, we will be impoverished because of our diversity instead of being enriched by it.

All students will benefit from gaining a greater perspective on the relationship between cultural values and environmental issues. One benefit is that it may help students to appreciate diversity more, as they gain a deeper and more personal understanding of different cultures. Another potential benefit is that it could help students of diverse ethnic backgrounds to feel more valued and to feel that their cultures are of equal significance to others. This in turn could result in those students feeling better about education in general, and more hopeful that their dreams and goals can be supported by the educational experience (Banks, 1993).
THE GOAL OF THE STUDY

Diverse cultural perspectives offer great potential to inform our environmental views and ethics. Currently there is a lack of programs that have incorporated them into their curriculum. The goal of this study was to develop and pilot-test a model residential environmental education curriculum infused with diverse cultural ideas and activities relating to the environment. Participants in the pilot-test were administered pre and posttests to determine the curriculum’s effect on the extent of their agreement with a series of value statements. Observations of instructors and students during the pilot-test were made. Instructional staff members were interviewed for feedback on curriculum content, sequence, and compatibility with their needs. Results were analyzed and suggestions made for the improvement and future evaluation of the curriculum.

THE OBJECTIVES

1. The first objective of this research was to identify resources on diverse cultural ideas and practices pertaining to relationships between humans and their environments.

2. The second objective of this research was to develop a model curriculum that infused diverse cultural ideas about the environment into residential environmental education.

3. The third objective of this research was to pilot-test the model curriculum at a residential facility, using interviews, observations, and a pre/post test to collect data on the curriculum’s impacts and effectiveness.
4. The fourth objective of this research was to analyze the results of the pilot-testing and to make suggestions for the improvement and future evaluation of the model curriculum.

THE DELIMITATIONS

1. This study did not attempt to identify all sources of cultural perspective regarding natural resources and the environment.

2. This study did not attempt to examine or include all cultures presently existing in the United States.

3. This study did not develop a model curriculum that excludes the "mainstream culture" or "dominant paradigm."

4. This study did not claim to present the characteristics of any culture in its entirety.

5. This study did include only that information about diverse cultural perspectives available through the existing literature and from the personal experiences of the researcher with diverse cultures.

6. This study included the development of a survey that was administered to students before and following the week-long program in residential environmental education. However, this survey was not prevalidated or otherwise tested prior to its use in this study.
THE DEFINITIONS OF TERMS

Cultural Values. Those attitudes and attributes which a group develops and embraces to adapt to and survive in their physical, social, and metaphysical environments (Bullivant, 1993).

Infuse. The inclusion of knowledge and skills into an existing course, without having a detrimental effect on the content of the course. (Ramsey, Hungerford, and Volk, 1992)

Residential Environmental Education. Residential environmental education refers to any program that houses participants, usually for one to four nights, with the purpose of providing an in-depth, field-based experience of learning about nature and human interactions with nature.

World-view. A set of cultural assumptions and ideas that is held by members of an ethnically distinct cultural group, and which in part determines acceptable behaviors within the cultural group.

THE ASSUMPTIONS

1. For the purpose of this study, it is assumed that an accurate and adequate representation of the values of diverse cultures relating to natural resources and the environment is accessible in the literature.

2. For the purpose of this study, it is assumed that developing a cross-cultural curriculum in residential environmental education is desirable and will benefit participants of all cultural backgrounds.
3. For the purpose of this study, it is assumed that diverse cultural perspectives regarding natural resources and the environment can be successfully infused into a residential environmental education curriculum.
CHAPTER II

THE REVIEW OF THE RELATED LITERATURE
HISTORICAL OVERVIEW

Cultural values regarding relationship with the environment have been recorded in written form as early as the period of ancient Egyptian civilization several thousand years ago. At that time wealthy people were buried with instructions, in hieroglyphic writing, on how to greet the spirits in the afterlife, and those instructions made it clear that they would be asked whether they had destroyed the fields or fouled the waters (Budge, 1967).

Distinctions have long been identified between people with different world-views and cultural perspectives relating to the environment. Thousands of years ago, the Chinese philosopher Lao-tzu wrote "Those who would take over the world and manage it, I see that they cannot grasp it, for the world is a spiritual (shen) vessel and cannot be forced. Whoever forces it spoils it. Whoever grasps it loses it." (Hayden, 1996). One can imagine that Lao-tzu might feel well-vindicated in his views if he were describing the world today.

Many cultures have long possessed an environmental ethic or sense of appropriate relationship with the environment. One of the more well-known is that of the Onondaga people of Canada and New York. In the eighteenth century, a member of that tribe had a vision that the people, before taking any action, were to consider the impact it would have on those born seven generations in the future (Lyons, 1987). This ethic has provided the Onondaga Nation and their Iroquois Confederacy allies with a useful standard by which sustainable behavior has been measured for over two centuries.

It has been recognized that an environmental ethic based on a particular set of values is a common characteristic of traditional societies and that such an ethic is
desirable (Engleson & Yockers, 1994). However, the researcher’s literature review has indicated that there are few curriculum materials that incorporate the study of such cultural values or ethics in environmental education, and particularly lacking are materials developed for residential programs.

**Multicultural Education**

The multicultural movement in education emerged in the 1970's out of the Civil Rights movement (Ramsey, Vold and Williams, 1989). As it has developed, it has brought not only information about minority populations into mainstream education, but also culturally diverse ideas on how to approach education (Office of Intergroup Relations, 1977). One of its primary messages is that a culturally diverse curriculum is necessary to prepare students for life in a culturally diverse society.

James A. and Cherry McGee Banks have examined the subject of multicultural education and one of their findings has been that the perspectives of diverse cultures are being excluded, sometimes actively, from school curricula (Banks and Banks, 1993). Among the effects of this cultural exclusion that they point out is that mainstream students are being denied the opportunity to learn from the perspectives of other cultures, and the opportunity to learn about their own culture from diverse perspectives.

The Banks' studied the infusion of multicultural materials in curriculum and developed a model called Approaches to Multicultural Curriculum Reform (Figure 1). One of the four levels of integration identified in this model is called the "Transformation Approach" in which the structure of the curriculum itself is "changed to enable students
to view concepts, issues, events, and themes from the perspectives of diverse ethnic and cultural groups (Banks & Banks, 1993)."

This study represents an example of curriculum that fits the Banks’ description of the “Transformation Approach,” as it presents diverse cultural ideas from the perspectives of members of the cultures themselves.

At this time, the Banks Transformation Approach has not been expressly applied to environmental education in any study or program that the researcher has encountered. Only a handful of programs have infused perspectives from other cultures into their programs, and in these cases only one or a couple of cultures are included, usually representing the dominant culture of the local area (Henley, 1993).
Level 1

The Contributions Approach

Heroes, heroines, holidays, foods, and discrete cultural elements are celebrated occasionally.

Level 2

The Additive Approach

Content, concepts, lessons, and units are added to the curriculum without changing its structure.

Level 3

The Transformation Approach

The structure of the curriculum is changed to enable students to view concepts, issues, events, and themes from the perspective of diverse ethnic and cultural groups.

Level 4

The Action Approach

Students make decisions on important personal, social, and civic problems and take actions to help solve them.

Figure 1. Approaches to Multicultural Curriculum Reform (Banks and Banks, 1993).
Multicultural Environmental Education

In recent years, some authors have begun to suggest the merging of multicultural perspectives with environmental education (Cajete, 1994; Running Grass, 1994; Henley, 1993; Caduto & Bruchac, 1990). An example of an organization that seeks to merge environmental education with multicultural values is the Three Circles Center in Sausalito, California. Three Circles is a nonresidential program which sees itself primarily as a resource center to help educate people about cultural diversity issues and to assist other environmental education programs in incorporating multicultural perspectives (NCEET, 1995). One of the central concerns of the Three Circles Center is environmental justice, which refers to the expression of racism and classism through the selective siting and approval of toxic waste dumps and facilities in predominantly poor and minority areas.

One residential environmental education program in Canada which has made progress toward the integration of multicultural perspectives in environmental education is the program called Rediscovery, started by Thom Henley on the island of Haida Gwai (Henley, 1993). This program serves the local Haida people, incorporating traditional ideas and ways into a residential environmental education program. The program has met with dramatic success and is credited for helping revitalize traditional culture and people's sense of meaning and belonging there (Henley, 1993). Rediscovery programs have started up in several other tribal communities in western Canada and the western United States. While the Rediscovery programs are open to people of all ethnic backgrounds, their curriculum is focused on the cultural values of their local ethnic communities.
Summary

Although diverse cultural values concerning the environment have been identified in and with different cultures throughout history, environmental education has been slow to recognize their import and incorporate them into its programs. The advent of the multicultural education movement in the 1970's has challenged assumptions regarding the right of one cultural world-view to dominate educational content. The call for diversity in educational perspectives is now starting to be heard, and curriculum materials that include multicultural perspectives are appearing. These materials most commonly include only perspectives of diverse groups within the present population of the United States, including groups defined by race, demographic location, and economic status. A relatively small number of curriculum materials are also available which present environmental education from the perspective of a particular cultural group.

Recently, multicultural education and environmental education have come together in the development of residential environmental education programs which seek to offer participants curricula from the perspectives of more than one cultural world-view (Henley, 1993). These programs have been limited in scope to the incorporation of perspectives from local ethnic groups.

Residential environmental education is by its nature interdisciplinary, and it therefor provides an excellent opportunity for the incorporation of diverse cultural approaches to its programs. A truly cross-cultural residential environmental education program, designed for participants from all ethnic backgrounds, is the logical next step in the coevolution of multicultural education and environmental education.
CHAPTER III

METHODS
THE RESEARCH METHODOLOGY

This section will describe the methods that were used to achieve each of the four objectives. Each objective will be restated, after which the methodology utilized will be described.

Overall, the methodology followed the model of educational research and development outlined by Borg and Gall (Borg and Gall, 1983). The model includes the following components:

1. Research and information collecting.
2. Planning and stating objectives.
3. Developing preliminary form of product, including instructional materials and evaluation devices.
4. Preliminary field-testing.
5. Main product revision as suggested by the preliminary field-test results.
6. Main field-testing. Quantitative data on subjects' precourse and postcourse performance are collected. Results are evaluated with respect to course objectives and are compared with control group data, when appropriate.
7. Operational product revision as suggested by main field-test results.
8. Operational field-testing.
9. Publication of Results.

Following Borg and Gall's recommendations for graduate-level research and development projects, the methodology for this study did not include all of the steps of
the complete research and development cycle (Borg and Gall, 1983). In this study, the following steps were included:

1. Research and information collecting.
2. Planning and stating objectives.
3. Developing preliminary form of product, including instructional materials and evaluation devices.
4. Preliminary field-testing.
5. Publication of Results.

Restatement of The First Objective

The first objective of this research was to identify resources on diverse cultural ideas and practices pertaining to relationships between humans and their environments.

Methodology for the First Objective

Outline of Methodology

I. Selection of Sources for Cultural Content
II. Literature Search – Libraries.
III. Literature Search – Conferences.
IV. The Criteria Governing the Inclusion of Multicultural Content
Selection of Sources for Cultural Content

Types of source material that were utilized include ethnographies written about cultures, video cassette recordings of documentaries focusing on cultures, biographies and autobiographies about members of cultures, curriculum guides and lesson plans incorporating cultural perspectives in environmental education, and other published materials which include information on the views of cultures relating to natural resources and the environment. In addition, information from contacts with members of diverse cultures from the personal experiences of the researcher were utilized.

Every effort was made to accurately represent the commonly held values, beliefs or assumptions of cultures regarding natural resources and the environment. However, in matters of cross-cultural description and translation absolute accuracy can be difficult to achieve or even define. This is because of the natural tendency for the ideas of one culture about another culture to suffer some degree of distortion due to the differences in perspective that cultures have. The researcher relied on the sensitivity for this distortion that he has developed from his experiences with diverse cultures, and on the perspectives and opinions of his Graduate Committee members, who also have experience working with diverse cultures.

Literature Search - Search for Resources in Libraries

The primary resources that were used in the literature search process were the University of Wisconsin at Stevens Point’s Albertson Learning Resource Center and the University of Colorado at Boulder’s Norlin Library. Individual resources used included the collection of journals, stacks of books, ERIC database, Wilson Disc On-Line Index,
and references. Resources of the Wisconsin Center for Environmental Education and the University of Colorado Environmental Center were also examined. Through the use of Interlibrary Loan services, resources from other libraries were requested as necessary. Additional information was acquired from searches of the Internet.

**Literature Search - Search for Resources at Conferences**

Resources acquired at the 1997 Annual Conference of the North American Association for Environmental Education, which focused on the connections between culture and environmental education, were used. These resources included papers, notes taken by the researcher at keynote speeches and presentations by other speakers and references acquired through personal contacts.

Resources from the 1997 Statewide Equity and Multicultural Education Convention held in Appleton, Wisconsin were also used, including notes taken at presentations.

**The Criteria Governing the Inclusion of Multicultural Content**

Content found through the literature search was examined and those aspects that were appropriate for adaptation to a residential environmental education curriculum were selected. Criteria for selection included:

1) Content must express or develop some aspect of value relationship between human beings and natural resources or the environment.

2) Content must be possible to model outside of its original geographic context, while retaining its essential nature or purpose.
3) Content must be possible to model in a manner that is physically safe for students, teachers, and residential program staff.

4) Content must come from a reliable source with a reasonable degree of expectation that the information accurately represents the values, beliefs, concepts or methods of the culture.

5) Use of the content in a modeled or adapted form in a residential environmental education program must be unlikely to be considered offensive by members of the originating culture.

**Restatement of the Second Objective**

The second objective of this research was to develop a model curriculum that infused diverse cultural ideas about the environment into residential environmental education.

**Methodology for the Second Objective**

Outline of Methodology

I. Philosophy of the Curriculum.

II. Goal of the Model Curriculum.

III. Objectives of the Model curriculum.

IV. Procedures for Development of the Model Curriculum.

**Philosophy of Curriculum**

The researcher’s philosophy of curriculum is as follows:
The purpose of curriculum is to provide students with experiences and knowledge with the intention of helping them develop the skills and sensibilities necessary to be self-supporting members and active participants in the maintenance and evolution of their local, regional, state, national, and global communities. In this definition the word communities refers to both human and ecological components.

The researcher supports constructivist, experiential, and inclusive approaches to education which accommodate different personalities and their diverse strengths and learning styles.

Goal of the Curriculum

The goal of the curriculum was as follows:

The curriculum will provide middle-school students in residential environmental education programs with experiences and knowledge to help them learn about how diverse cultures think about human relationships with the environment.

Objectives of the Model Curriculum

The objectives of the model curriculum were as follows:

1) Instructors teaching with the model curriculum will value the content and delivery of the lesson plans, considering them appropriate for residential environmental education programming.

2) Students learning with the model curriculum will find the lessons interesting and enjoyable.
3) Students will exhibit a statistically significant increase in their knowledge of diverse cultural ideas about the environment on a survey administered before and following their participation in a five-day residential environmental education program using the model curriculum.

Evaluation of the success of the curriculum was made based on observations made by the researcher during the pilot-testing, interviews with instructors following their experience teaching with the curriculum, and the comparison of surveys administered to students before and after their experience with the curriculum.

Procedures for Development of the Model Curriculum

1) Applying the Banks’ “Transformation Approach” to curriculum and using the goals of environmental education established at the international conference in Tbilisi in 1977, write or adapt lesson plans that teach about the environment from the perspectives of diverse cultures (Simmons, 1998; Engleson & Yockers, 1994).

2) Deliver completed lesson plans to members of the researcher’s Graduate Committee and to an authority on middle-school environmental education for review regarding appropriateness of content and planned delivery.

3) Make revisions to lesson plans based on reviews.

4) Develop schedule infusing diverse cultural-content lesson plans into five-day residential program.

5) Submit schedule to the researcher’s Graduate Committee for review.
6) Make revisions to schedule based on review by the researcher's Graduate Committee.

7) Create and/or purchase necessary materials for seven copies of the completed model curriculum.

Discussion on the first procedure of curriculum development.

Procedure 1) Applying the Banks' "Transformation Approach" to curriculum and, using the goals of environmental education established at the international conference in Tbilisi in 1977, write or adapt lesson plans that teach about the environment from the perspectives of diverse cultures (Simmons, 1998; Engleson & Yockers, 1994).

The content that was identified during the activities discussed under the Methodology of the First Objective and that met the aforementioned Criteria Governing the Inclusion of Multicultural Content was examined for inclusion in the curriculum. Content was selected to present diverse cultural ideas about the environment and about how humans should or do relate to it.

The Banks' "Transformation Approach" to curriculum design, discussed in the second chapter of this study, was followed in developing the curriculum. The "Transformation Approach" involves the presentation of diverse cultural content from the perspectives of diverse cultures in a curriculum. This is to say that diverse cultural ideas were not presented in the context of an "us" studying a "them," but rather as equally valid and valued information from diverse sources.
The internationally recognized goals of environmental education established at the Tbilisi conference in 1977 were consulted in the development of this model curriculum. The Tbilisi goals are important to consult for the development of any environmental education curriculum materials, as they cover a comprehensive range of educational objectives in a sequential manner. The five goals and their recommended grades for emphasis are as follows: 1) Awareness: Grades K-3. 2) Knowledge: Grades 3-9. 3) Attitudes and Values: Grades K-12. 4) Citizen Action Skills: Grades 6-11. 5) Citizen Action Experience: Grades 9-12 (Engleson and Yockers, 1994). These goals seem to be primarily intended for the traditional classroom setting, and therefore it is not realistic to attempt to adequately address all of them within the span of a one-week program. For the development of this model curriculum, effort was made to address the Tbilisi goals as extensively as possible.

Cultural values and teaching methods were included in their original forms and context, where possible. For example, if a particular culture gives thanks to the animals and plants before meals, inclusion of such an activity was also arranged to occur prior to a meal. Otherwise they were adapted into activities with the intent of preserving their essential meanings or values.

In developing both the schedule and individual lesson-plans, consideration was given to how well each activity fit in logistically with other activities and constraints of a residential program. For example, if an activity involved paddling a traditionally crafted canoe on open water, considerations would have included: 1) How much of the day would be required by the activity, 2) Feasibility of the activity regarding availability of a suitable canoe and body of water, and 3) The insurance requirements of the facility and
the school or schools participating in the program. In other words, unique cultural activities were included where possible, but their inclusion was limited and balanced by the need to meet other needs and objectives.

Lesson plans were developed or adapted for use with middle school groups from grades 6-8.

Lesson plans were developed or adapted with individual goals, objectives, procedures, necessary background information, and guidelines for evaluation. Materials needed were specified and provided for the pilot-testing.

The types of lesson-plans that were developed or adapted include:

1) Simulations of cultural activities relating to the environment.

2) Adaptations of existing lesson-plans by infusing cultural content.

3) Lessons presenting a diversity of cultural ideas about a particular aspect or facet of the environment.

4) Lessons that deal with cultural conflicts relating to the environment.

5) Lessons featuring cultural song or story relating to the environment.

Discussion on the second procedure of curriculum development.

Procedure 2) Deliver completed lesson plans to members of the researcher’s Graduate Committee and to an authority on middle-school environmental education for review regarding appropriateness of content and planned delivery.

Following the completion of the lesson plans, they were submitted to members of the researcher’s Graduate Committee and to an authority on middle-school environmental
education curriculum for review regarding accuracy and appropriateness of content. As cultural content was drawn from cultures spanning the globe, it was not practical to attempt to validate each individual contribution from each culture with an authority from that culture to determine accuracy and appropriateness of context or adaptation. Validity rests on the source material, which was drawn from respected sources within the literature and from the researcher’s own personal contacts and experiences with diverse cultures.

Discussion on the third procedure of curriculum development.
Procedure 3) Make revisions to lesson plans based on reviews.

Following review of the lesson plans by the researcher’s Graduate Committee and an authority on middle-school environmental education the lesson plans were revised as necessary and resubmitted to the committee members.

Discussion on the fourth procedure of curriculum development.
Procedure 4) Develop complete schedule of lesson plans for five-day program.

A schedule was developed which infused cultural content lesson-plans throughout each day of the week-long residential environmental education learning experience. The schedule of San Mateo County, California Department of Education’s Outdoor Education program was also used as a template in the development of the schedule for this model curriculum. San Mateo Outdoor Education hosted the pilot-testing of the model curriculum, as discussed later in this chapter. It was therefore useful to develop the
schedule for this curriculum with the available resources and overall program design in mind.

**Discussion on the fifth procedure of curriculum development.**

Procedure 5) Submit schedule of lessons to the researcher’s Graduate Committee for review.

The schedule of lessons was submitted to members of the researcher's Graduate Committee for review regarding advisability and appropriateness of sequence.

**Discussion on the sixth procedure of curriculum development.**

Procedure 6) Make revisions to schedule based on review by the researcher’s Graduate Committee.

Following review of the schedule of lessons by the researcher’s Graduate Committee, the schedule was revised as necessary and resubmitted to the committee members.

**Discussion on the seventh procedure of curriculum development.**

Procedure 7) Create and/or purchase necessary materials for seven copies of the completed model curriculum.
Procedure 7) Create and/or purchase necessary materials for seven copies of the completed model curriculum.

As needed, materials were purchased and/or created for the lesson plans. Seven copies of each lesson plan were made and collected into seven binders so five instructors could simultaneously teach using the model curriculum, with two reserved for academic review and future duplication.

Each set of lesson plans was accompanied by a set of maps that was used to identify the geographic location of each culture from which a lesson plan has been developed.

A copy of the model curriculum has been included with the report for this study as Appendix A.

Restatement of the Third Objective

The third objective of this research was to pilot-test the model curriculum at a residential facility, using interviews, observations, and a pre/post test to collect data on the curriculum’s impacts and effectiveness.

Methodology for the Third Objective

Outline of Methodology

I. Make Arrangements to Pilot-Test the Curriculum:

1) With a residential environmental education facility.

2) With a middle-school group.
II. Develop Pre/Posttest Survey to be Administered to Participating Students.

III. Prepare Field Instructors Participating in Pilot-Testing to Teach Using the Model Curriculum.

IV. Pilot-Test Curriculum.

1) Pretest Administration
2) Selection of Treatment and Control Groups.
3) Selection of Instructors for Treatment Group.
4) Administration of Model Curriculum.
5) Posttest Administration.
6) Interviewing Instructors

Arrangements to Pilot-Test the Curriculum with a Residential Environmental Education Facility

The San Mateo County Outdoor Education (SMOE) program in La Honda, California offered the use of their facilities and instructors for the purpose of a pilot-test of this curriculum. SMOE is a residential environmental education program serving fifth and sixth grade groups in one of the country’s most ethnically diverse counties. The site is in the heart of extensive old-growth redwood forests in close proximity to an estuary and the Pacific Ocean. The program’s directors are committed to high-quality programming in environmental education and are interested in increasing their ability to offer relevant and effective programs to their diverse student populations.

SMOE was solicited as host site for this research for the following reasons:
1) SMOE curriculum has been well established over the course of the program’s thirty-year history. In visits to the SMOE program in 1993, 1994, and 1998, the researcher encountered no discernable differences in curriculum content from his original exposure to the program in 1991. The continuation of curriculum content from year to year is facilitated by SMOE’s approach to training intern naturalist (instructor) staff: Each year’s incoming staff, usually consisting of nine new intern naturalists, is trained by four members of the previous year’s staff. This training is akin to an apprenticeship, and curriculum is passed on almost exclusively in a manner utilizing oral tradition and demonstration.

This stability in curriculum content makes the use of a control group in an experimental design for field-testing possible. One set of instructor groups could receive an experimental treatment, such as the infusion of particular curriculum content, and with reasonable expectation those groups would receive the same core curriculum content as a control group drawn from the same student population.

2) SMOE follows a practice of mixing students from different schools together during weeks when more than one school is participating in SMOE programs. This homogenization makes possible the execution of experimental designs with greater validity than would be possible if different cabin groups were compared that each consisted exclusively of members of different schools.

3) The researcher was familiar with the SMOE program, including its curriculum, organizational structure and facilities, having worked there as an intern instructor in the years 1991 and 1992. This familiarity facilitated the design of lesson plans to be included
in the experimental curriculum, as available program and natural resources for teaching were possible to anticipate.

4) The diversity of biomes available for use at SMOE made possible the pilot-testing of a wide range of experimental lesson plans. Biomes include pond and freshwater wetlands, estuary, climax redwood forests, oak/madrone woodlands, savanna, chaparral, buckeye groves, tidepools, and ocean beaches.

**Arrangements to Pilot-Test the Curriculum with a Middle-School Group**

The Taylor Middle-School agreed to participate in the pilot-test of the model curriculum with a group of their students in grade 6. Taylor Middle-School is located in Millbrae, a densely populated and culturally diverse city located in San Mateo County, California. Taylor Middle-School’s students included speakers of 36 different primary languages, and one half of the school’s students spoke a primary language other than English.

Taylor Middle-School is committed to supporting multicultural practices in education, as well as experiential practices in science education.

**Develop Pre/Posttest Survey**

A survey was developed that asked students questions regarding their retention of the material presented in the model curriculum and their self-assessment of knowledge of diverse cultural ideas about the environment. In addition, questions regarding student attitudes and values towards the environment and diverse cultures were included. In general, the literature does not support an assumption that attitudes about the environment
would be likely to change following a brief treatment such as a week-long experience in residential environmental education. However, because this model curriculum utilized approaches and content uncommon to existing practices in residential environmental education, the researcher tested for the possibility of certain attitude changes.

The survey was designed with questions formulated using a modified Likert-scale, modeled after the scale used by Dunlap and Van Liere in their study on the New Environmental Paradigm (Dunlap and Van Liere, 1978). A copy of the survey has been included with this report as Appendix B.

Prepare Field Instructors Participating in Pilot-Testing to Teach Using the Model Curriculum

An in-service training session was presented on-site for the instructors who taught using the curriculum. This session familiarized the instructors with the curriculum materials. It introduced the concept of cultural sensitivity regarding the content of the curriculum and regarding the teaching of culturally diverse groups of students. It also presented an opportunity for instructors to have questions answered regarding administration of the curriculum.

Pilot-Testing Curriculum

Pretest administration.

Students instructed using the model curriculum were administered a pretest of the survey before beginning the five-day model program. The pretest was also administered to a control group of students from the same school that was not instructed using the
model curriculum. The test was administered to students on-site upon the arrival of the school to the residential environmental education site.

**Selection of treatment and control groups.**

Taylor Middle School teachers assigned students to cabin groups without knowledge of which groups would receive the experimental treatment, which would be acting as a control, and which would not be involved in the testing. An exception was made in instances of newly immigrated students who did not have proficiency in the English language. These students were each paired with another student who spoke both languages to serve translation purposes. Cabin groups were gender-segregated upon arrival.

Out of a total of thirteen cabin groups, five received the experimental treatment, four acted as a control group, and four did not take part in the testing. The group receiving the experimental treatment consisted of three girls' cabins and two boys' cabins with a total population of 67. For this group, pre and posttest items were both answered by numbers of students ranging from 37 to 67, depending on the test item. The group acting as a control consisted of two girls' cabins and two boys' cabins with a total population of 58. For this group, pre and posttest items were both answered by numbers of students ranging from 32 to 56, depending on the test item.

**Selection of instructors for treatment group.**

Instructors for the group that received the experimental treatment were selected at random from the total population of thirteen available instructors by drawing slips of
paper from a hat. Those who drew slips of paper with a mark on it instructed the students with the experimental curriculum.

**Administration of model curriculum.**

The participating school group followed a five-day schedule of activities. The group of students receiving the model curriculum followed the same schedule, but with diverse cultural perspectives infused into their lessons.

As unpredictable variables exist in residential environmental education such as weather, injuries, wildlife encounters, and transportation problems, a certain degree of flexibility must be incorporated into any curriculum planning. For this study, a model curriculum was developed which included a maximum degree of cultural content infusion. Not every one of the lesson plans in the model curriculum was taught by every one of the instructors. The objective was to include as much infusion as possible with materials presented from the perspectives of diverse cultures.

Students in the five cabins of the Treatment Group were combined into five “trail-groups”, each led by a single instructor over the course of the week. Each trail group consisted of members drawn from each of the five cabin groups. Each day before morning lessons with trail groups began, a single lesson was presented to all students in the Treatment Group, led by one or more of the five instructors. Evening lessons were presented to a single group consisting of all students in the Treatment Group, led by two of the instructors.
Treatment Group trail-groups utilized the SMOE site for daytime programs on the first three days and the fifth day. The fourth day included a field-trip to an estuary, tidepools, and ocean beaches.

The researcher endeavored to observe the experimental curriculum as it was administered by all five of the instructors over the course of the week. As instructors often taught the same lessons simultaneously, no individual instructor was observed administering the experimental curriculum in its entirety.

Observations of lessons and their assessments was recorded by the researcher. At times, the researcher participated in the assessment process, asking trail-groups questions following lessons and recording the information. Recorded observations were used to determine the effectiveness and impact of the curriculum, and in making recommendations for improvements, future administration, and future evaluation.

Posttest administration.

At the close of the week-long residential environmental education experience, the students in the Control and Treatment Groups were administered the same survey which they completed at the beginning of the week. They were allowed the same amount of time to complete the posttest as they had for the pretest.

Interviewing instructors.

Instructors administering the model curriculum were interviewed periodically throughout the week-long program, including a final interview at the end of the pilot-test period. Regularly scheduled interviews of all instructors was not possible due to the very
busy and irregular schedules of the instructors. Interviews were therefore done on an "as-available" basis throughout the week.

Interviews focused on gaining feedback on the effectiveness of individual lessons and on the model curriculum as a whole. Effectiveness of lessons were judged on the basis of apparent student interest and engagement with the lessons, instructor comfort-level in teaching the lessons, and other anecdotal observations and statements made by the instructors to the researcher.

Modification of lesson plans by instructors to adjust to needs of particular situations is common in residential environmental education due to unpredictable variables such as weather changes, wildlife encounters, transportation delays, and injuries. The researcher sought to be made aware of any modifications made to or special circumstances affecting administration of the model curriculum's lesson plans.

Restatement of the Fourth Objective

The fourth objective of this research was to analyze the results of the pilot-testing and to make suggestions for the improvement and future evaluation of the model curriculum.

Methodology for the Fourth Objective

Outline of Methodology

I. Analysis of Results.

1) Analysis of Pre/Posttest Results.

2) Discussion on Interviews and Observations.
II. Recommendations.

1) Recommendations for Future Evaluation of the Model Curriculum

Analysis of Pre/Posttest Results

Following the pilot-test, results of the surveys were entered onto a software package spreadsheet (SPSS) for statistical analysis. As the same individuals were asked the same questions before and following the week-long educational program, a paired samples t test was run to compare differences in the mean rankings on the pre and posttest surveys between the Treatment and Control Groups. Results of the pre and posttests were analyzed to determine if any of the questions on the survey have statistically significant differences of the means of pre and posttest rankings. An alpha value of .05 was used to determine statistical significance. The control group and experimental group results were compared, and a determination was made regarding whether or not the third curriculum objective was successfully met.

Results of the pre and posttests have been included with the report for this study as Appendix C.

Discussion on Interviews and Observations

Observations of student-instructor interactions.

Recorded observations of student-instructor interactions were analyzed and discussed. Observations included:

1) Instructor and student interactions during teaching of model curriculum.

2) Entries in journals.
Observations made during the pilot-testing of the model curriculum have been included with the report for this study in Appendix D.

Journal entries.
Entries made by students in their school journals were reviewed at the end of the week. Entries with content considered by the researcher to be relevant to the model curriculum were photocopied and transcribed. Transcribed entries have been included with the report for this study in Appendix D.

Discussion on instructor interviews.
Results of interviews with instructors including suggested improvements to the model curriculum have been analyzed and are discussed later in this paper.

Notes taken by the researcher during the interviews were transcribed and have been included with the report for this study as Appendix E.

Discussion on observations of individual lesson-plans and recommendations for improvements.
Each lesson-plan from the model curriculum has been discussed in light of data collected through interviews and observations. Suggestions for improvements to the lesson-plans have been made where necessary based on the information present in the data.
Recommendations for Future Evaluation of the Model Curriculum

Recommendations for the future evaluation of the curriculum have been made based on results of the pre and posttest surveys, observations made by the researcher during the pilot-testing, and interviews with instructors involved in the administration of the model curriculum.
CHAPTER IV

ANALYSIS OF RESULTS


**SOURCES FOR CULTURAL CONTENT**

Sources for cultural content were located using the resources described in this study's second chapter. Resources used for the development of the model curriculum can be categorized into three types:

1) Cultural stories published in the literature.

2) Ethnographical information published in the literature.

3) Cultural information gained from the researcher's experiences with members of diverse cultures.

**Cultural Stories Published in the Literature**

Several published collections of cultural stories were identified and utilized by the researcher for this study. *Keepers of the Animals, Keepers of Life, Keepers of the Plants,* and *Keepers of the Night* by Michael Caduto and Joseph Bruchac are collections of Native American stories relating to the environment. Each presents stories from individual Native American cultures, with discussion and activities suggested for related environmental education topics.

*Earth Tales* (Caduto, 1997) is a collection of stories relating to the environment from cultures around the world. Stories included are brief and well-disposed to be recounted orally.

*Thai Tales - Folk Tales of Thailand* (Vathanaprida, 1994) is a collection of stories from Thailand including several that discuss relationships between humans and the
environment. They are especially well-suited to adaptation for outdoor education because of their brevity.

Folk Stories of the Hmong (Livo and Cha, 1991) is a collection of stories from the Hmong people of Southeast Asia. This source contains stories explaining origins of relationships between people and animals as well as moral lessons.

Ethnographical Information Published in the Literature

Bali - Further Studies in Life, Thought, and Ritual (Van Baal, 1969) was used as a source for information on Balinisian rituals performed to propitiate nature spirits.

Wilson Wallis' Religion in Primitive Society (Wallis, 1939) was found to be an invaluable source on diverse cultural views and practices relating to the environment. Although this resource is half a century old, it continues to be a useful collection of eclectic ethnographic information.

T.C. McLuhan's The Way of the Earth (McLuhan, 1994) was found to be a treasure of cross-cultural information regarding the environment. This source was particularly useful in its wealth of direct quotes from members of diverse cultures.

David Suzuki and Peter Knudtson's book, Wisdom of the Elders: Honoring Sacred Native Visions of Nature (Suzuki and Knudtson, 1992), was another excellent source of information on diverse cultural beliefs and attitudes towards the environment. This book is arranged in a manner that presents specific cultural beliefs of a single culture towards the environment one at a time, with discussion on each one included.

Gregory Cajete's book, Look to the Mountain: An Ecology of Indigenous Education, (Cajete, 1994) was found to be an invaluable source for information on
indigenous approaches to education. This book focuses on the traditions of indigenous peoples of North America primarily but includes indigenous people from all over the world.


*Brave are My People*, by Frank Waters (Waters, 1993) served as a source for quotes from native North American peoples.

**Cultural Information Gained from the Researcher's Experiences with Members of Diverse Cultures**

The researcher's personal experiences with members of diverse cultures contributed to the information used in developing the model curriculum.

Studying with traditional Zimbabwean Shona music teachers Chris Murewa Berry from Albuquerque, New Mexico and Lora-Lu Chiorah-Dye from Seattle, Washington, the researcher learned several Shona songs relating to the environment. "Ndindinyongwe" is a song about the sacred mountain in Zimbabwe, to which spiritual seekers make pilgrimages to conduct prayers to their ancestors. Another song greets the spirit of the waterfall, and is sometimes used as a preparation for prayer and ritual. A third song is used to coax the sun out during extended rains, to allow people to visit with their friends and families.

The researcher’s experience studying with Dagara shaman Malidoma Patrice

Some of Burkina Faso resulted in acquisition of knowledge regarding the Dagara tribe’s
traditional educational practices. Among these practices, the use of rituals to balance students with various natural elements was shared. The practice of balancing with the mineral element was explained, including the Dagara concept of stones holding knowledge and stories within them.

Analysis of Results of Search for Sources for Cultural Content

Sources examined for cultural content yielded excellent results regarding diverse cultural ideas about the environment. These ideas were found to be readily available in accessible formats that could be adapted for use toward completion of the second objective of this study: The development of a model curriculum infusing cross-cultural perspectives.

DEVELOPMENT OF THE MODEL CURRICULUM

The resources providing information on diverse cultural relationships, described in the previous section, were utilized by the researcher to develop lesson plans for the model curriculum.

Five types of lesson plans were developed or adapted:

1) Simulations of cultural activities relating to the environment.

2) Adaptations of existing lesson plans by infusing cultural content.

3) Lessons presenting a diversity of cultural ideas about a particular aspect or facet of the environment.

4) Lessons that deals with cultural conflicts relating to the environment.

5) Lessons featuring a cultural song or story relating to the environment.
Table 1. Lesson-Plans and Related Tbilisi Goals Addressed

Simulations of cultural activities relating to the environment:

- Balinisian Water Spirit Ritual (1,2,3,4)
- Cultures and the Night (1,2,3)
- Indigenous Learning Hike (1,2,3)
- Indigenous Learning Time (1,2)
- Medicine Plant Meeting (1,2,3)
- Medicine Plant Meeting (1,2,3)
- Medicine Plant Meeting (1,2,3)
- Mineral Balancing (1,2,3,4)
- Ohlone Sunrise Competition (1,2,3,4)
- Sharing Circle with Talking Feather (2,3,4)
- Stone Pass Game (1,3)
- Wild Rice Dinner (1,2,3)

Adaptations of existing lesson plans by infusing cultural content:

- Ethnobotany Professor Hike (1,2,3)
- Nature Names Across Cultures (2)
- Moon and Tides (1,2,3)
- Sacred Mountain Sketching and Poetry (1,2,3)

Lessons presenting a diversity of cultural ideas about a particular aspect or facet of the environment:

- Attitude of Gratitude (1,2,3,4)
- Cultures and Animals, Cultures and Plants (2,3)
- Cultivating Plants (1,2,3)
- Four Elements, Four Directions (1,2,3)
- Imaginary Clan House (2,3)
- Sacred Trees, Sacred Groves (1,2,3,4)
- Values Glasses (2,3)

Lessons that deal with cultural conflicts relating to the environment:

- Bumbas and Alcans (3,4)
- Sarawak Town Meeting (1,2,3,4)

Lessons featuring a cultural song or story relating to the environment:

- Scottish Story – “The Silkies and the Fisherman’s Sons” (2,3)
- Hmong Story – “Why Birds Never Go Hungry” (2,3)
- Mayan Story – “People of Maize” (2,3)
- Shona Sacred Mountain Song (2,3)
- Shona Songs – “Zuza Buda,” “Iso Tauyu Pono,” “Zinyama Redu”
- Shona Waterfall Song (1,2,3)
- Thai Story – “The Elephants and the Bees” (2)
- Thai Story – “The Deer Buddha” (2,3)
- Thai Story – “The Honest Woodcutter” (2,3)
- Thai Story – “The Seven Stars” (2,3)

Numbers in parentheses indicate Tbilisi goals addressed as follows:

- 1=Awareness
- 2=Knowledge
- 3=Values/Attitudes
- 4=Citizen Action Skills
- 5=Citizen Action Participation
Simulations of cultural activities relating to the environment

Balinisian Water Spirit Ritual.

This simulation focuses on the Balinisian rice-farmers’ practice of making offerings to a water-spirit in hopes of gaining a successful crop. The idea of appealing to a metaphysical representative of a natural resource is presented, and students are asked to consider this in contrast to practices in farming with which they are familiar.

Cultures and the Night.

This lesson presents diverse cultural ideas about the night and campfires. It is centered on the sharing of a traditional Dine story about the creation of the Milky Way. This lesson is a simulation in that it presents the story in a context that is similar to how it is likely to be presented traditionally, which is at night. The story presents the meaning of the stars and their origins in the Dine cosmology.

Indigenous Learning Hike.

The Indigenous Learning Hike was developed based on concepts of indigenous learning and teaching about nature as presented by Cajete (1994) and Dugan (1993). Dugan writes about traditional ways of teaching youth about nature among members of the Native American Colville tribe, wherein youth are encouraged to explore nature with all of their senses and learn from their direct experiences. Similarly, Cajete emphasizes a common approach of indigenous instruction wherein the interests of the individual learner guide the learning process.
In this lesson-plan, an indigenous method of teaching youths about nature is simulated. Students are encouraged to explore on their own, using all of their senses, with distractions from their classmates minimized by physical separation.

In an actual situation of indigenous experiential education, it is likely that there would be few restrictions on the amount of time that a student would have to explore. However, in order to accommodate time limitations inherent to residential environmental education school schedules, the simulation in this lesson plan is of limited length. It is hoped that the students’ experience with this cultural form of education can suffice as a model by which to compare other cultural approaches to education about the environment.

**Indigenous Learning Time.**

The Indigenous Learning Time lesson was developed along the same lines as the hike described above. The difference is in the context, as this lesson takes place in the intertidal zone. Students are encouraged to simply observe the interactions of life in a tidepool. They are encouraged to find a place away from other students, where they can observe without being distracted.

**Medicine Plant Meeting.**

In this simulation, students are introduced to the practice of engaging in two-way communications with plants to gain information on medicinal qualities. The objective is not to have the students actually gain information on the medicinal qualities of the plants, but to understand that this method of research is considered valid in some cultures.
Mineral Balancing.

This lesson introduces students to diverse cultural concepts about the power of inanimate parts of the environment. This power goes beyond the aesthetic beauty commonly recognized in modern western cultures, including characteristics such as the ability to transmit traditional information, balance personalities, and heal. This lesson simulates a rite-of-passage ritual that boys of the Dagara culture in Burkina-Faso traditionally experience. It was taught to the researcher by Burkina-Faso shaman Malidoma Patrice-Some, a resident of Oakland, California, in August of 1998.

Sharing Circle with Talking Feather.

This lesson-plan was created based on the researcher’s personal experience in a sharing circle of Wisconsin’s Ojibwe tribal members. At that time, a stick with feathers attached to it was passed around. It was said that holding the stick gave each person recognition to talk and be listened to, and that the feathers would carry the words onto the wind where they could be shared.

In this simulation, a stick with feathers attached is used in a circle of students for sharing what they learned and experienced in a previous activity. This method can be contrasted with other common methods of sharing in educational settings, which include taking turns by raising hands and jumping into a conversation spontaneously, which often interrupts the person speaking.

Ohlone Sunrise Competition.

The Ohlone Sunrise Competition is a simulation of a practice of the Native American Ohlone tribe as described by members of the Spanish Portola Expedition in 1769 (Margolin, 1978). Ohlone people were found to actively participate in the daily
rising of the sun, encouraging the sun to come up with shouts, prayers and gestures. The Ohlone have historically held the belief that their encouragement was necessary to ensure the sun’s return each day.

In this simulation, students try to bring up the sun with their own words and gestures. Although there is no reason to speculate that the Ohlone would have had any competitive attitudes relating to this ritual, a competitive context has been created for this lesson-plan to make it more interesting to middle-school students. This follows the models of common residential environmental education approaches to increasing student interest in cleaning cabins and being quiet at night.

**Stone Pass Game.**

This game is a simulation of one practiced by the Native American Ohlone tribe (Margolin, 1978). It was used as a means to teach young people to pay attention to the small details of the world around them. This lesson teaches students experientially about a cultural approach to environmental education that is itself experiential.

**Wild Rice Dinner.**

This lesson presents the concept that certain foods, and their gathering and preparation, are considered special or sacred in some cultures. Students experience the consumption of such a food, and learn about the beliefs and history around it. Wild rice was selected for this lesson because of the ease of acquiring, transporting, and preparing it, as well as the accessibility and richness of its cultural meanings. An additional benefit of using wild rice for this lesson is that it relates to environmental issues and issues of cultural identity and ownership. This makes the context of the beliefs or values about the food broader, with greater opportunities for discussion and synthesis.
Adaptations of Existing Lesson-plans by Infusing Cultural Content

Ethnobotany Professor Hike.

The format of a "professor-hike" is that each student takes up a position along a trail and explains something to other students as an authority or "professor" for that topic. In this lesson, students share information on the traditional uses of local plants by indigenous cultures. In this process, students learn to differentiate one plant from another by visual and cultural characteristics. Simultaneously, students learn about diverse cultures and their relationships with the plants in their environments.

Moon and Tides.

This is a lesson plan developed by the researcher while working as an environmental education instructor with Olympic Park Institute in Port Angeles, WA in 1995. A story from the Native American Tsimshian tribe describing how the character Raven created tides has been included at the beginning of the lesson. After hearing the Tsimshian story, students are presented with the modern western scientific explanation, and asked to compare the two. The story has been taken from the book Keepers of The Earth (Caduto and Bruchac, 1988).

Nature Names Across Cultures.

Nature names are often taken on by students in residential environmental education programs. They help them to identify with some aspect of the environment, and provide a mnemonic device to aid others in learning and remembering the student's name. The establishing of nature names is a process shared through oral tradition and demonstration in the field of residential environmental education. A written lesson-plan or single source for this activity has therefore not been found or used by the researcher.
This lesson is adapted from the nature names activity first encountered by the researcher in working with the San Mateo County Outdoor Education program in La Honda, CA in 1991.

In this lesson, students are introduced to the diversity of common names across cultures referring to something in the environment. In learning this, it is hoped that students gain a greater appreciation for the cross-cultural relationships between names and the environment. Names for this activity were found in the book *What Will We Call The Baby?* (Tutalo, 1996).

**Sacred Mountain Sketching and Poetry.**

Sketching and Poem composition are common practices outdoors, including in the context of environmental education. In this lesson, students share and discuss quotes from diverse cultures about sacred mountains. After viewing cross-cultural images of sacred mountains and hearing a poem about a sacred mountain, students are asked to consider if there is anything they might find sacred about a mountain, and to express this artistically. This gives students an opportunity to synthesize the diverse cultural concepts they have learned, and to express their own beliefs as well.

**Lessons that Deal with Cultural Conflicts Relating to the Environment**

**Bumbas and Alcans.**

This lesson is an adaptation of the one in Thom Henley’s book *Rediscovery*. It is a simulation of a conflict between two cultures attempting to engage in trade together. The switching of roles at the end of this lesson allows students to see cultures and their beliefs from inside and outside. The discussion provides students with an opportunity to apply
what they have learned to other situations of cultural conflict in their lives. The experience of role-playing cultural conflict situations may help students to empathize with people who hold different beliefs.

**Sarawak Town Meeting.**

The “Town Meeting” is a type of simulation that is commonly used in residential environmental education programs in which students take on the roles of diverse interest groups relating to an environmental issue. This may involve the building of a road, a dam, a shopping mall, or a similar development topic that exemplifies the conflicts that may arise within a community.

In Sarawak Town Meeting, the “Town Meeting” has been adapted to a cross-cultural context, where different cultures with different world-views argue about the development of tropical forested areas. The benefit of using this context for a town meeting simulation is that it is possible to include all “normal” conflicts in a development issue plus issues of cultural conflict, international development issues, and tropical forest biology and conservation issues. In this lesson-plan, interest groups as diverse as the Dayak people, Holiday Inns, World Bank, Malaysian Timber Council, and the Rainforest Action Network present their positions on development of the forests. World-views are expressed implicitly through the statements and positions of representatives of each group.
Lessons Presenting a Diversity of Cultural Ideas About a Particular Aspect or Facet of the Environment

Attitude of Gratitude.

This collection of activities is based on a theme common to many cultures in their relationships to the environment. The practice of actively expressing gratitude to plants, animals, or landscapes is so common to cultures around the world that it is actually somewhat conspicuous where it is absent.

This lesson introduces students to diverse cultural values and practices regarding nature appreciation. It is a dynamic collection of story, simulation, discussion, and reflection around a single theme. The objective of presenting a wide diversity of cultural approaches to this theme is to help students understand its breadth and depth among peoples of the world.

Cultivating Plants.

In this lesson, students learn about diverse cultural beliefs relating to the cultivation of plants for food. Actual practices are simulated in a teaching-garden setting.

Cultures and Animals, Cultures and Plants.

This lesson presents diverse cultural concepts about the relationships between humans and wild plants and animals. A "card-hike" format is used, in which students walk down a trail one at a time and read cards that have been placed along the way.

Four Elements, Four Directions.

This lesson presents diverse cultural concepts of fundamental elements and cardinal directions. By learning that different cultures recognize different elements and
directions in nature, students may gain a greater appreciation for the diversity of viewpoints and values held by humans towards nature.

**Imaginary Clan House.**

This lesson introduces students to the concept of world-views, and the diversity of world-views relating to the environment. It includes a discussion of some of the prominent contemporary world-views towards the environment in the United States and world-views of diverse cultures.

This lesson-plan was developed with the intention of helping students to understand cultural values and beliefs from a broad perspective and to understand differences between them.

**Sacred Trees, Sacred Groves.**

Diverse cultural values towards trees and groves are presented in this lesson. Students share quotes from diverse cultures about special trees and groves and discuss the idea of giving special value to certain trees or groves. They then create their own ways of recognizing hypothetical sacred trees or groves.

**Values Glasses.**

This lesson emphasizes the role of individual or group experiences in forming values. It presents the idea that people see through the filters of their own eyes, and that these filters differ for different people with different experiences (Bauer, 1995). Small-group discussions provide students with an opportunity to share their own thoughts on how a person’s cultural beliefs might be interpreted differently by different people.
Lessons Featuring Cultural Song or Story Relating to the Environment

Hmong Story – “Why Birds Never Go Hungry”.

This story presents Hmong ideas about beneficent creatures in the environment. Hmong values of compassion and gratitude are expressed through animal characters. The concept of animals as guides or helpers is introduced to students, and students are asked to compare the ideas of the Hmong with those of their own cultures. This story was taken from the book Folk Stories of the Hmong (Livo and Cha, 1991).

Mayan Story – “People of Maize”.

This story explains the relationship between the Mayan people and maize (corn), one of their primary foods. It presents maize as a sacred food with special meanings and origins. It is taken from the book Keepers of Life, a book on Native American stories about plants. (Caduto and Bruchac, 1994).

Scottish Story – “The Silkies and the Fisherman’s Sons”.

This story presents a Celtic idea that wildlife and their needs must be respected. This is conveyed in the context of competition for resources between humans and animals. It includes a description of animals taking the form of humans to communicate, a common concept across many cultures. The story is taken from the book Earth Tales (Caduto, 1997).

Shona Sacred Mountain Song.

The cultural concept of a sacred mountain is introduced here. Students learn that in some cultures, certain mountains hold special significance and are recognized in song. This is a traditional Shona song from Zimbabwe, sung about making a pilgrimage to their sacred mountain, which is infused with spiritual power. It was taught to the researcher by

**Shona Songs – “Zuza Buda,” “Isu Tauyu Pano,” “Zinyama Redu”**.

This lesson teaches students about a common African practice of singing songs in informal groups. These songs are often on environmental themes such as animals or the weather. In this lesson, songs from the Shona tribe in Zimbabwe are sung. These songs were taught to the researcher in 1995 and 1998 by Lora Lue Chiorah-Dye, a resident of Seattle from Zimbabwe.

**Shona Waterfall Song.**

This lesson introduces students to the concept that some cultures view particular features of the environment as being sacred, and recognize this with song. Students are encouraged to reflect on any natural features that they consider special or that are considered special by their culture. This provides students with the opportunity to contemplate why a culture might consider a particular place sacred, and what the meaning and implications of that might be. The song was taught to the researcher by Zimbabwean music teacher Chris Murewa Berry of Albuquerque, New Mexico in July of 1998.

**Thai Story – “The Deer Buddha”**.

This story presents the Thai concept of animals having spirits and making ethical decisions just as humans do. The story involves population sizes of hunted deer, and is used as a lead-in activity for a lesson on deer and predator population dynamics. It is taken from the book *Thai Tales - Folk Tales of Thailand*, a collection of stories from Thailand (Vathanaprida, 1994).
Thai Story – “The Elephants and the Bees”.  

This story presents Thai values about helping others in the face of an environmental catastrophe. It uses animal characters to portray human values and characteristics. It is taken from the book Thai Tales - Folk Tales of Thailand, a collection of stories from Thailand (Vathanaprida, 1994).

Thai Story – “The Honest Woodcutter”.  

This story presents a Thai (and greater Asian) belief that trees have spirits, and that their spirits can help people. It is taken from the book Thai Tales - Folk Tales of Thailand, a collection of stories from Thailand (Vathanaprida, 1994).

Thai Story – “The Seven Stars”.  

This story presents the Thai (and greater Asian) beliefs that it is important to be considerate towards animals, and it is important to sacrifice oneself for the good of others. It is taken from the book Thai Tales - Folk Tales of Thailand, (Vathanaprida, 1994).

PILOT-TESTING OF MODEL CURRICULUM

Results of Pre and Posttests  

Data from the pre and posttests were entered onto a statistical software package spreadsheet (SPSS) and a paired samples t test was calculated.
Treatment Group Results

Results of the paired-samples $t$ test for the Treatment Group revealed statistically significant changes between the pretest and posttest surveys on five of the eighteen items (Table 2.) The statistical output figures used to calculate significance are included in this study as Appendix F.
Table 2. Statistical Data for Treatment Group Pre and Posttests.
* denotes statistically significant result based on alpha of .05

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest Mean</th>
<th>Posttest Mean</th>
<th>t value</th>
<th>Level of Signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.28</td>
<td>0.73</td>
<td>-2.586</td>
<td>.012*</td>
</tr>
<tr>
<td>2</td>
<td>1.82</td>
<td>2.49</td>
<td>-3.466</td>
<td>.001*</td>
</tr>
<tr>
<td>3</td>
<td>2.98</td>
<td>2.27</td>
<td>3.588</td>
<td>.001*</td>
</tr>
<tr>
<td>4</td>
<td>2.21</td>
<td>2.48</td>
<td>-1.443</td>
<td>.156</td>
</tr>
<tr>
<td>5</td>
<td>3.11</td>
<td>2.38</td>
<td>4.224</td>
<td>.000*</td>
</tr>
<tr>
<td>6</td>
<td>2.07</td>
<td>1.95</td>
<td>0.819</td>
<td>.417</td>
</tr>
<tr>
<td>7</td>
<td>1.96</td>
<td>1.89</td>
<td>0.408</td>
<td>.685</td>
</tr>
<tr>
<td>8</td>
<td>2.32</td>
<td>2.17</td>
<td>0.910</td>
<td>.368</td>
</tr>
<tr>
<td>9</td>
<td>2.61</td>
<td>2.93</td>
<td>-1.679</td>
<td>.100</td>
</tr>
<tr>
<td>10</td>
<td>2.69</td>
<td>2.11</td>
<td>2.822</td>
<td>.007*</td>
</tr>
<tr>
<td>11</td>
<td>1.85</td>
<td>1.72</td>
<td>0.868</td>
<td>.391</td>
</tr>
<tr>
<td>12</td>
<td>2.17</td>
<td>1.83</td>
<td>1.673</td>
<td>.103</td>
</tr>
<tr>
<td>13</td>
<td>3.08</td>
<td>3.22</td>
<td>-.797</td>
<td>.431</td>
</tr>
<tr>
<td>14</td>
<td>1.95</td>
<td>1.97</td>
<td>-0.136</td>
<td>.893</td>
</tr>
<tr>
<td>15</td>
<td>1.97</td>
<td>1.86</td>
<td>0.644</td>
<td>.524</td>
</tr>
<tr>
<td>16</td>
<td>1.94</td>
<td>2.17</td>
<td>-1.244</td>
<td>.222</td>
</tr>
<tr>
<td>17</td>
<td>1.57</td>
<td>1.78</td>
<td>-1.276</td>
<td>.210</td>
</tr>
<tr>
<td>18</td>
<td>1.97</td>
<td>2.00</td>
<td>-0.138</td>
<td>.891</td>
</tr>
</tbody>
</table>
The first item showing a statistically significant change, item one, expresses the mean number of identifications made of diverse cultural beliefs about the environment. Students were asked to list as many cultural beliefs about the environment as they could. An example of a cultural belief listed is “Thai – They believe that trees have spirits.”

For the other items showing a statistically significant change, items 2, 3, 5, and 10, changes in the mean of agreement ranking are expressed. Rankings are on a modified Likert scale, where 1 represents “Totally Agree,” 2 represents “Agree Somewhat,” 3 represents “Disagree Somewhat,” and 4 represents “Totally Disagree.”

All of the items indicating statistically significant changes in the Treatment population pertain to knowledge of diverse cultures and their ideas about the environment. The first item is a direct measurement of this change, while the other four items represent self-assessments of what has been learned about cultures and their ideas about the environment. Questions associated with each item are included with a copy of the survey in Appendix B.

**Control Group Results**

Results of the paired-samples t test for the Control Group revealed no statistically significant changes between the pretest and posttest surveys (Table 3.) The statistical output figures used to calculate significance are included in this study as Appendix F.
Table 3. Statistical Data for Control Group Pre and Posttests.

* denotes statistically significant result based on alpha of .05

<table>
<thead>
<tr>
<th>Item</th>
<th>Pretest Mean</th>
<th>Posttest Mean</th>
<th>t value</th>
<th>Level of Signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.20</td>
<td>0.20</td>
<td>0.000</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>1.96</td>
<td>2.20</td>
<td>-1.731</td>
<td>.090</td>
</tr>
<tr>
<td>3</td>
<td>2.67</td>
<td>2.63</td>
<td>0.244</td>
<td>.808</td>
</tr>
<tr>
<td>4</td>
<td>2.25</td>
<td>2.32</td>
<td>-0.426</td>
<td>.672</td>
</tr>
<tr>
<td>5</td>
<td>2.38</td>
<td>2.28</td>
<td>0.616</td>
<td>.541</td>
</tr>
<tr>
<td>6</td>
<td>2.13</td>
<td>2.07</td>
<td>0.507</td>
<td>.615</td>
</tr>
<tr>
<td>7</td>
<td>1.73</td>
<td>1.67</td>
<td>0.489</td>
<td>.627</td>
</tr>
<tr>
<td>8</td>
<td>1.77</td>
<td>1.84</td>
<td>-0.489</td>
<td>.628</td>
</tr>
<tr>
<td>9</td>
<td>2.93</td>
<td>2.98</td>
<td>-0.286</td>
<td>.777</td>
</tr>
<tr>
<td>10</td>
<td>2.20</td>
<td>2.09</td>
<td>0.696</td>
<td>.490</td>
</tr>
<tr>
<td>11</td>
<td>1.74</td>
<td>1.82</td>
<td>-0.464</td>
<td>.645</td>
</tr>
<tr>
<td>12</td>
<td>1.97</td>
<td>1.94</td>
<td>0.215</td>
<td>.831</td>
</tr>
<tr>
<td>13</td>
<td>2.86</td>
<td>2.94</td>
<td>-0.463</td>
<td>.646</td>
</tr>
<tr>
<td>14</td>
<td>2.21</td>
<td>1.91</td>
<td>1.665</td>
<td>.106</td>
</tr>
<tr>
<td>15</td>
<td>1.76</td>
<td>1.82</td>
<td>-0.387</td>
<td>.701</td>
</tr>
<tr>
<td>16</td>
<td>1.97</td>
<td>2.06</td>
<td>-0.770</td>
<td>.447</td>
</tr>
<tr>
<td>17</td>
<td>2.00</td>
<td>2.15</td>
<td>-0.895</td>
<td>.377</td>
</tr>
<tr>
<td>18</td>
<td>1.94</td>
<td>1.94</td>
<td>-0.000</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Appendix B: Pre and Post-Test Survey

Please answer these questions with the answer that most closely describes your opinion:

1). When it comes to beliefs and values about the environment, I would identify my own culture as being ______________. (For example, North American, Asian, African, Indigenous, Ukranian, or any other country, area, or group of people. You may enter more than one ethnic group or geographic area).

2). I don't know very much about how different cultures think about the environment.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

3). I know a good deal about how different cultures think about the environment.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

4). I understand very little about cultures that are different than my own.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

5). I understand a good deal about cultures that are different than my own.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

6). I think that cultures that are different than my own could learn a lot from my culture about taking care of the environment.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

7). I think that my culture could learn a lot from cultures that are different than my own about taking care of the environment.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

8). I am interested in learning more about cultures that are different than my own.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

9). I feel like I don't need to learn more about cultures that are different than my own.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>
10). I have personally learned some valuable ideas about understanding the environment from cultures that are different than mine.

```
1  2  3  4
```

11). I think that all plants and animals, even ones like poison oak and mosquitoes and wasps, should be respected and treated with kindness.

```
1  2  3  4
```

12). I think that the ways that people think about and act toward the environment in my culture are generally good, and will allow plants, animals, and the environment to be well cared for into the future.

```
1  2  3  4
```

13). I think that it is acceptable for humans to use plants, animals, and the environment however they please.

```
1  2  3  4
```

14). I think that plants and animals have feelings and that they can communicate those with people.

```
1  2  3  4
```

15). I like spending time outdoors in natural environments.

```
1  2  3  4
```

16). I am interested in learning about ecology and the environment.

```
1  2  3  4
```

17). I enjoy spending time with my classmates, and I feel that I get along well with most of them.

```
1  2  3  4
```

18). I feel that I am able to understand environmental issues and that I can help to solve some of them.

```
1  2  3  4
```
Appendix B: Pre and Post-Test Survey

For any cultural groups whose environmental values or beliefs you know about, please write their name and say if your own values or beliefs about the environment are more similar or more different to theirs.

Example:

Cultural Group: Mayan

My values or beliefs are similar/different. How are they different or similar? I believe that people are made out of corn.

Names of Cultural Groups

Aborigine (Australia); Dagara (Burkina Faso, Africa); Shona (Zimbabwe, Africa); Mohawk (New York and Quebec, Canada); Dine (Navajo) (southwestern U.S.); Ojibwe (Great Lakes, U.S.); Makah (Washington, U.S.); Ohlone (Coastal California, U.S.); Lakota, Dakota (North Central U.S.); Kikuyu (Kenya, Africa); Chewong (Malaysia); Eskimo, Inuit (Alaska, Canada); Okanagan (Washington, U.S.); Jews (Israel); Moors (Israel, Lebanon); Zen Buddhist (Japan); Ibo (Nigeria, Africa);

Cultural Group: ______________________

My values or beliefs are similar/different. How are they different or similar? ______________________

Ekoi (Nigeria, Africa); Senegalese (Senegal, Africa); Masai (Kenya, Africa); Jibaro and Canella (eastern Ecuador); Turks (Turkey); Maori (New Zealand); Penan (Sarawak, Malaysia/Borneo); Dayak (Sarawak, Malaysia/Borneo); Thai (Thailand, Asia); Hmong (Laos, Asia); Balinisan (Bali, Asia); Shinto (Japan); Mayan (Mexico, Guatemala, Belize); Kogi (Columbia, S. America); Quichua, Quechua (Peru); Aymara (Peru); Greeks (Greece); Hindu (India); Buddhist (India, Tibet, Thailand); Celts (Ireland, Scotland, and Wales); Moroccans (Morocco); Chinese (China); Italians (ancient) (Italy); Arabs (ancient) (Arabia); Nez Perce (Washington, Idaho, U.S.);

Cultural Group: ______________________

My values or beliefs are similar/different. How are they different or similar? ______________________

______________________________
ANALYSIS OF PRE AND POSTTEST RESULTS

Statistically significant changes occurred for five of the eighteen items on the survey administered to Treatment-group students from pre to posttest. No statistically significant changes occurred in the Control-group. The five items will now be discussed and the results analyzed.

Data Analysis of the First Survey Item Showing a Statistically Significant Change

The first survey item showing a statistically significant change between the pretest and posttest was one which asked students to identify as many diverse cultures and their beliefs or values towards the environment as they could. As such, the item directly measured student knowledge of diverse cultural ideas about the environment. The mean number of identifications on the pretest was 0.28, while the mean number for the posttest was 0.73. While this change of 0.45 mean identifications is statistically significant, it does not represent a dramatic increase in student knowledge of diverse cultures and their beliefs about the environment. This most likely reflects the overall level of language arts skills among students participating in the pilot-test. Many students expressed difficulty and/or frustration with understanding the survey administered to them. Many students in the treatment group seemed to be familiar with and comfortable with verbally expressing information on diverse cultures and their environmental beliefs, yet they did not express this familiarity as extensively in writing. For example, during the posttest administration of the survey, one instructor made the following remark to the researcher: “I can’t believe that (student’s name held confidential) didn’t write down any cultures or their beliefs! He knows a bunch of them. He was just talking about several of them this morning!”
Factors that may have affected the students' extent of written expression include the large representation of students with a primary language other than English (50%, according to the school principal); The age of participants; and the size, style, and language level of the survey. Although the model curriculum was reviewed and accepted by an authority in the area of middle-school science and environmental education, the language arts limitations of the experimental population were not anticipated.

It can be inferred that with this particular experimental population, a better method of assessing knowledge gained on cultural beliefs could have been utilized. In particular, focus groups or some other form of exit interviews would likely have revealed knowledge gained to a greater extent. These techniques were not utilized for this study due to the large sample size of students participating in the pilot-test and the short amount of time available for the testing.

**Data Analysis of the Second and Third Survey Items Showing a Statistically Significant Change**

The second and third survey items showing a statistically significant change between the pretest and posttest were survey questions 2 and 3, which both measured the students' self-assessment of their knowledge of diverse cultural ideas about the environment. For Item Two, students were asked to rank their agreement with the statement "I don't know very much about how different cultures think about the environment." Rankings were on a modified Likert scale, where 1 represents “Totally Agree,” 2 represents “Agree Somewhat,” 3 represents “Disagree Somewhat,” and 4 represents “Totally Disagree.”
The pretest mean for this item was 1.82, whereas the posttest mean was 2.49. This change of 0.67 in the mean ranking represents a shift toward greater disagreement with the statement among students. Students in the treatment group are indicating here that they feel they know more about diverse cultures' environmental beliefs after their experience with the model curriculum than before.

Item Three addressed the same question, this time stated in a positive way: "I know a good deal about how different cultures think about the environment." For this item, the pretest mean was 2.98 and the posttest mean was 2.27. This difference of 0.71 represents a shift toward greater agreement with the statement among students. As was the case for Item Two, the change in the mean ranking for Item Three indicates that students feel they know more about diverse cultures' environmental beliefs after their experience with the model curriculum as compared to before.

**Data Analysis of the Fourth Survey Item Showing a Statistically Significant Change**

The fourth survey item showing a statistically significant change between the pretest and posttest was survey question 5, which asked students to rank their agreement with the statement "I understand a good deal about cultures that are different than my own." The mean pretest ranking for the treatment group was 3.11, while the mean posttest ranking was 2.38. The change in the mean ranking of 0.73 indicates a shift toward greater agreement with the statement. It can be concluded that students in the treatment group felt they understood more about diverse cultures following their experience with the model curriculum than before their experience with it.
Data Analysis of the Fifth Survey Item Showing a Statistically Significant Change

The fifth survey item showing a statistically significant change between the pretest and posttest was survey question 10, which asked students to rank their agreement with the statement "I have personally learned some valuable ideas about understanding the environment from cultures that are different than mine." The pretest mean ranking of the treatment group was 2.69, while the posttest ranking was 2.11. This difference in the mean of 0.58 indicates a shift toward greater agreement with the statement. Students are expressing that, after their experience with the model curriculum, they feel they have learned more valuable ideas about understanding the environment from diverse cultures than before their experience with the model curriculum.

Analysis of Survey Items Showing no Statistically Significant Change

The absence of a statistically significant change in student rankings for survey question 4 stands as a possible anomaly in the results of this study. Question 4 asked students to rank their agreement with the statement “I understand very little about cultures that are different than my own.” As this question is the direct opposite of survey question 5, which showed a statistically significant change in student agreement rankings as discussed above, it indicates an inconsistency in student responses. It may be that students are indicating that, while they know some things about diverse cultures, there is still a great deal more that they don’t know about. The fact that the posttest mean ranking of 2.48 was very close to the center point of the scale (2.5) may also indicate some ambivalence or confusion on the part of the students regarding this question.
The absence of statistically significant changes in student rankings for the remaining items on the survey is not surprising, as there is little in the literature to support the idea that student attitudes are likely to change from any short-term treatment. These items were included to investigate whether the inclusion of cross-cultural materials about values towards the environment would cause a change in attitudes to be seen. Changing student attitudes was not a purpose of this research, but because cross-cultural approaches are uncommon and do not appear to have been measured or tested in environmental education research before, the researcher deemed it worthwhile to explore this area.

**DISCUSSION ON INTERVIEWS AND OBSERVATIONS**

Observations of student-instructor interactions will be discussed first, followed by a discussion on journal entries, a discussion on instructor interviews, and finally a discussion and analysis based on overall feedback relating to each individual lesson-plan, including suggestions for improvements.

For this discussion and analysis of observations, instructors participating in the pilot-testing will be referred to by their "nature names." Nature names are described earlier in this chapter (page 53) under the lesson-heading "Nature Names Across Cultures." The instructors' nature names were “The Husk,” “Jessica Jellyfish,” “Rachel Raven,” “Juniper,” “Cove,” and “Kohlrabi.”
Observations of Student-Instructor Interactions

Observations of student-instructor interactions during the pilot-testing of the model curriculum were recorded by the researcher in a spiral-bound notebook. Observational data could not include 100% of student-instructor interactions during the pilot-testing, as only one of the five instructors administering the model curriculum to the treatment group could be followed and observed by the researcher at any given time. Observations recorded primarily include direct questions and answers extended by instructors, students, and the researcher. Observations of other indications of student interest and impact, such as visible enthusiasm, attentiveness, and restlessness were also noted by the researcher.

Overall, students were observed to be polite, attentive, respectful, and focused during the pilot-testing of the model curriculum. This suggests that the model curriculum was well-designed to meet the needs, developmental levels and academic abilities of the students. Students often encountered some difficulty with lesson materials involving reading but endeavored to read, understand, and interpret the materials nonetheless. Much of the difficulty can most likely be attributed to the fact that students were primarily reading direct quotes about the environment from members of diverse cultures. The lessons contained direct quotes to minimize cultural distortions that can result from interpretation. These quotes often touched upon spiritual beliefs and other abstract concepts regarding ideas of relationship with the natural world that may have been difficult for students with the language arts abilities of this experimental population to comprehend.
Students exhibited enthusiasm to take active roles in lessons such as volunteering to read quotes and participate in other ways. Students were also enthusiastic to offer answers to questions posed by the researcher or instructors, except in cases where they did not understand the question.

Data collected on observations of student and instructor interactions are included with this study as Appendix D.

**Discussion on Journal Entries**

Some references to lesson-plans with cultural content were included in student journals. The journals used were those designed by San Mateo Outdoor Education for their students, and therefore focused on the “normal” curriculum of that program.

Journals from only two of the five cabin-groups in the Treatment Group could be examined for entries relating to the model curriculum. This was due to a short window of opportunity to examine them that had to be shared with instructors, whose responsibility it was to look through the journals and write comments on them. Instructors received the journals on Thursday night and needed to return them on Friday morning, leaving scant time to review them. Although it was requested of all five instructors to allow the researcher ten to twenty minutes to look at their student’s journals, only two instructors made them available.

References to lesson-plans with cultural content most often occurred in the parts of the journal where students were asked to describe their day. Other pages of the journal were primarily devoted to games and questions specific to the ecological components of the normal S.M.O.E. curriculum.
Students who completed the “daily journal” pages of the journal wrote about what they did and what they enjoyed during each of their days at outdoor education. Entries were typically one or two sentences long, so when a student made mention of something, it can be inferred that it was a highlight of the day for him or her. Some examples of journal entries are as follows: “Today we helped grow in the garden and learned a fascinating tradition of the people of Bali;” “I liked the beach day the most because we didn’t have to hike much and you got to explore new stuff. I liked looking at seals, burrying (sic) people, and watching the crabs and hermit crabs do stuff.”

The lessons specifically mentioned in the student journals reviewed include the “Mineral Balancing” lesson, the “Balanisian Water Ritual” lesson, the “Indigenous Learning Time” lesson, and the “Ohlone Sunrise Competition.” It is noteworthy that no other specific lessons outside of the model curriculum were mentioned or described, although students did mention enjoying “games” in general and several activities such as viewing the seals and visiting the garden. All references to lesson-plans from the model curriculum were positive or neutral.

Data collected on journal entries are included with this study as Appendix D.

**Discussion on Instructor Interviews**

Interviews with instructors occurred on an “as available” basis. Instructors were often exhausted or needed to move on directly to other responsibilities following the end of their teaching time. Some instructors made themselves more available than others, and their feedback is therefore proportionately represented. One of the instructors asked to give his feedback in written form at the end of the week, to which the researcher agreed.
Unfortunately the feedback from that instructor was not forthcoming, nor was it made available in response to numerous requests following the pilot-testing of the model curriculum.

For each interview, instructors were asked to verbally describe their experience with the model curriculum and its individual lesson-plans. Feedback relating directly to individual lesson-plans will be discussed in the following section in conjunction with other observational data. Comments on the model curriculum as a whole will be discussed here.

An examination of the data from the interviews conducted with instructors reveals ten common themes on which instructors focused (Table 4). A perusal of table three reveals that instructors identified aspects of the model curriculum that they feel need improvement twice as frequently (16:8) as they identified aspects that are fine as they currently exist. However, the identified needs for improvement are almost entirely in the area of curriculum application as opposed to curriculum content. Eight out of eleven comments regarding overall curriculum content were very positive, and the remaining three focus on a dislike of the use of quote cards, which represent just one facet of the lessons with which they are used.

Feedback obtained from the interviews is included with this study as Appendix E.
<table>
<thead>
<tr>
<th>Instructor</th>
<th>R. Raven</th>
<th>J. Jellyfish</th>
<th>The Husk</th>
<th>Cove</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme or Issue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of Stories</td>
<td>Fine As Is*</td>
<td>Fine As Is*</td>
<td>Fine As Is*</td>
<td>Fine As Is*</td>
</tr>
<tr>
<td>Use of Songs</td>
<td></td>
<td>Fine As Is</td>
<td></td>
<td>Fine As Is</td>
</tr>
<tr>
<td>Use of Quote Cards</td>
<td>Improve</td>
<td>Improve</td>
<td>Improve</td>
<td></td>
</tr>
<tr>
<td>Flexibility in Curriculum Sched.</td>
<td>Improve</td>
<td>Improve</td>
<td></td>
<td>Improve</td>
</tr>
<tr>
<td>Number of Cultures Studied</td>
<td>Improve</td>
<td>Improve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Kinetic Activity</td>
<td>Improve</td>
<td>Improve</td>
<td>Improve</td>
<td>Improve</td>
</tr>
<tr>
<td>Academic Level of Lessons</td>
<td>Improve</td>
<td>Improve</td>
<td>Improve</td>
<td></td>
</tr>
<tr>
<td>Pre and Post Test Survey</td>
<td>Improve</td>
<td>Improve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appreciation Activities</td>
<td></td>
<td></td>
<td>Fine As Is</td>
<td>Fine As Is</td>
</tr>
<tr>
<td>In-Service (Staff Training)</td>
<td></td>
<td></td>
<td>Improve</td>
<td></td>
</tr>
</tbody>
</table>

Table 4. Instructor Identification of Opportunities for Improvement

*These opinions are taken from the final interviews with instructors and are somewhat inconsistent with some of the statements made during interviews earlier in the week.
These data suggest that the content of the curriculum was well received by the instructors, while its organization and application could be improved. The individual topics addressed by comments from the instructor interviews will now be discussed.

**Use of Quote Cards**

“The Husk” suggested that quote cards would be good to use for one activity such as “Imaginary Clan House,” but not more. As it was, he said that both he and the kids were “getting sick of using them.” “Rachel Raven” commented that she didn’t think the cards worked well. “Jessica Jellyfish” felt that the cards didn’t work well, except with the lesson “Sacred Trees, Sacred Groves.” None of the instructors identified the cards as being a consistently positive aspect of every lesson in which they were used. However, the cards were identified as a positive aspect of lessons on several individual occasions. One example is the one cited by “Jessica Jellyfish” above. Another example is identified by “Rachel Raven’s” statement regarding the “Imaginary Clan House” lesson, that “All of the students wanted to read the cultural world-view quote cards.” In addition, “The Husk’s” assertion that all of his students were reading all of the cards he placed on the trail for the “Cultures and Animals, Cultures and Plants” lesson suggests that the students must have found the quotes to be interesting. If they found them to be irrelevant or too difficult to understand, it is probable that students would not have persisted with reading each one.

It is evident from the preceding comments that instructors, and probably also students, would have enjoyed the model curriculum more if there were fewer lessons using quote cards. This may be due in part to the decision to utilize quotes directly from
their sources as reported in the literature instead of modifying or summarizing them for young readers. Another factor in their lack of popularity may be related to the appearance of the cards used for the pilot-testing. Simple photocopied text on paper was used, whereas the use of large, thick cardboard-backed cards with large print and colorful backgrounds may have made the cards more interesting to both students and instructors.

The quote cards are an important facet of the model cross-cultural curriculum, as they convey the ideas of diverse cultures about the environment. Other ways that this could be accomplished include the use of audio-visual aids, the incorporation of individuals from diverse cultures to represent their own beliefs, and the presentation of information verbally by the instructor. As the first two options may be logistically and/or financially prohibitive for many residential environmental education programs, the third option remains as the most viable alternative. One drawback of this approach is that it requires a fair amount of talking on the part of the instructor and a fair amount of listening on the part of the students.

**Suggested Improvements:** Using quote cards provides an opportunity for students to be more actively involved in the learning process and helps them to practice the skills of reading and public speaking. With this in mind, and with due consideration given to the aforementioned data, it is suggested that the quote cards continue to be used with the model curriculum’s lesson plans, albeit in a modified manner. The quotes could either be more carefully selected in terms of language arts level or existing quotes could be paraphrased to more closely fit the language arts needs of the students. To this latter suggestion must be added a note of caution that paraphrasing or translating the ideas of a person from a different culture than one’s own can be very tricky. Therefore it would be
best to validate any modified, simplified, or summarized statements by allowing a member of the quote’s originating culture to examine it.

Where resources are available, it would certainly be advantageous to incorporate members of diverse cultures themselves, or their likenesses recorded on audiovisual media, into the presentation of the lessons.

Use of Stories

“Rachel Raven” remarked that she didn’t expect that students would enjoy hearing so many stories, and that in the future she would use them more extensively in her teaching. “The Husk” claimed that the students “really liked all the stories.” “Cove” said that she liked the stories and the kids loved the stories. According to “Jessica Jellyfish” the stories worked, except for those with religious content.

These statements are somewhat inconsistent with other comments made by instructors during interviews conducted over the course of the week. It is likely that three of the stories in the curriculum were not told by any of the instructors. Stories that were most likely not used include the Hmong Story, “Why Birds Never Go Hungry,” The Scottish Story, “The Silkses,” “and the Mayan story, “The People of Maize.” It may be noted that all of these stories were scheduled as a part of the “Beach Day” and there may have been a greater aversion to teaching organized lessons on that day. This is evidenced by the fact that other lessons besides the stories were skipped by most or all of the instructors on that day. Possible reasons for this are discussed in the analysis of the lesson “Hmong Story - ‘Why Birds Never go Hungry”’ in the “Discussion of Observations of Individual Lesson-plans” section below. The Thai Story, “The Deer Buddha,” was
apparently told by only one instructor, “The Husk,” who liked the story but felt that it was poorly placed with its accompanying lesson on deer population dynamics. “The Elephant and the Bees” may not have been told by three of the instructors as no mention was made of it.

There were four stories about which only positive comments were made, including “The Woman Who Lives in the Earth” from the “Attitude of Gratitude” lesson, “First People Make the Stars” from the “Cultures and the Night” lesson, “Raven Makes the Tides” from the “Moon and the Tides” lesson, and “The Elephant and the Bees.” The first three stories were specifically commented upon in a positive manner, while the fourth was commented on as a part of a broader statement about all of the stories that one of the instructors, “Jessica Jellyfish,” used. This indicates that the stories were effective as presented.

The data suggest that the use of stories in general was very well received by both the instructors and the students. This pedagogical method, used by many cultures to teach young people about the environment, seems to be well-suited and effective for teaching students of all ethnic backgrounds. It can be surmised that the relationships between people and their environments have some universal characteristics that transcend cultures and site-specific species. For example, the importance of expressing gratitude towards nature in the story “The Woman Who Lives in the Earth” can apparently be understood even by students who have no experience in the environment or with the culture from which the story originates. It would be presumptuous to assert that those without this experiential connection to the land and culture of the story would have the same experience or understanding as someone who did have that connection. However, some
elements of the story, some themes and concepts, can evidently be conveyed successfully across cultures.

Several stories in the model curriculum were not consistently well received by all students and instructors. The Thai stories about the honest woodcutter, the “Deer Buddha,” and the “Seven Stars” worked well for some students and instructors, but not for others. "The Husk" said that he did not tell the "Seven Stars" story because he didn't like it. "Juniper" said that it was difficult to tell during lunch. “Jessica Jellyfish” asserted that students were uncomfortable with these stories. There is some question as to how many students were truly uncomfortable with the stories, and whether they may have been merely confused by subtle conceptual differences within the stories. The questions of a small number of students may have validated a deeper discomfort with the stories on the part of the instructor. Either way, it is evident that these stories touch upon a level of critical thinking and comprehension that was beyond the grasp of some of the students, and therefore they can be considered to have been ineffective.

There were several stories that instructors identified as being inconsistent with the needs of the teaching situation. The first was the “Deer Buddha,” which was considered by “The Husk” to be incompatible with the needs of the deer population dynamics lesson. As discussed above, this story would fit into the category of potentially confusing stories and therefore could be considered ineffective as a component of the model curriculum. The second was the “People of Maize,” which “Jessica Jellyfish” considered “too mellow” to be told in the marsh environment. This story could possibly work if presented in a different place on the schedule, perhaps before the group leaves the residential site for the marsh, or the evening prior to a trip to the coast. A third story identified as
incompatible as scheduled was "The Silkies," which "Cove" claimed "wasn't the right energy, the kids wouldn't be focused with the seals there." If this story were told on the bus prior to students disembarking, it may have worked well.

**Suggested Improvements:** Removal of stories with complex and subtle spiritual content would make the model curriculum more accessible to all students. Stories fitting into this category include “The Honest Woodcutter,” “The Deer Buddha,” and “The Seven Stars.” It is recommended that the story “People of Maize” be moved to a different place in the week’s schedule, preferably prior to the students’ trip to the coast.

**Flexibility in Curriculum Schedule**

Three instructors, “Rachel Raven,” “Cove,” and “Jessica Jellyfish,” mentioned that they would like to have greater flexibility in the scheduling of lesson-plans. They spoke to a desire to be able to choose individual lesson plans and fit them in a day’s plans as they deemed appropriate.

This suggests a misunderstanding between the researcher and instructors regarding the purpose and structure of the model curriculum. Instructors were asked to teach as many lessons with cultural content as possible, and were given a schedule to roughly guide them in a way that made this possible. It was considered advantageous by the researcher to have all instructors follow the same general schedule, as this would increase the chance that data on every lesson plan could be gathered. It was not the intent of the researcher to suggest that the same order of lessons taught during the pilot-testing should be taught again in the future. On the contrary, it is assumed that instructors would select individual lesson-plans and fit them logically into their day plans in the future.
Number of Cultures Studied

Two instructors, “Rachel Raven” and “Jessica Jellyfish,” suggested that the model curriculum would be more effective if it were limited to three or four different cultures. Ideas of individual cultures could then be more thoroughly explored and developed.

This approach was considered by the researcher, but the idea of determining selection criteria for inclusion of a culture seemed excessively arbitrary and limiting. Presentation of the great variety of human cultures was opted for instead, with the hope that students would see some of the similarities as well as differences between them.

Suggested Improvements: Following the pilot-testing of the model curriculum, it is evident that simplification would be a good idea when working with groups of students similar to the one tested. It seems likely that the curriculum in its present form would be more effective with a group of students older than the sixth grade, as many diverse cultures and ideas are included. For use of this curriculum with sixth-graders, it may be advantageous to modify the lesson plans so the cultures discussed are narrowed to only a handful. This could help students to develop a broad perspective on those cultures and their beliefs towards the environment.

Level of Kinetic Activity

Four of the instructors interviewed made the suggestion that the curriculum should include more kinetic activities. “Rachel Raven” specifically suggested more crafts or skills. “Jessica Jellyfish” suggested that lessons should be adapted more to the outdoors and interacting with the environment.
“The Husk” commented that there was too much talk about cultures and how they do things.

The model curriculum currently includes seventeen lesson plans that are physically active and interactive, while sixteen are passive, based solely on reading and discussion. Regarding the suggestion by “Jessica Jellyfish,” nineteen of the lessons do not directly focus on the immediate environment, while fourteen do. Eight of the lessons are focused on or include a segment with discussion of diverse cultures and their ways.

Every effort was made to make the lessons as active and interactive as possible. This was not always a simple matter, as much of the material included in the curriculum is the recorded ideas of members of diverse cultures. When learning about something in the immediate environment it is simple and straightforward to do so in a physical and interactive manner, as the material can be felt, directly observed, and experienced through time and space. Conversely, when teaching materials based on abstract concepts, it is challenging to include a physical component. These must usually be secondary activities, which is to say the activity is a vehicle for the teaching and learning of other material and not the material itself.

**Suggested Improvements:** Some of the lessons in the model curriculum are more active than others. It would be best for instructors to select activities from the curriculum according to their needs and the energy-level of their group. Outdoor residential environmental education programs typically include some lessons that are taught indoors, especially when weather is very cold or wet. The more reflective or abstract lessons besides the stories may be most appropriate for such indoor learning times and also with students older than the sixth grade.
Pre and Post Test Survey

Two of the instructors, “Rachel Raven” and “Jessica Jellyfish,” commented that the pre and posttest survey was designed for people beyond the average comprehension level of the students involved in the pilot-testing. Multiple choice and open-ended questions were suggested.

It is difficult to determine how well students understood the survey, although it is clear that it was not easy for all of them to comprehend. Most of the students were able to answer a large part of the survey. However, it is likely that more and possibly better data could have been collected through means such as those suggested.

Multiple choice questions were not used by the researcher because their ability to remind students of the correct answer was seen as undesirable. An effort was made to determine what information students held regarding diverse cultural views on the environment following the pilot-testing without such reminders. Another factor in the decision not to use multiple choice questions was the desire to avoid cheating, which could have caused a misrepresentation in the data. It is relatively simple to copy answers to multiple choice tests from a neighboring student, so this option was rejected.

Open-ended questions would have been an excellent approach to assessing what information had impacted students following the pilot-testing. However, these questions would have been largely irrelevant for the pretest segment of the survey. For this reason, and because of time limits for the length of the pre and posttesting periods, this approach was not selected.

**Suggested Improvements:** These will be discussed in the section called “Recommendations for Future Evaluation of Curriculum.”
**Academic Level of Lessons**

Two instructors, "Cove" and "Jessica Jellyfish," felt that the language and/or concepts presented in lessons were often beyond the students developmentally and academically. "Jessica Jellyfish" suggested that the lessons be designed in a manner by which instructors could select materials catered to diverse language and critical thinking skill levels to use for specific populations of students.

"The Husk" had some doubts about the academic level of concepts presented in the "Imaginary Clan House" lesson. He was unsure that students were able to understand the concepts presented.

The academic level of the model curriculum was developed based on recommendations made by an authority in the area of middle-school science and environmental education in Boulder, Colorado and on the researcher’s years of work with middle-school students at a private residential environmental education institute in western Washington State. There are two primary reasons why the academic level of the model curriculum may have been higher than that of the students involved in the pilot-testing.

The first reason is that students involved in the pilot-testing represented a demographic population with significant differences from populations in Boulder, Colorado and western Washington. The students participating in the pilot-testing were to a large extent recent immigrants to the United States, over half of whom spoke a language other than English as their primary language at home. While this does not necessarily mean that these students were at a lower level academically than their counterparts in
western Washington or Boulder, Colorado, it is likely that the language barriers played a role in their abilities to read and express themselves in writing.

The second reason is that these students were members of the sixth grade, the earliest level of the middle-school and a time when students are undergoing rapid development intellectually. It is very possible that the model curriculum would be better suited to the older middle-school students in the seventh or eighth grades.

**Suggested Improvements:** The effectiveness of the lesson-plans in the model curriculum would likely be greater if materials were included that could be adapted for use with the language and critical thinking skill levels of specific populations. This is especially relevant regarding the lessons that include a reading component for students, such as the lessons with quote cards. Ideally, quotes would be selected that match the level of the students. For populations with greater language arts difficulties, quotes could also be explained or paraphrased to facilitate comprehension.

Additionally, instructors could select only those lessons that are considered to be appropriate for the academic level of a group that is being taught.

**Appreciation Activities**

Two instructors, “Cove” and “The Husk,” expressed a liking for the appreciation activities. Both mentioned that they particularly valued the fact that these activities taught simultaneously about different subjects, including diverse cultures, the importance of showing gratitude, and observation skills.

It is possible that these activities were also singled out because they help to represent a personal agenda common to instructors in residential environmental education.
programs: The desire to teach students to appreciate the natural world more. The lessons focusing on appreciation were the only ones that carried an implicit value-lesson about how people should interact with the environment. Many other lessons presented information about how diverse cultures value the environment in different ways and for different reasons. The appreciation-focused lessons were the only ones that modeled a general positive value-orientation towards the environment.

Use of Songs

"Cove" and "Jessica Jellyfish" mentioned that they liked the songs. It was recommended that instructors be taught the songs more thoroughly, and that a single song be taught and used each day. It should be noted here that the researcher asked instructors during the in-service training if they felt comfortable with the songs and all of them replied in the affirmative. The instructors were then encouraged to ask for help with the songs if they forgot them or had any trouble with them.

Suggested Improvements: Teaching instructors songs more thoroughly would necessarily require instructor participation in the process, including practice.

The suggestion to have a song for each day seems like an excellent idea. As presented, the model curriculum included the singing of songs on two of the four teaching days. Singing on each day would have added a greater sense of stability and continuity to the experience.
In-Service (Staff Training)

“Jessica Jellyfish” suggested more modeling of activities during the instructor inservice training, and clear communication of the researcher’s expectations from the students. She also called for greater guidance regarding the management of student group energy flow between activities, more structure and planning for the training, and more training in cultural information.

As no funding was available to pay the instructors for their time during the inservice training, the researcher sought to make it casual, comfortable, and informal. To this end, snacks and beverages were provided, and instructors were encouraged to ask any questions they had as the model curriculum’s schedule for the week was presented and discussed. The suggestions to model activities and train instructors in group energy-flow management and cultural knowledge are excellent, assuming that instructors would be willing to volunteer a longer period of their free time for this training. Alternatively, funding could be secured in the future to compensate instructors for such a training.

Suggested Improvements: The greatest improvements to a staff in-service training session prior to teaching with the model curriculum would be made through the securing of funds to compensate instructors for their time. With that taken care of, a proper training could be presented in a professional manner over the course of a half day or full day. Such a training could include several important components that would serve to enhance the level of preparedness of instructors and therefore the quality of instruction of the model curriculum. One such component could be to have instructors take turns teaching lessons from the curriculum to their peers and receive feedback from the researcher and from each other. This activity could include practice segueing from one
activity to the next. Another could be to facilitate a group-study process where information on cultures would be provided and instructors could each present what they have learned about one culture to the rest of the group. A third component of training could involve role-playing, where an instructor takes on the identity of a member of a cultural group and experiences what it is like for their “instructor” to make comments that exclude, stereotype, belittle, or ignore that person’s culture.

These approaches to an in-service training could substantially improve an instructor’s sense of confidence and preparedness in the teaching of the model curriculum. An instructor would therewith be better disposed to integrating the new material into his or her own style and other teaching content.

Other Feedback on the Model Curriculum from Instructor Interviews

Additional suggestions for improvements were offered by three of the instructors. “Rachel Raven” suggested that the researcher should have arrived a week earlier to familiarize himself with instructor schedules and ways of doing things. She also suggested that the researcher should have provided all of the teaching supplies in advance to help the instructors feel more organized and “solid” with teaching the model curriculum.

“The Husk” mentioned that some of the activities didn’t have a good hook to get the kids’ interest.

“Jessica Jellyfish” expressed concern that “If kids don’t believe in the spiritual part, they don’t have anywhere to go with the lesson.” She also felt that the focus on spiritual aspects of cultural relationships to the environment sometimes became too
cerebral and took attention away from the environment. Finally, she recommended more smaller-group discussions.

Regarding the suggestions made by “Rachel Raven,” it is unclear what advantage was implied by the suggestion that the researcher should have arrived a week earlier to familiarize himself with instructor schedules and ways of doing things. Arriving a week before the pilot-testing would not have permitted sufficient time for the researcher to have revised the schedule of lesson-plans in the model curriculum, if that is what was being implied. As mentioned earlier, the San Mateo Outdoor Education program remains virtually unchanged from the time when the researcher worked there himself, and therefore there was not a great deal that could have been gained from an earlier arrival in terms of getting to know instructors' ways of doing things.

This statement may in fact be an indirect way of communicating that the instructor, “Rachel Raven,” was uncomfortable with trying to teach the lessons of the model curriculum as scheduled. This is posited in absence of other logical reasoning provided to explain the suggestion.

Regarding the suggestion that the researcher should have provided all of the teaching supplies in advance to help the instructors feel more organized and “solid” with teaching the model curriculum, it is a good suggestion and a point well-taken. The scheduling of the pilot-testing needed to happen months in advance, before the lesson-plans and materials for the model curriculum were completed. Providing supplies for some of the lessons "at the last minute" would have preferably been avoided if at all possible.
Regarding "The Husk's" suggestion that some of the activities lacked an introductory hook to gain greater student interest, this is also a point well-taken. Any time that a lesson can be presented with an enticing or exciting introduction it is reasonable to assume that students will be more interested and possibly engaged in the learning process. No attempt was made to provide such a hook for every one of the lessons in the model curriculum. Development of such hooks would certainly improve the quality and effectiveness of the curriculum.

Regarding the suggestions by "Jessica Jellyfish," the recommendation for more smaller-group discussions is supported. Discussion and interaction between students in a lesson teaches students skills beyond the specific subject of the lesson, including verbal advocacy of beliefs, cooperation, and the ability to compare thoughts and rationales. Such discussion is also often enjoyed by students, as it includes a social component.

The researcher disagrees with "Jessica Jellyfish's" assertion that students must share the beliefs modeled in a lesson plan in order to benefit from the lesson. By learning about diverse cultural ideas and approaches to the environment, it is possible that students can develop the intellectual capacity to recognize and think more critically about their own assumptions and ideas.

The comment that lessons focusing on spiritual aspects of cultural relationships to the environment were too cerebral is well-taken. This is an indication that the material in the model curriculum was not always well-aligned with the developmental levels and needs of the students. That the abstract or reflective nature of the lessons would take students' interest away from the environment is unfortunate and contrary to the researcher's intentions. It is understandable that instructors would have difficulties with
lessons that were not properly designed or selected for the specific group of students being taught.

It is clear, however, that quite a few students were not put-off by these lessons and often enjoyed them. Comments recorded in journals and reported by instructors often expressed great enthusiasm for such lessons on the part of students. One example is this student comment, recorded in a journal, about the "Ohlone Sunrise Competition" lesson: "We all got dressed and went to the rising of the sun. It was like a rain dance but, (sic) we were bringing up the sun...It was so fun." Another example is this student comment, recorded in a journal, about the "Balinisian Water Ritual" lesson: "Today we...learned a fascinating tradition of the people of Bali." A third example is this student comment, recorded in a journal, about the "Mineral Balancing" lesson: "Pebble beach (sic) was really fun too, I helped berry (sic) someone."

Instructors also frequently reported that students enjoyed and understood lessons teaching about cultures' spiritual relationships with the environment. For example, following Tuesday's hike, "The Husk" said, "The sunrise thing was fun. All day long kids were saying, 'See the sun? We got that up!'" Following Tuesday's hike, "Juniper" said, "The kids came up with reasons to thank trees. They were really into it. One Philippino-American student said he thanked plants all the time. The kids understood that different cultures have different values and what a value-set is. They liked the millet/medicine bags." Also following Tuesday's hike, "Jessica Jellyfish" herself said about the "Attitude of Gratitude" lesson, "It worked really great. All of the students in my cabin threw their millet on the cabin leaders. Their statements of gratitude were really great. They found a lot to be grateful for."
The data suggest that students often understood diverse cultural spiritual concepts relating to the environment, including ritual interaction with the environment, symbolic expressions of gratitude, and ideas about communicating with nature. In addition these data make clear that students not only understood these concepts but also enjoyed modeling them.

Since only one of the five instructors made any mention about students being unable to relate to or understand diverse cultures' spiritual concepts relating to the environment, the question must be asked if it might have been the instructor herself who was uncomfortable with the material. This would explain why the same instructor expressed discomfort with stories in the model curriculum concerning Thai Buddhist beliefs. Another possibility is that "Jessica Jellyfish's" group of students had a disproportionately high number of individuals who were very sensitive about encountering spiritual beliefs different than their own. As there are no data to unequivocally substantiate either of these hypotheses, it will remain unexplained.

Discussion on Observations of Individual Lesson-plans and Suggestions for Improvements

Lesson: "Attitude of Gratitude"

This lesson involved several different activities centered on cultural ideas of expressing gratitude towards nature. The instructor observed ("Cove") skipped the first part of the lesson, which focused on the concept of gratitude and the importance of
expressing gratitude. Students subsequently had trouble understanding the meanings of quotes expressing gratitude. The telling of the story “The Woman Who Lives in the Earth” was an effective way to focus students’ attention on the concept, and several students volunteered that they really enjoyed it. Students referred back to the story several times during the remainder of the day, and at the end of the day’s lessons some of the students were able to correctly identify the origin of the story. Instructor “Jessica Jellyfish” mentioned that the story “worked,” and “The Husk” said that he really liked it.

Following the telling of the story, “Cove” introduced the Balinisian practice of offering rice to the environment to show gratitude. Two students expressed that they did not feel comfortable simulating this cultural practice because of their Christian beliefs. Six students simultaneously went to a nearby eight-foot diameter stump of a redwood tree with burn scars and offered their rice to it. One student expressed an understanding of reciprocity, saying that she offered the rice to a tree in thanks for the oxygen it provided her. “The Husk” expressed appreciation for this part of the lesson because it integrated experience and skills in observation with the values focus on gratitude. When asked later in the day to provide an example of how a culture shows gratitude, one of “The Husk’s” students mentioned offering rice.

The following part of the lesson was the “appreciation hike.” The lesson-plan suggested that instructors ask students to take turns leading the group until something was found that the leader thought deserved recognition. Students would then show appreciation as a group to the leader. “Cove” skipped this segment of the lesson, opting instead to lead the group herself and stop occasionally to appreciate something along the way. She asked that students give thanks to animals and plants as they walked along.
Following this segment, “Cove” asked if students saw things differently when they walked along giving thanks to things. Most students responded “yes” simultaneously, and none said “no”. When asked why they saw things differently, one student mentioned that they had seen a great deal of banana slugs and attributed that good fortune to the fact that they were showing gratitude to nature. During a review at the end of the day’s lessons, the Balinisian practice of offering rice and the Shona practice of offering millet were remembered.

“The Husk” thought that this lesson was good, but too long as a single block of activities. He mentioned that his students liked the appreciation hike, which he combined with the simulation of the Balinisian practice of giving offerings to nature. He also suggested that the lesson involved “too much talk about cultures and how they do things.” “Cove” expressed appreciation for the lesson because it integrated cultural content with other outdoor experiential teaching objectives. “Juniper” said “they were really into it,” and that one Filipino-American student mentioned that he thanked plants all the time. His students liked the millet pouches and used them with respect: “The kids came up with reasons to thank trees…They had good things to say in making their offerings…they gave thanks to the person who was giving thanks.” “Jessica Jellyfish” mentioned that the lesson had “a lot of potential” and “worked really great” with the exception of the quote cards. She also mentioned that student statements of gratitude “were really great” and covered many aspects of the environment. Students were given pouches of millet and told that they could offer millet to show gratitude during their stay. “Jessica Jellyfish’s” students threw all of their millet on their cabin leaders to show them appreciation. This suggests that while students clearly understood the concept of showing appreciation, they
may have been more comfortable expressing their own cultural norm of appreciating other people than the norm in some cultures to show appreciation for nature. "Jessica Jellyfish" mentioned that some of the students were having problems with the millet spilling out of their pouches or the strings breaking.

According to "Cove," the program assistant and substitute instructor "Kohlrabi" told her that the students from the treatment group thanked him when he handed out apples at the end of each day’s lessons. Presumably, other students did not express gratitude as commonly.

Five students expressed gratitude towards nature in general, or specific aspects of nature, in their journals.

Overall, the observational data gathered during the pilot-testing of this lesson-plan suggest that students are able to understand the cultural concept of showing gratitude towards nature, and they are predominately enthusiastic about the practice. Students and instructors enjoyed the story “The Woman Who Lives in the Earth,” and the concepts conveyed in the story were understood.

**Suggested Improvements:** Based on comments made by the instructors during the pilot-testing of this lesson-plan, improvements could be made in the following areas. Quote cards introducing diverse cultural ideas about expressing gratitude towards nature could be replaced by a discussion facilitated by the instructor. Visual aids such as pictures might augment the discussion. Stronger cordage for tying the millet pouches would prevent disappointment and mess. Hemp or leather cord would most likely be superior to the synthetic material used for the pilot-testing. Additionally, the lesson-plan could be broken up into separate parts that could then be experienced over a longer period. This
might improve integration of the basic concepts such as showing gratitude into the students' overall outdoor experiences.

**Lesson: "Balinisan Water Spirit Ritual"**

Students were attentive and appeared interested in this activity. Every student was interested in receiving a treat-filled balloon, and some were visibly excited to pop their balloons and see what treats were inside. Students were able to identify the culture and the meaning of the ritual during a review at the end of the activity.

"Cove" found the ritual simulation to be fun, while "Rachel Raven" and "Jessica Jellyfish" felt that it required hiking too far to get to the pond for just one activity.

One student wrote in her journal regarding this activity, saying, "Today we...learned a fascinating tradition of the people of Bali."

"Rachel Raven" mentioned that one of her students, an Asian-American, claimed that his family did a similar ritual, but that it was done always in the fall when rice is planted. This comment confirms that the simulated activity is a true and current practice among at least a couple of cultures of Southeast Asia. The fact that a person familiar with the practice could recognize it as presented in the lesson suggests that the lesson-plan is well-designed to accurately portray the practice and its associated cultural beliefs.

**Lesson: "Bumbas and Alcans"**

This activity worked well for "Cove's" group and she liked the fact that it was a kinesthetic activity. One student gave an example of how the ideas in the lesson could apply to a situation in real life, saying that similar conflicts might arise when a person encounters someone who speaks sign language. "The Husk" said that the activity went well. "Rachel Raven" said that her group did the activity as groups from outer space.
"Juniper" said that the activity didn't go as well as he would have liked because students didn't follow the instructions, but that they had a good discussion on how to resolve cultural conflicts. “Jessica Jellyfish” said that the activity “worked great,” but that there was some “cultural stereotyping” afterwards such as the comment, “I liked being Indians.” The student’s assumption here, that the “Alcans” represented Indians in this activity, was in fact accurate and may not have represented stereotyping at all.

This feedback indicates that the lesson was useful and worked well as designed. Although “Jessica Jellyfish” presented her encounter with stereotyping as a negative experience, it can be seen as an excellent opportunity to apply the concepts introduced in the activity to real situations and issues. A discussion of stereotyping and problems with stereotypes would be a natural and potentially fruitful outcome of this activity. It is likely that the difficulty that “Juniper” had with his group not following instructions was due to a variable not directly related to the design of the lesson-plan, as other instructors did not have similar experiences. “Juniper’s” experience underscores the importance of emphasizing that the rules need to be accurately followed for this activity.

Lesson: "Cultivating Plants"

“Rachel Raven” apparently skipped this lesson (see description under the following activity, “Cultures and Animals, Cultures and Plants”). She mentioned that after doing some planting with the students she asked them how they might give thanks to the plants in the garden. Students suggested the Lakota practice of touching the Earth, a practice described in one of the cards used in an earlier lesson.

“The Husk” said that he also chose to not use the cards for this lesson. He discussed agriculture but not, evidently, from cross-cultural perspectives. He suggested
that it would be better to first introduce agriculture and its history, followed by a segment focusing on individual cultures.

Lesson: "Cultures and Animals, Cultures and Plants"

"Rachel Raven" didn't use the cards describing diverse cultural relationships between people, plants and animals for this lesson. She felt that in general the cards weren't working well with the lesson-plans of the preceding two days. She also expressed that she liked her usual routine with the garden lessons and thought that the students would enjoy her approach more than that of the model curriculum's lesson-plan.

"The Husk" said that he used six of the cards for the self-guided "card-hike" segment of the lesson, wherein the instructor walks ahead down a trail and sets cards on the trail periodically for students to read as they follow one at a time. He said that it took a very long time, as all students were reading every card.

Lesson: "Cultures and the Night"

The first section of this lesson-plan was not presented by the instructors, who opted instead for teaching their regular night-hike curriculum. It was explained that the night-hike, and in particular the "alone-walk," is a very important part of the outdoor education experience at SMOE. It was felt that teaching the curriculum for this activity could not work logistically and still allow for an "alone-walk."

The storytelling component of this lesson was presented by the researcher at a group campfire amphitheater. Students listened attentively. "Rachel Raven" said, "I liked the campfire after Night-hike."
Lesson: "Ethnobotany Professor Hike"

The instructors interviewed did not teach this lesson. "The Husk" mentioned that he "did some ethnobotany with the kids in front."

For a discussion of possible reasons instructors did not teach this lesson, please see the analysis written regarding the lesson: "Hmong Story – 'Why Birds Never Go Hungry"

Lesson: "Four Elements, Four Directions"

"Kohlrabi" (substituting for "Jessica Jellyfish") said that students were "really attentive and into it." He suggested that students might find representations of each element in the environment to increase their participation. "The Husk" said "I liked it....I liked the quotes with that one." He did not follow the presentation exactly as prescribed in the lesson-plan because he had not read it beforehand, but he discussed how some cultures associate basic elements with personality types. "Rachel Raven" said that her group read the Lakota quote and discussed it. Her comment during the interview that the Chinese have five elements suggests that she did not read or follow the lesson-plan closely, as that information was a part of the lesson to be presented.

Suggested Improvements: "Kohlrabi's" suggestion to make the lesson more interactive by having students find a representation of elements in nature is an excellent one.

Lesson: "Hmong Story – 'Why Birds Never Go Hungry'"

The instructors interviewed did not teach this lesson. "The Husk" mentioned that the primary reason that he didn't do it was because there was not enough time. According
to "The Husk" this was partially due to the fact that he was indulging himself in his own interest of bird-watching. "Cove" said that she didn't teach it because there was not enough time. "Jessica Jellyfish" said that there was no time and that the story was too mellow for the marsh. She preferred to spend her time observing the birds there.

The fact that instructors opted to skip this lesson may be due to any of several reasons. First of all, instructors may not have had the energy and enthusiasm to study lesson plans and prepare for the lessons on this last teaching day of the week, whereas they had abundant energy and enthusiasm at the beginning of the week.

Secondly, instructors may have felt resistance to structuring their time on the coast with planned lessons. It is common at San Mateo Outdoor Education for instructors to approach the day at the coast loosely as far as lesson-planning is concerned because the visits to the marsh and the beaches can themselves be adequately stimulating. Variables such as frequent wildlife sightings can supercede the focus of a planned lesson, making it pedagogically easier to approach the area with minimal structure.

A third possible factor influencing instructors decisions to skip lessons on the day at the coast may be due to the ambient noise of the wind, waves, and highway traffic. These sources of noise could limit the opportunities and ability of instructors to focus student attention. None of the instructors mentioned these factors in relationship to their decision to skip this lesson, but the researcher's familiarity with the S.M.O.E. program suggests that these factors could have had potential significance. This may be the grounds on which "Jessica Jellyfish's" comment was based, that the story "Why Birds Never go Hungry" was "too mellow".
A possibility exists that some instructors may have made excuses about the reasons for skipping lessons in order to avoid an uncomfortable discussion with the researcher about beliefs that the lesson was not well-suited for the students at this occasion. The comments of “Jessica Jellyfish” would suggest this possibility, as she first talked about there not being enough time and then stated that she did not think the lesson was appropriate for the situation.

Regarding another story-based lesson scheduled for the same day, “Scottish Story – ‘The Silkies,’” “Cove” stated that it wasn’t appropriate for the situation. This comment and the previous one by "Jessica Jellyfish" may suggest that instructors became more critical of lessons from the model curriculum as the week went on. This possibility is also reflected in “Rachel Raven’s” comments about the “Mineral Balancing” lesson.

**Suggested Improvements:** This story would most likely work better as a preparation activity for the student’s visit to the coast. The visit itself is stimulating and engages the students’ attention completely, making other activities and especially quiet or reflective activities somewhat difficult and out of place.

**Lesson: "Imaginary Clan House"**

Some students expressed an ability to understand and interpret the philosophies of members of diverse cultures towards nature. Most students either did not understand or did not choose to express their understanding of the written ideas of diverse cultures towards the environment. Students were enthusiastic to volunteer to read quote cards, but few wished to attempt interpretation. An exception was in the case of “Rachel Raven’s” group, which seemed to have no problems with it. One instructor (“The Husk”) expressed a dislike for this lesson. “Cove” described her experience with the lesson by saying, “we
read a few quotes.” The fact that few students offered interpretations of the quotes may be due to difficulties with language arts (as suggested by “The Husk” in his final interview), difficulties with the conceptual content of the quote cards, or a simple lack of interest on the part of students towards that material.

**Suggested Improvements:** This activity might work better using simpler concepts, or using simplified descriptions of diverse cultural views. This is necessarily a balancing act between accuracy and efficacy, as the possibility for misunderstanding is always present when someone from one culture interprets the words of a person from a different culture. Another approach would be to incorporate multimedia technologies such as recordings or videotape segments showing members of diverse cultures speaking about their views. This could improve student interest, assuming that lack of interest was a significant factor preventing greater student engagement with the material.

This activity may be better suited to students older than those in the sixth grade. A significant improvement in the functioning of this lesson-plan may be achieved simply by applying it to older students.

**Lesson: "Indigenous Learning Hike"**

This activity appears to have been successful in simulating a common indigenous mode of learning. Following the hike, students expressed a clear sense of well-being, stimulated curiosity, and fascination with the natural world. This affirms the idea that members of diverse cultures can benefit from the ideas or methods of cultures that are unlike their own in many respects.

One instructor (“The Husk”) expressed a strong liking for this activity. One student, on the other hand, mentioned that she didn’t enjoy learning alone, and that she
preferred to learn together with others. This may be an expression of dissonance with a new experience that is outside of the norms of the student’s educational culture.

“Rachel Raven” asked students about the manner in which they normally learned and they answered “Books,” “Library,” and “Teachers.” One student mentioned that she learned how deer chew their food by watching one.

**Suggested Improvements:** If some students are uncomfortable learning on their own, it may be advantageous to allow students the option of walking with the instructor.

**Lesson: "Indigenous Learning Time"**

Students appeared to be very enthusiastic and content exploring the tidepools within the loose structure of this lesson. Guided by their own curiosity, students observed and interacted with the plants and animals of the tidepool environment, asking questions only when they desired additional knowledge from instructors.

Three students wrote in their journals that they specifically enjoyed their time exploring the tidepools. While it is reasonable that students may have enjoyed the tidepools working within the structure of a different lesson-plan as well, this feedback indicates that the “indigenous learning” approach was acceptable and enjoyable for these students. It is possible that a pedagogical approach incorporating a more predetermined focus or structure for the students’ study of tidepools may not have been as enjoyable. Likewise, it is possible that one approach would work well for some students, while a different approach would be found more enjoyable by others. No comparative data were collected to this end.
Lesson: "Mayan Story – 'People of Maize'"

The instructors interviewed did not teach this lesson. “Rachel Raven” said, “We were gonna read the maize story but we forgot.”

For a discussion of possible reasons instructors did not teach this lesson, please see the analysis written regarding the lesson: “Hmong Story – ‘Why Birds Never Go Hungry’” on pages 99-101.

**Suggested Improvements:** This story would most likely work better as a preparation activity for the student’s visit to the coast. The visit itself is stimulating and engages the students’ attention completely, making other activities and especially quiet or reflective activities somewhat difficult and out of place.

Lesson: "Medicine Plant Meeting"

The instructors interviewed did not teach this lesson. “The Husk” mentioned that the primary reason that he didn’t do it was because there was not enough time. According to “The Husk” this was partially due to the fact that he was indulging himself in his own interest of birdwatching.

For a discussion of possible reasons instructors did not teach this lesson, please see the analysis written regarding the lesson: “Hmong Story – ‘Why Birds Never Go Hungry’” on pages 99-101.

Lesson: "Mineral Balancing"

This activity was presented twice, first to a group consisting of three cabins and then to a group consisting of two cabins. With the first group, students seemed restless at the start of the lesson when background information on the cultural groups was being
presented. This was not the case for the second group, which seemed interested and attentive at the start.

With the first group, there were more students interested in being buried in the pebbles than could be accommodated. This suggests that students were comfortable simulating this cultural activity. No students were greatly disappointed by not being able to get buried and all seemed enthusiastic about participating in the process.

With the second group, the number of students interested in being buried was not greater than what could be supported by remaining group members. One possible explanation for this difference in interest is that these students came directly from an experience of watching marine mammals and they may not have been as energized as the first group.

Students were not interested in joining in the singing and clapping with any energy. The traditional African song may have been too strange for them to feel comfortable singing. Also, they may have had absolutely no previous experience with a community supporting an activity with singing and clapping, and therefore could not imagine its role or importance for such an activity.

Several students were playfully dropping pebbles on the heads of their buried classmates and had to be repeatedly reminded not to abuse the vulnerable students who were buried. This suggests that more work would be advisable toward the preparation of participants to treat this activity seriously and with respect.

“The Husk” said that he liked the activity and suggested that it could have a more enticing introduction. He also questioned what the students got out of the activity.
“Jessica Jellyfish” didn’t like having to limit the number of students that could be buried in the pebbles.

“Rachel Raven” said, “I don’t know how much they really got of listening to the stones. I don’t know if they were listening. It’s kind of middle of the road. It wasn’t a disaster.” This feedback suggests that the activity was not very interesting, or at least not very relevant, in the eyes of this instructor. Her feedback does not suggest that she attempted to test her doubts by asking students about their experiences. It is possible that she was expressing an indifference that she perceived from the students and not just her own attitude. However, the researcher noted no students who were expressing indifference or showing interest in anything other than the simulation activity. It would be expected that students would dig in the pebbles off on their own, or walk towards the crashing waves, or explore the water-sculpted rock formations if they were not interested in the activity.

Three students mentioned the activity in their journals in a positive light.

**Suggested Improvements:** This lesson-plan could be improved by including instructions to teach the song of support ahead of time, and possibly substituting a familiar song. Students could also do a run-through ahead of time, where they act out the ritual without actually being at a beach or burying anyone. This could help to prepare them to be more supportive during the actual simulation.

**Lesson: "Moon and Tides"**

On the bus following this activity, “Rachel Raven” asked the students if they could tell her why we have tides. A student said, “Because of YOU!,” referring to her as
representing the raven from the story read with the lesson. “The Husk” said that he read the story. “Jessica Jellyfish” mentioned that she liked this activity.

**Lesson: "Nature Names Across Cultures"**

Students in the observed group, led by “The Husk,” responded to this lesson by sharing some of the meanings of their own names in their languages including several relating to nature. Students appeared to enjoy learning about the meanings of names. No comments were heard dismissing the importance of the meaning of peoples’ names.

No instructors mentioned this activity during interviews, so it cannot be determined if other instructors besides “The Husk” taught with this lesson-plan.

**Lesson: "Ohlone Sunrise Competition"**

This activity worked very well as it was presented. Students were excited to compete in a creative effort and worked well together toward that end. They expressed an understanding of the Ohlone model on which their presentations were based and did not caricature the process or their roles in it. All students expressed commendable creativity and sincere effort in their expressions.

One student described her participation in this activity in detail in her journal, concluding with the statement, “It was so fun.”

At least one instructor (“The Husk”) used this lesson-plan on several occasions besides the week of the model curriculum’s pilot-testing and reported positive results every time.

**Lesson: "Sacred Mountain Sketching and Poetry"**

Students seemed very absorbed in the creative process of drawing and writing to express their ideas of what a sacred mountain might look like or mean. In the group
observed ("Cove's"), five students continued to draw or write after the instructor asked the students to stop. This indicates that the students were very interested in what they were doing and that they wanted to complete their artistic expressions.

At the end of the day's lessons, students were able to identify several points of cultural information regarding sacred mountains. They were also able to express the fact that there are many different cultural ideas about the meaning of sacred mountains.

"Cove" expressed appreciation for the activity as a "quiet journal activity," while "The Husk" found it to be "too mellow" in context with other activities of the day. "The Husk" said that he read the quote cards expressing diverse cultural views towards sacred mountains, but that none of the students remembered any of the information when queried. He suggested the activity might be good for an otherwise active day.

"Juniper" said that the activity "went pretty well" with his group.

"Jessica Jellyfish" found the activity to be fun and said that the poem, which was read as an example for the students, "worked." She mentioned that many of the students in her group drew volcanoes after being shown an artistic image of the volcano Mt. Fuji in Japan.

Six students included poems and/or drawings of their own hypothetical sacred mountain in their journals. As this was a part of the lesson, it can be assumed that at least one trail-group of students used their journals for this segment of the lesson, whereas other students used paper from other sources.

**Suggested Improvements:** "Jessica Jellyfish" suggested breaking the students into groups of four and asking them to compare the poem with the picture to see if they fit together. Including such an opportunity for interactive learning would most likely be an
improvement to the lesson. Additionally, the use of quote cards to begin a discussion on diverse cultural ideas about sacred mountains might be better replaced with a story or an explanation presented by the instructor.

Lesson: "Sacred Trees, Sacred Groves"

Student response to this lesson was quite creative. “Jessica Jellyfish” describes students developing hypothetical ways to honor a hypothetical sacred tree or grove in the following manner: “Kids went out in ones, twos or threes. Some kids came up with little dances or chants. The last group decided to do a silent thanks, sitting down. Some of the kids kissed a tree and bowed. Two girls put their hands together like prayer. The cabin leaders did a cheer.” “Rachel Raven” approached this lesson-plan more timidly, stating, “I was worried at first that they wouldn’t know what a ritual was, so they just gave thanks.” “Cove” said, “the kids liked that. They thanked trees for guiding us on our night-hike.” “The Husk” combined this lesson with an activity wherein students interview trees. He reported that none of the students expressed thanks to trees in a creative manner. “The Husk” performed a review following this activity in which he queried students regarding their beliefs about trees having spirits. He found that about one-half of students believed that trees have spirits, while almost all believed that people in some cultures commonly believe trees have spirits.

Lesson: "Sarawak Town Meeting"

The method of dividing students into groups for this activity was not efficient. It was time-consuming to pass out a slip of paper to each student with a group name on it. Many students were not clear as to the role they would play as individuals or as advocacy groups and needed to have instructions explained several times by the chaperone working
with their group. Students were often unclear regarding what they needed to do with the information on their group’s advocacy position paper. Perhaps the least clarity was found among members of the group representing the public officials or decision-makers whose task was to listen to representatives from each of the other groups. Despite some confusion, students were able to understand the scenario after a bit of explanation, and soon became engaged in the process.

**Suggested Improvements:** This activity is another that is most likely better suited for an older group of students. For sixth-graders, it could be improved by having adults in the role of decision-makers. This would prevent students from having to play a role with which they may be largely unfamiliar. Additionally, position papers for advocacy groups could be improved by editing them down to several simpler statements expressing the group position, as opposed to putting that responsibility on the students. The sense of confusion would likely be largely diminished by applying this lesson to a group smaller than sixty-seven.

**Lesson:** "Scottish Story – The Silkies and the Fisherman’s Sons"

The instructors interviewed did not teach this lesson. “Cove” said, “It wasn’t the right energy: The kids wouldn’t be focused with the seals there.”

For a discussion of possible reasons instructors did not teach this lesson, please see the analysis written regarding the lesson: “Hmong Story – ‘Why Birds Never Go Hungry” on pages 99-101.

**Suggested Improvements:** This story would most likely work better as a preparation activity for the student’s visit to the coast. The visit itself is stimulating and
engages the students’ attention completely, making other activities and especially quiet or reflective activities somewhat difficult and out of place.

**Lesson: "Sharing Circle with Talking Feather"**

One student in the observed group understood the general idea of the talking feather prior to the lesson. Students used the talking feather as instructed, showing respect to each person as he or she spoke while holding it. This behavior demonstrates a willingness on the part of students to simulate or utilize a social structure of communication that is characteristic of a small group of North American cultures. The fact that students had no evident problems with this process suggests a willingness to learn from and emulate cultures different from their own.

“The Husk” expressed a liking for this activity when interviewed at the end of the week.

**Lesson: "Shona Sacred Mountain Song"**

This song was presented by the researcher. Students listened attentively. No attempt was made to evaluate the impact of this activity on students.

**Lesson: "Shona Songs – 'Zuza Buda,' 'Isu Tauyu Pano,' 'Zinyama Redu'"**

Most students were initially tentative about learning and singing these new songs on the bus. A small core of students were very interested and enthusiastic, and this helped to keep the energy going until more students learned the songs or decided to join in. It should be noted that there was no lack of willingness to sing on the bus. A stronger factor was the need for these songs to compete with the student’s own “bus-songs.” A careful effort was made to introduce and teach the songs during the lulls between the students’ own songs. Once the songs were taught and sung once, students were not asked or
instructed to sing the songs. Individuals or groups of students took the initiative to lead and sing these new songs repeatedly during the bus rides to and from the coast. Students most frequently sang the simplest song, “Zinyama Redu,” which has only two lines. “Rachel Raven” reported that three of her students were singing the songs as their group walked back to the bus from their hike through the marshlands. Several students were heard to sing lines from the songs on the following day, although it did not sound like they had mastered any one of them.

The fact that students initiated singing of these songs on their own suggests that they enjoyed them. This in itself is positive feedback for the design and content of the lesson-plan. No data were collected regarding student comprehension of the meaning of these songs.

**Suggested Improvements:** The number of students interested in singing and able to sing these songs would most probably be greater if the songs were taught prior to the bus ride.

**Lesson: "Shona Waterfall Song"**

"Juniper" said, "the waterfall song went well. Kids liked that." "The Husk" said that the song went "really well," and later said, “Kids really liked that.” During lunch with "Cove's" group, several students sang this song on their own, indicating that they enjoyed it. At the end of the day’s lessons, this song was one of the highlights remembered by a student in "Cove's" group. Some of the students were able to identify the source culture of this song after it was presented.

Towards the end of the day when “The Husk” asked students to give an example of how cultures show gratitude, “About half brought up the waterfall song, and a couple
of them remembered where it was from.” This suggests that the students understood at least one aspect of the song’s meaning and purpose, and that at least some of them were interested in knowing the name of the culture from which it came.

Lesson: "Stone Pass Game"

The only data gathered on this lesson-plan are from “The Husk,” who said, “They loved the stone passing game,” and later said, “The Stone Pass Game was awesome.” The fact that students enjoyed this simulation activity suggests that it was designed and presented in a manner that was accessible to them in terms of interest and understanding. Whether or not students understood the cultural context of the game cannot be determined from the available data.

Lesson: "Thai Story – 'The Deer Buddha"

“The Husk” reported that students gave good feedback after hearing this story, and that their comprehension was good. He felt, however, that this story did not fit well with the accompanying activity, which was a game called “Oh Deer!” from the book Sharing Nature with Children (Cornell, 1979). No other instructors reported using this lesson-plan.

The fact that possibly only one of the five instructors taught this lesson could indicate that it was rejected because of design or content. However, it is also likely that instructors chose to skip this lesson because of time constraints, as two of them mentioned that they had to spend a great deal of time walking to and from the pond for the “Balinisian Water Spirit Ritual” lesson. This hypothesis is supported by the apparent fact that no instructors completed either of the other two lessons scheduled for that afternoon, “Cultures and Animals, Cultures and Plants” and “Cultivating Plants.”
**Suggested Improvements:** This lesson-plan was not tested enough to gain useful feedback for its improvement.

**Lesson: "Thai Story – The Elephants and the Bees"**

Students in the observed group ("Jessica Jellyfish’s") appeared to be attentive and interested in the story. Following the story, “Jessica Jellyfish” asked the students if they had any ideas about what the story meant or was meant to teach. One student said, “not to lie.” Another said, “Not to let bees in your nose.” A third said, “I liked that story.” This feedback suggests that students didn’t all learn the same thing from the story, and it is questionable whether they learned anything valuable about Thai beliefs regarding animals or the environment. The story has some potential value simply as a cultural story about animals that students seem to enjoy hearing.

**Suggested Improvements:** This lesson may function best in a context where students are studying about honey bees and their need to find a cavity-nest. It would be a good introductory activity for a unit on bee-keeping.

**Lesson: "Thai Story – The Honest Woodcutter"**

Students with close ethnic ties to Thailand, Japan, China, Korea, and Taiwan recognized this story immediately. The fact that it is apparently widely known in Asia suggests that it may be an excellent choice for a story representing environmental views of a broad regional culture, but perhaps not the best choice to represent those of a single national culture.

When asked what they learned from this story, several students mentioned the value of being honest and none mentioned anything about the Thai belief that trees have spirits. However, when individually queried a short time later regarding what they had
learned about diverse cultures, three out of five students mentioned the Thai belief that trees have spirits.

In at least two groups the instructors conducted a silent and blind poll following the story, asking whether students believed that trees have spirits. One group was equally split on the belief, while the other group supported the belief with a two-thirds majority. The fact that these polls were taken only following the story’s telling precludes the formation of useful inferences here. Given the large representation of Asian cultures in the experimental population and the prior exposure to this story or similar stories, it is possible that the beliefs expressed were well established before the students’ experience with the model curriculum.

Towards the end of the following day when “The Husk” asked students to give an example of how cultures show gratitude, “a lot of them brought up the woodcutter story.”

“The Husk” expressed a liking for this story when interviewed at the end of the week. “Jessica Jellyfish” was critical of its presentation, suggesting that more background should have been provided and also suggesting that its association with Buddhist beliefs about not killing any living things made it confusing.

**Lesson: "Thai Story – The Seven Stars"**

During a review facilitated by “Cove” at the end of the day’s lessons, the cultural source of the story was remembered. “The Husk” said, “I didn’t tell the story. I didn’t really like it.” “Juniper” said, “It was difficult, during lunch.” “Jessica Jellyfish” said, “The Seven Stars was weird. It disturbed some kids.” It is evident from this feedback that the inclusion of this story in the curriculum was not a positive addition. The spiritual ideas in this story relating to self-sacrifice and revering life, albeit in a hierarchical
manner, may be too complicated for the educational population and context of this pilot-study. This story might more usefully be included in a high school unit on comparative religions.

**Suggested Improvements:** Given the feedback from this activity, the researcher recommends withdrawing this lesson-plan from the curriculum, particularly when used with younger students. If the lesson is being presented to upper-level students (grades eight-twelve), it would be advisable to precede it with a background on traditional Thai spiritual beliefs. It may be more relevant if presented in conjunction with stories from several other cultures that also deal with human values towards animal life.

**Lesson: "Values Glasses"**

Students in the observed group ("Cove's") read and understood all of the quotes and were able to accurately interpret their meanings. One student was able to synthesize the ideas expressed in one of the quotes with an idea expressed earlier in the story "The Woman Who Lives in the Earth," comparing the concept of gratitude with the concepts of respect and restraint in relation to natural resources.

"The Husk" said of this activity, "I didn't do it. I read it and didn't really like it." He had become disenchanted with using quote cards for lessons and felt that the students were too. He also felt that there was no connection to nature in the activity.

"Rachel Raven" said "The Values Glasses didn't work for me. It would have been better with colored glasses and images that can only be seen through certain colored glasses."

"Juniper" said, "It went well. Kids enjoyed reading the cards. It seems they're grasping the ideas of cultural concepts."
The feedback from this activity is interesting in that negative comments refer exclusively to instructor preferences. No negative responses on the part of students were observed or mentioned. It may be inferred that the activity went well for the two instructors “Cove” and “Juniper” because they were personally open to its design.

**Suggested Improvements:** This lesson-plan could be improved by making the use of the quote cards and sunglasses optional. In this manner, instructors who do not feel comfortable with them could skip them and perhaps discuss the concept of different cultures having different values with the students.

**Lesson: "Wild Rice Dinner"**

The logistics of presenting this experience were such that no introduction was accomplished, as the need to facilitate the feeding of one-hundred eighty students and their chaperones required all available time and attention. The activity, therefore, was a passive one, with information placed on each table along with a dish of the wild rice. Out of twenty-two tables in the dining hall, only two chaperones were seen to be sharing the information with students at their tables and no students appeared to be noticeably interested. Approximately one-half of the students appeared to have tasted the wild rice dish. It is possible that interest was greater than this, as the researcher also had to eat at this time and may not have seen much of the activity. There was plenty of wild rice to sample and it was well-prepared, though served plain.

**Suggested Improvements:** This activity would probably be improved by including an introduction. This would be best accomplished in groups of thirty students or less to allow for questions and to facilitate crowd control. Additionally, preparing the wild rice with a traditional recipe such as with duck meat might make it more appealing
to students. Ideally, the activity would be presented by a person with relevant cultural background and experience.
CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS
SUMMARY

This report began by identifying a lack of cross-cultural approaches in environmental education curricular materials for residential programs. Though materials have been developed for certain specific cultural groups, none were identified in the course of this study’s literature review that present diverse cultural views towards the environment. The development and pilot-testing of this model curriculum is a step in the direction of remedying the lack of culturally inclusive materials in the field of environmental education.

Results of the pilot-testing of this model curriculum prove that it is possible to successfully convey diverse cultural ideas about the environment to middle-school students in a residential program context. Furthermore, the results of this study show that students value this type of knowledge and enjoy learning it.

In addition, it is evident that field instructors in residential environmental education programs value the teaching of cross-cultural content. Especially valued are kinesthetic and traditional cultural approaches such as storytelling and singing songs.

Cross-cultural approaches in environmental education, such as those developed in this study, teach students about diverse cultures at the same time as they teach students about the environment. This synthesis may be a potent approach toward providing students with the critical thinking skills necessary to understand and address the complex environmental issues in the world today.

Further research and development of these and similar curricular materials will serve to determine the extent to which cross-cultural approaches may aid in the understanding, resolution, and prevention of environmental problems.
CONCLUSIONS

The statistical results of the pre and posttest surveys administered during the pilot-testing of this model curriculum provide us with the following insights.

1. It is possible for middle-school students with diverse cultural backgrounds to learn about diverse cultural views towards the environment in a residential program setting.

2. Students that were taught using the model curriculum felt that they became more knowledgeable about diverse cultural views towards the environment following their experience with it.

3. Students that were taught using the model curriculum expressed an increased value for the knowledge of diverse cultures following their experience with it.

The data collected during the administration of the pilot-test suggest that:

1. Students enjoyed the process of learning about diverse cultural views towards the environment.

2. Instructors enjoyed and appreciated many of the cross-cultural approaches to learning about the environment.

3. Students with diverse cultural backgrounds appreciated the inclusion of their own cultures’ materials in the model curriculum.

4. Students were comfortable exploring unfamiliar territory in learning about diverse cultural views towards the environment. Such unfamiliar territory included being buried by pebbles to learn about the mineral element, simulating activities to encourage the sun to rise, and making offerings of grains to nature as a way of expressing gratitude.
RECOMMENDATIONS FOR FUTURE USE OF THE CURRICULUM

Recommendations relating to individual lesson-plans of the model curriculum have been included in the text of this report, in chapter IV. From these specific recommendations, these six general recommendations can be made for the future use of this model curriculum.

1. The cross-cultural lesson-plans in this model successfully conveyed knowledge on diverse cultural ideas about the environment. In addition, many were enthusiastically received by students. The lesson-plans of this model curriculum should therefore be utilized by environmental educators in both residential and classroom environments.

2. Language Arts materials utilized with the lesson-plans should be selected specifically for the population with which the lessons will be used. This needs to be done to ensure a good match between the materials and the language arts abilities of the students.

3. The greatest possible extent of kinesthetic activities should be included in cross-cultural approaches to residential environmental education. This is in line with the active and experiential approach that is characteristic of outdoor environmental education.

4. The greatest possible degree of flexibility in lesson-plan scheduling should be made available to field instructors in environmental education. This helps to accommodate the changing needs of the instructor and group that come about due to variations in weather, pace, and wildlife encounters.
5. The use of stories and songs is extremely effective as a method for teaching about diverse cultural views towards the environment. Their use should therefore be optimized.

6. Instructors using the model curriculum should be well trained in the areas of cultural sensitivity, the importance of using culturally inclusive teaching materials, and culturally inclusive teaching methods.

RECOMMENDATIONS FOR FUTURE EVALUATION OF THE CURRICULUM

It is recommended that the model curriculum be revised in accordance with the suggestions outlined in this report before a future evaluation is conducted. It is also recommended that a future evaluation be conducted with a group having well-developed skills in the language arts at the seventh or eighth grade level.

It is evident from the data gathered during the course of the model curriculum's pilot-testing that feedback was not obtained from all instructors on all lessons taught. This situation could be improved upon by the use of questionnaires listing each individual lesson. Instructors could rate lessons using categories such as Clarity of Presentation, Overall Effectiveness of Lesson Design, Interest to Students, Age-Appropriateness of Lesson, and Ability of Lesson to be Adapted to Diverse Teaching Environments.

A similar questionnaire would also be advantageous to utilize with participating students. Categories on a student questionnaire could include How Much I Enjoyed the Lesson, How Much I Learned From the Lesson, How Easy or Difficult it Was to Understand Information in the Lesson, and What I Liked Most and Least About the
Lesson. Data from students could then be compared with those of instructors to gain a more complete picture of the overall effectiveness of lesson-plans.

Employment of additional assistance in the data collection process would be advantageous during future evaluations of the curriculum. Ideally an observer would be assigned to each instructor teaching with the model curriculum, thereby allowing collection of data on every lesson-plan with every instructor.

Another approach to improve the quality of data generated from evaluation of the model curriculum would be to include open-ended questions with the instructor and student questionnaires. Questions that could generate useful data might include, "What did you learn from this lesson?," "What did you like about the lesson?," and "What did you have difficulty with in this lesson?" Data generated from this process could then be examined and used to make further refinements to the lesson-plans.

Finally, it would be interesting to test for differences in understanding and approaches to solving environmental issues before and after experience with the curriculum. Students could be given a test before their experience with the curriculum asking them how they would solve or respond to a series of environmental issues. They would take the same test following their experience with the curriculum, and the comparison of the two tests could demonstrate if their approaches to solving environmental problems were changed by the experience.

RECOMMENDATIONS FOR FUTURE RESEARCH IN THIS AREA

For future research in the area addressed in this study, the following general recommendations are offered.
Development of a relationship with the school group to be tested before administration of curricular materials is recommended. In so doing, the researcher may develop an accurate sense of the language arts abilities of the group to be tested, and therefore be able to write materials that are best suited to the test population.

Pilot-testing of the instrument with the specific group to be tested is also recommended. This would increase the likelihood that students being tested would understand what is being asked of them. This could be done with a small sample of the population, with results being used to improve the design of the instrument.

It is recommended that future research include comparative investigations of curricular materials taught from members of diverse cultures themselves. It is possible that cultural material could be more engaging and more effectively conveyed if presented from an individual or individuals that are members of the culture or cultures being studied. Comparative investigations could determine if this is an important factor in the teaching of cross-cultural lesson content.

Finally, exploration of the adaptability of the model curriculum’s lesson-plans to diverse teaching environments should be investigated. This could include both formal and informal teaching environments as well as outdoor education facilities located in diverse geographical locations and natural settings.
REFERENCES


Simmons, Bora. “National Guidelines for Environmental Education Learner Outcomes” (Draft), Northern Illinois University, 1998.


Tutalo, Gia. What Will We Call The Baby? Boca Raton, FL: Globe Communications Corp., 1996.


APPENDIX A

Model Curriculum
<table>
<thead>
<tr>
<th>Monday 11/16</th>
<th>Tuesday 11/17</th>
<th>Wednesday 11/18</th>
<th>Thursday 11/19</th>
<th>Friday 11/20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARRIVAL, PRETEST, SENSE OF PLACE</strong></td>
<td><strong>ETHNOECOLOGY</strong></td>
<td><strong>FOREST ETHNOECOLOGY</strong></td>
<td>Coastal Ethnoecology</td>
<td></td>
</tr>
<tr>
<td>6:30 Choline Sunrise Competition (Facilitated by researcher)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30 Arrival, Tour, Cabin Assign.</td>
<td>7:50 Breakfast</td>
<td>7:50 Breakfast</td>
<td>7:50 Breakfast</td>
<td>7:50 Breakfast</td>
</tr>
<tr>
<td>11:00 Lunch with Cabin Groups (Nature Name Preparation)</td>
<td>9:00 Village Meeting</td>
<td>9:00 Village Meeting</td>
<td>8:50 Meet for Bus</td>
<td>8:30-9:30 Students Pack and Move Out</td>
</tr>
<tr>
<td>11:30-12:30 Opening Ceremony Student Orientation</td>
<td>Shona Sacred Mountain Song (10 min)</td>
<td>4 Elements, 4 Directions (30 min)</td>
<td>9:00 Leave for Coast</td>
<td>(African Songs for bus ride)</td>
</tr>
<tr>
<td>12:45 Staff Lunch; Kids move in</td>
<td>Attitude of Gratitude Set-Up (10 min)</td>
<td>LA W.S. (20 m)</td>
<td>9:25 Arrive at Pescadero Marsh</td>
<td>9:30-10:00 Post-Test</td>
</tr>
<tr>
<td>1:15 - 1:45 Curriculum Pretest - Picnic Tb Discovery Hike Introduction Circle</td>
<td>Story - The Woman Who... (10 min)</td>
<td>10:00-10:30 Movie: The Lorax</td>
<td>10:00-10:30 Movie: The Lorax</td>
<td>10:00-10:30 Movie: The Lorax</td>
</tr>
<tr>
<td>Nature orientations (20 min.)</td>
<td>Reading Cultural Cards (15 min)</td>
<td>12:00 - 12:30 Lunch (on trail)</td>
<td>12:00 Lunch at Bean Hollow</td>
<td></td>
</tr>
<tr>
<td>Nature in Names across cultures</td>
<td>Making Offerings (10 min)</td>
<td>Shona waterfall song (before lunch)</td>
<td>11:45 Lunch at Bean Hollow</td>
<td></td>
</tr>
<tr>
<td>Indigenous Learning Time (Silent)(10 min)</td>
<td>Gratitude Hike to Hilltop (40 min)</td>
<td>Story - &quot;Seven Stars&quot;</td>
<td>Story - &quot;Seven Stars&quot;</td>
<td></td>
</tr>
<tr>
<td>(use sweep, allow stops to examine)</td>
<td>Discussion (10 min)</td>
<td>Stone Pass Game (10 min)</td>
<td>Water Testing/Aquatic Ecology (25 min)</td>
<td></td>
</tr>
<tr>
<td>Sharing Cir. w/Talking Feather(10 min)</td>
<td>Sacred Mtn. Sketching/Poetry (20 min)</td>
<td>Balinisan Water Spirit Ritual (25 min)</td>
<td>Birdwatching I.D. Contest (15 min)</td>
<td></td>
</tr>
<tr>
<td>4-Sense Hike (Blind Caterpillar)(10 min)</td>
<td>Stone Pass Game (10 min)</td>
<td>(pond)</td>
<td>Moon and Tides (in sand) (15 min)</td>
<td></td>
</tr>
<tr>
<td>Challenge #2-Human Knot (15 min)</td>
<td><strong>Each trail group should do the morning lessons in a different order</strong></td>
<td><strong>Two trail groups will need to do the</strong></td>
<td>12:00 - 12:30 Lunch (on trail)</td>
<td></td>
</tr>
<tr>
<td>Imaginary Clan House (15 min)</td>
<td>The Purpose of Environmental Education: Different World Views towards the Environment (political; cultural)</td>
<td>Tree I.D. (15 m)</td>
<td><strong>Tree Interview to Renewable Energy lessons in the morning after Ethno-Photosynthesis Theatre, and lessons</strong></td>
<td></td>
</tr>
<tr>
<td>Meet a Tree (pairs, one blindfolded or to avoid congestion.</td>
<td><strong>Meaning of Environmental Education</strong></td>
<td>Ha-Ha (time permitting) (10 min)</td>
<td>2:20 Bus back to Jones Gulch</td>
<td></td>
</tr>
<tr>
<td>Nature Observations (25 min)</td>
<td><strong>(read cultural belief statements)</strong></td>
<td>(preparation stations)</td>
<td>2:20 Bus back to Jones Gulch</td>
<td></td>
</tr>
<tr>
<td><strong>Name Tag (Time permitting)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00 Instructors Meet w/ Cabin Leaders</td>
<td>3:15 Meet Teachers at Dining Hall</td>
<td>3:15 Meet Teachers at Dining Hall</td>
<td>3:15 Meet Teachers at Dining Hall</td>
<td></td>
</tr>
<tr>
<td>4:30 Instructors Meet w/Teachers</td>
<td>3:15 Meet Teachers at Dining Hall</td>
<td>3:15 Meet Teachers at Dining Hall</td>
<td>3:15 Meet Teachers at Dining Hall</td>
<td></td>
</tr>
<tr>
<td>5:00 Fire Drill</td>
<td>5:00 Fire Drill</td>
<td>5:00 Fire Drill</td>
<td>5:00 Fire Drill</td>
<td>5:00 Fire Drill</td>
</tr>
<tr>
<td>5:00 Dinner</td>
<td>5:00 Dinner</td>
<td>5:00 Dinner</td>
<td>5:00 Dinner</td>
<td>5:00 Dinner</td>
</tr>
<tr>
<td>6:45 Dinner</td>
<td>6:15-6:45 Night Hike</td>
<td>7:25 Evening Program</td>
<td>7:15 Evening Program</td>
<td></td>
</tr>
<tr>
<td>7:00 Evening Program</td>
<td>Earth Dance</td>
<td>Earth Dance</td>
<td>Earth Dance</td>
<td>Earth Dance</td>
</tr>
<tr>
<td>Town Meeting (Sarawak Land Use)</td>
<td>8:15-8:40 Campfire</td>
<td>8:15-8:40 Campfire</td>
<td>8:15-8:40 Campfire</td>
<td>8:15-8:40 Campfire</td>
</tr>
</tbody>
</table>

**NOTE:** Lessons in shaded segments include cross-cultural infusion and need to be completed. Other lessons are suggestions.
Lesson Title: 4 Elements, 4 Directions (Estimated time: 30 min.)

Objectives: Students will learn that four basic elements are recognized in the Greek intellectual tradition, while cultures around the world recognize different numbers of basic elements. Students will learn that some cultures recognize a necessity for the basic elements to be in balance in order for the environment to exist in peace and harmony. Students will learn that four cardinal directions are recognized in many cultures, although some cultures recognize more.

Background/Preparation: Four basic elements are recognized in the European/Greek intellectual tradition. This dates from the Greek philosopher Empedocles, in the 5th century BC. However, other cultures around the world recognize different or additional elements. The Dagara of Burkina Fasso recognize the element mineral in addition to earth, air, fire, and water. The Indians and Tibetans recognize ether or space in addition to those four. The Chinese recognize five elements, including earth, wood, metal, fire, and water. A concept of balance between the elements is found in some cultures, which is analogous to the needs of plant life to have a balance of light, air, water and soil.

Four cardinal directions are recognized by many cultures, although, again, some cultures recognize more. The Lakota and the Celts are two examples of cultures recognizing four cardinal directions, although the Lakota also recognize up and down for a total of six directions. The Dine include up, down, and center for a total of seven directions.

Materials Needed:
Symbols of the four elements (fire, water, air, and earth)
A candle
A container of water
A feather
A handful of dirt

Procedure: Draw a circle on the ground and draw lines across it pointing East to West and North to South. Ask if anyone can tell you what the lines signify. Explain that four directions are recognized by many cultures around the world.

Read the Dakota quote (below) about the number four. Place a symbol of the four elements at each of the four directions (fire in the west, water in the north, earth in the east, and air in the south). Ask if anyone knows what they symbolize. Explain that the four elements are also recognized in many cultures, and that some kind of balance is thought to exist in some cultures between the elements. Read the Salivan quote (below).

Explain that a balance of the four elements is required for life to thrive, because all four elements are required for plants to live. A plant needs light, air, water, and soil. If it gets too much or too little of any of these, it will be unhealthy or die. The four elements can
be thought of with the acronym L.A.W.S., standing for light, air, water, and soil. The L.A.W.S. of life are that the four elements have to be balanced for plants to live.

Explain that people in the Dagara culture of Burkina Fasso (N.W. Africa) believe that the elements must also be balanced within people and cultures, and that America currently has far too much fire and not enough water. Furthermore, the Shona people of Zimbabwe believe that the people of European descent are the ones who are naturally closest to the element water, and that it is therefore their role to reconnect with the element water and help to rebalance this country.

Assessment: Question: What are four elements that are required for plants to live? (Earth, Fire (light), Water, and Air).
Question: Which cultures that we learned about have the belief that the elements need to be balanced together for everything to go well? (Salivan, Dagara, and Shona)

Sources:


Information on the Shona culture presented by Chris Murewa Berry in a ritual facilitated in Albequerque, NM in May of 1998.

Information on the Lakota culture from Wilson and from web page http://www.lonedersonagolese.com/medicine.htm

Information on the Chinese and Indian concepts of fundamental elements was taken from The Contemporary Physics Education Project web page at: http://mesa.lbl.gov/cpep/four_elem_ans.html

The elements, balance, and vegetation - A Salivan Perspective
"The Salivan of Columbia believe in a supreme invisible deity, Puru, the creative power from whom all things visible and all natural forces originated. He rules over men's destinies and sends them blessings or calamities in accordance with their good or bad conduct. Natural forces, wind, fire, earthquake, and thunder, and other forces operative in the natural and the human world, emanate from Puru. (Following is a description of how plants are made to grow) Guaigerri, the wind, sweeps over the Earth and moves the clouds on which Cuisiabirri, the fire, is seated. (Cuisiabirri) causes the lightning, and thus arouses the anger of the sleeping Puvisana, the earthquake, who resides in the dark regions of the Earth. His grudge is the thunder, which is so terrible that Chavisana, the water, covers the Earth with floods in order to soothe the pains of the fire-stricken deity, who in anger shakes the Earth by turning around in his underground bed. This logical sequence of events is ordered by Puru in order that Qurrama Minari, the hidden force of
vegetation, may favour men with the benefits of his fruit. Sometimes, however, in order

to punish the inhabitants of the Earth for their misdeeds, Puru unchains all the elements.

Then houses are burned, food becomes scarce, and men are frightened by the anger of

Puivisana, who upsets the Earth.” (Wallis, p. 89)

**Four elements in Egypt**

“In ancient Egypt there were four pillars of heaven, four winds, four elements, each with

a god, and four rudders of the boat of Re, the sky god.” (Wallis, p. 168)

**Lakota meaning of Four**

“Dakota grouped all their activities by fours. This was because they recognized four
directions: the west, the north, the east, and the south; four divisions of time: the day, the

night, the moon, and the year; four parts to everything that grows from the ground: the

roots, the stem, the leaves, and the fruit; four kinds of things that breathe: those that
crawl, those that fly, those that walk on four legs, and those that walk on two legs; four

things above the world: the sun, the moon, the sky, and the stars; four kinds of gods: the

great, the associates of the great, the gods below them, and the spirit kind; four periods of
human life: babyhood, childhood, adulthood, and old age; and finally, mankind has four

fingers on each hand, four toes on each foot, and the thumbs and the great toes of each
taken together are four. Since the Great Spirit caused everything to be fours, mankind

should do everything possible in fours.” (Wallis, p. 169)

**The Lakota Medicine Wheel**

Among the Lakota, a child's first teaching is of the Four Great Powers of the Medicine

Wheel. To the North is found Wisdom. The color of the Wisdom of the North is White,

and it's Medicine Animal is the Buffalo.

The South is represented by the Sign of the Mouse, and its Medicine Color is Green. The

South is the place of innocence and trust, and for perceiving closely our nature of heart.

In the West is the Sign of the Bear. The West is the Looks- Within-Place, which speaks

of the introspective nature of man. The color of this place is Black. The East is marked by

the sign of the Eagle. It is the Place of Illumination, where we can see things clearly far

and wide. Its color is the Gold of the Morning Star.

According to Lakota tradition, each of us is given a particular Beginning Place within the

Four Great Directions on the Medicine Wheel. This Starting Place gives us our first way

of perceiving things, which will then be our easiest and most natural way throughout our

lives. We grow by seeking understanding in each of the Four Great Ways. Only in this

way, so say the Lakota, can we become complete and capable of balance

The Greek philosopher Empedocles, in the 5th century BC, first classified the

fundamental elements as earth, air, fire, and water.

In ancient times, the Chinese proclaimed the five basic components (Pinyin WU XING)
of the physical universe to be: earth, wood, metal, fire, and water.

In India, in the Samkhya-karikas by Ishvarakrsna (c. 3rd century AD), the five gross

elements are: space, air, fire, water, and earth.

(Contemporary Physics Education Project)

Day 3, Lesson 1
Lesson Title: Attitude of Gratitude  (Estimated Time – 90 min.)

Objectives: Students will be familiar with diverse cultural concepts of gratitude for other forms of life and life in general. Students will understand diverse cultural concepts of gratitude and reasons for which thanks are given.

Background/Preparation: Many cultures from around the world believe that it is important to give thanks for natural resources. The thanks are given in diverse ways, often through offerings or prayers, and they serve to show gratitude to and for life. Sometimes the thanks is addressed to a representative deity, while at other times the thanks are addressed directly to the plant, animal, or feature of the landscape that is being utilized or appreciated.

Materials Needed:  
Map or Globe  
Bag of rice  
Story “The Woman Who Lives in the Earth”  
Cards “Voices of Gratitude from Around the Earth.”  
Neck Pouches full of Millet

Procedure:  
Part 1. Set-up (Estimated time: 10 min.)  
Start with the students standing in a circle. Ask someone to volunteer to go into the center and share something of interest or possible benefit to others. It can be a statement about something they’ve seen, a creative gesture for entertainment, or anything else within the realm of respect for each other. (If possible, pick someone with a hand up who is generally quiet – not the class clown). After the sharing, ask the person to return to the circle. Don’t ask the students to show any appreciation. Ask the person how they felt about sharing what they did.

Ask the person to return to the center of the circle and share the same thing again, but this time ask the other students to express gratitude with words, gestures or sounds of appreciation (claps, smiles, gestures, even good thoughts and focused attention can be forms of appreciation). Ask the person to return to the circle again. Ask them how they felt about sharing what they did this time.

Discuss the impact of gratitude on a person’s spirit. (Doesn’t it make you feel happier, better, more positive, more interested in sharing something again in the future?).

Explain that many cultures recognize the same dynamic in nature. In such a world-view, all life and even landforms are thought to recognize and appreciate gratitude. Showing gratitude to life is understood to be very important, because when plants and animals receive recognition and respect, they are more willing to give of themselves.  
Part 2. Story “The Woman Who Lives in the Earth” (Estimated time: 10 min.)
Read or tell the story "The Woman Who Lives in the Earth" (from Caduto and Bruchac, Keepers of Life)

Part 3. Voices of Gratitude from Around the World (Estimated time: 15 min.)
Have the students sit down in a circle and pass out cards "Voices of Gratitude from Around the Earth." Ask students to read the statements on the cards one at a time (remind them to be loud and clear as possible). Point out source cultures on a globe or world map as each card is read.

Part 4. Making an Offering (Estimated time: 10 min.)
Point out Bali on the globe or map. Explain that in Bali, many people make offerings to all life in the form of incense and rice. The offering is made by placing the items on the ground with thoughts of gratitude.

Give each student a few dozen rice grains, and tell them that they can make an offering of gratitude to all life, or to a particular plant, if they like.

Part 5. Appreciation Hike (Estimated time: 40 min.)
Have one student lead the group at a time and ask them to find something they think is interesting to share with the group (within a few minutes). Ask students to show their appreciation to the person sharing (model this yourself first). Rotate through until all have led the group. Suggest that students practice active appreciation of plants and animals as they hike (good thoughts, focused attention, words of gratitude).

Part 5. Closing (Estimated time: 10 min.)
Stop and gather in a circle. Using a talking stick or feather, ask the students to share how they felt about giving offerings, or what they think of the concept(s). Give each student some millet to offer over the course of the week in a neck pouch. Remind them that offerings only work if they are made with humility and sincerity, so they shouldn’t brag about or show off their pouches to others or make a show of giving an offering. Suggest that they keep the pouch under their shirt or in a pocket.

Assessment: Question: For each culture that I mention, tell me what their attitude of gratitude is, and how they give thanks.

Sources:

CHAPTER 12

The Woman Who Lives in the Earth (Chugach Inuit—Arctic)

The animals, the birds, the lakes and trees, even the grass—all these have something alive which dwells within them. The Chugach people call this the shua. And Earth itself, on which life depends, also contains a shua. The Chugach call this being Nunam-shua, the One Who Lives Within the Earth, and she is seen as a woman.

This woman who lives within the Earth also has her home in the stones and the plants. Sometimes she is known as The One Who Dwell in the Alder Trees, but she also can walk the land in the shape of a woman. A bright light shines all around her when she walks. She wears boots made of the fur of all the animals of the land. She wears a long coat, which hangs down to her knees, hangs as lichen hangs on the stones. On her coat are many tiny animals: the caribou, the arctic fox, the musk ox, the wolf, the bear, the lemming and the hare. These are the souls of the animals which she protects, all of the animals of the land. Those animals all came originally from Earth.

The people, too, came from Earth. The first children, the Inuit say, were formed out of Earth in the places where the small willow trees grow. They were covered by the willow leaves and the soil gave them food. So the human beings must always be careful what they do on Earth. They must remember Nunam-shua.

One day, during the time when the caribou migrate, a hunter went out to seek game. As he walked, he was careful where he stepped so that he did not scrape the lichen off the stones. When he moved through a thicket of small alder trees, he bent the branches gently so that they did not break. Soon he came upon the caribou herd and he stalked closer. He was careful in his movement and so was able to come very close to the caribou without frightening them. He watched them for a long time, picking out the ones which were cows with calves and the ones which were leading the herd. Those were the animals which he knew should not be killed. He chose the animal he wished to take and then spoke to its spirit as he pulled back the arrow in his bow. His shot was a good one and the animal fell dead. He could have shot more animals, but he did not need them. So he put down his weapon, took his pouch from his side and went to the fallen caribou. Before he began to cut it up, he thanked the animal’s spirit for giving itself to him. Then he placed something in its mouth to show his gratitude. As he skinned and butchered the animal, he wiped his hands on his own clothing and not on the grass, remembering that the grass is sacred at the time when the caribou migrate.

This hunter did not know it, but everything he did had been watched by Nunam-shua. He became aware of a light and turned to see a woman walking toward him. The air shone all around her and as she walked he saw that her feet sank into the earth with each step. He was afraid, because he knew who this was. He knew the power of The Woman Who Dwells in the Earth. Not long ago, a man had been cutting a live alder tree and had fallen dead. The people knew that he had died because Nunam-shua lived within the alders and the man had shown no respect for the tree while cutting it.
Nunam-shua came close to the man and stopped. She looked straight into the hunter's face and he looked down at Earth to show respect.

"You have done well, child," she said to him. "You hunt the animals with care. You do not show contempt for the grass and the trees and Earth. So I give you these."

Then Nunam-shua reached up and took from her coat tiny animals in the shape of the caribou, the musk ox and the hare. The man held out his hands to take those tiny animals. As soon as he touched them, they melted like snow into his hands. When he looked up, Nunam-shua was gone. But because she had given him the gift of those animal spirits, a gift which had entered into him like rain into the soil, from that time on he was always successful whenever he hunted the animals of the land.

Waw Giwulk: The Center of the Basket

(O'odham—Southwest)

_Shab wa chu'i na'ana._ They say it happened long ago. All was well with the O'odham, the People. All was in harmony. But then a great snake came from out of Earth. It came to the place where the people lived and began to devour them. It sucked the people into its mouth. Those people who escaped the great snake called to Itoi, Elder Brother.

"Help us!" they called.

Itoi came then from his home on Waw Giwulk. He came from his house in the center of the world.

"Give me an obsidian knife and four greasewood sticks," Elder Brother said.

Then Itoi took the knife and sticks and went to meet the great snake.

The snake sucked Elder Brother into its mouth, but he stuck the first greasewood stick into the snake's mouth and wedged it open. It sucked him down into its throat, but he stuck the second greasewood stick in the great snake's throat and wedged it open. It sucked him down into its esophagus, but he stuck the third greasewood stick in and held its esophagus open. It sucked him down into its belly, but he wedged in the fourth greasewood stick and held its belly open.

In the great snake's belly, Itoi listened. He listened for the sound of its heart. With his obsidian knife he slashed the heart and then ran out of the great snake, pulling free each greasewood stick as he ran. So Itoi killed the great snake.

Elder Brother went back to the O'odham and told them the danger was over. Then he went back to his home on Waw Giwulk. _Am o wa'i at boabdag_. That is at the center of the basket.

**DISCUSSION**

The stories that open this chapter come from peoples connected to two very different ecological communities: the Arctic and the desert. The Chugach Inuit say that the plants and animals protected by Nunam-shua, The Woman Who Lives in the Earth, came from the earth where the small willow trees grow: the Arctic and subarctic environments. Nunam-shua's being dwells within the alder trees and she can sometimes appear as a woman. All things and Earth itself possess a living essence called _shua_. Taking care of Earth
We walk about with a very great respect for the Earth is a very great responsibility.

The Original Instructions that walk about on the Earth are to express a great respect and affection towards all the spirits and towards all living things. To this day we deeply understand our relation to life on the earth and give thanks for all the living things. We give thanks to our benefactors who have helped us. We give thanks to the Earth and to the other beings of the Earth for the gifts they have given us. We give thanks to our benefactors who have helped us.

When people cease to respect and suffer the Earth who is their mother. The Earth is our mother.

The planet will come to an end. It destroyed and human life on this planet will come to an end. The people who are very strong spirit who live in a very great respect.

The First People will come to an end. It destroyed and human life on this planet will come to an end. The people who are very strong spirit who live in a very great respect.

"The First People have a relationship with the Earth and with the Earth's resources. We walk about on the Earth and we are mindful of our responsibilities.

"The First People have a relationship with the Earth and with the Earth's resources. We walk about on the Earth and we are mindful of our responsibilities.

"The First People have a relationship with the Earth and with the Earth's resources. We walk about on the Earth and we are mindful of our responsibilities.

"The First People have a relationship with the Earth and with the Earth's resources. We walk about on the Earth and we are mindful of our responsibilities.
Lesson Title: Balinisian Water Spirit Ritual  (Estimated time: 25 min.)

Objectives: Students will be aware that people in some cultures perform rituals of appreciation to natural features of the environment or their spiritual guardians.

Background/Preparation: Rituals to show appreciation for natural resources are common to peoples from around the world. These rituals are often performed to show appreciation to a spiritual representation or guardian of a natural resource. In Bali, where rice cultivation depends primarily on the availability of water, collectives of farmers join together to make yearly offerings to the water spirit that resides in lakes, which are thought of as the source of water in streams and rivers. These offerings involve treats being floated out onto the lake on a raft, which is then dumped into the lake. The floating treats are then collected from the water by the members of the community and enjoyed.

Materials Needed:
Raft with cord attached
Long stick
Treats in plastic containers in a basket
Map or Globe

Procedure: Bring the students to a lake or pond. Point out Bali on a map or globe. Explain that in Bali, rice farmers depend on water for the success of their crops, and that they believe the water in rivers and streams comes from lakes and is overseen by the water spirit that lives in the lake.

Tell them that you are going to simulate a ritual performed by Balinese farmers to maintain their water supply for successful crops. Explain that the ritual involves sending gifts of treats on a raft out onto the water, and then dumping the raft into the water.

Send the raft out onto the water a few feet, and ask the students to imagine that they are Balinisian farmers in Bali, and to imagine that the success of their crops depends on making the water spirit happy with their offering.

Hold on to the cord and dump the raft with a long stick or pole, sending the treats out into the water. Explain that the treats have now been offered, and their essence has been received by the water spirit. Explain that now the treats can be collected and enjoyed by the farmers and their families, but they may not be offered twice since their spiritual essence is already gone.

Pass out some nets, or use a net yourself, and collect the treats, telling the students that each may have one. Explain that in Bali, people would enter the water to collect the treats, but ask them to stay out of the water and share the treats without quarrelling. (Note: The researcher will facilitate this lesson, and gather any stray treats afterwards with a canoe. Please ask the students to take only the contents of the plastic containers and leave the containers with the raft.)
Assessment: Question: Ask the students what they think of the Balinisian idea of having to please a spirit to ensure a good harvest. Ask them how they would feel if they were required to participate in a public ritual like this, as farmers in Bali have been. Ask them in a silent/blind pole if they believe that making an offering can help ensure better harvests of crops (ask them to stand outwards in a circle with their eyes closed, and put a thumb up if they believe it could, down if they believe it couldn't, and sideways if they don't have an opinion. Then share the anonymous results of the group with them.)

Sources:

Day 3, Lesson 3
Lesson Title: Bumbas and Alcans  (Estimated time: 50 min.)

Objectives: Students will learn that cultures operate with different assumptions, values, and taboos. They will gain experience in the conflicts and possible resolutions that may arise when members of different cultures meet.

Background/Preparation: Differences in cultures can result in misunderstandings and conflicts. The story of Gulliver’s Travels presents a fictional example of this, where a war has started because one group of people likes to eat soft-boiled eggs from the large side, while the other prefers to eat them from the small side.

On a more practical level, researchers have found that different cultures have different lengths of time that members normally pause between each speaker in a conversation, and different lengths of time that people look at strangers when passing. For example, Americans of European descent have a normal average pause time between speakers of three-tenths of a second, while Native Americans have a normal average pause time of 2.8 seconds. When people from such different cultural groups talk together, members of one culture sometimes misinterpret the differences in the other culture as indicating offense or insult. In this case, Native Americans might assume that the Euro-Americans are not taking the time to consider and respect what they have said, while the Euro-Americans might think the Native American speakers are acting aloof or evasively. Similarly, there is a difference between the average time that African-Americans and European-Americans look at strangers when passing. The Afro-Americans average 1.8 seconds, while the Euro-Americans average 0.7 seconds. It is therefore likely that an Afro-American passing a Euro-American stranger on the street thinks that he or she is being discriminated against or otherwise rejected when the other looks away so soon, while the Euro-American may feel that he or she is being stared at, perhaps with resentment.

This activity will provide a simulation of such conflicts and an opportunity to explore and talk about differences in cultures and the conflicts that may arise from them.

Materials Needed:
Pieces of cloth (3-5 per person)
Spoons (3-5 per person)

Procedure: Explain that differences between cultures are often hard to anticipate, see, or understand, and that conflicts commonly arise when the actions of one culture are misinterpreted by members of another culture.

Divide the group randomly into two heterogeneous sub-groups. (To do this, you might give each person a number and then split them into odds and evens, or designate each person with a nature-identity such as columbines, voles, lupine, and flying squirrels and then divide them into animals and plants.) Separate the two groups so they cannot hear each other’s conversations, and give each group an identity card that tells them what rules
they have to live by in their culture. They will either be the Bumbas or the Alcans. Ask them to take the time for all of the members of the group to familiarize themselves with the rules of their own cultures and get comfortable acting them out. This may take 5 or 10 minutes, but it is a very important step in the activity, so check in with each group to make sure that they are really familiar with their cultural roles and rules.

Inform the group that they will be meeting the other group to do some trading, but they do not know each other’s languages. You might re-emphasize this point, and ask each group if it’s members heard that instruction.

Have the groups meet to trade for several minutes, or until they seem very frustrated and at a loss to figure out what to do, then call an end to that trading session. Separate the two groups again and ask the members of each group to talk among themselves to improve their success at the next trading session.

You may wish to have 3 or 4 trading sessions, depending on the evolution of the process with your groups. After they seem to have exhausted creative ideas or tolerance for one another, stop the last trading session and bring the two separate groups to a discussion with each other about how they felt in the interaction. Then, read each of the cultural rules cards out loud, so the members of the other culture can understand why their trading partners acted as they did.

Have the groups take on the role of the other culture for one last session of trading (give them 5 minutes to learn the rules of the other culture first).

Assessment: After the trading sessions are finished, bring the groups together again and ask students to express what they experienced. Facilitate a discussion on how this activity relates to their own personal experiences or the experiences of cultural groups that they have heard about or observed. Finally, ask them what might be done in a real-life situation to prevent problems and misunderstandings when members of two different cultures interact.

Sources:


Day 2, Lesson 7
Cultural Rules Cards

Bumbas
The Bumbas greet strangers with a firm handshake and often a pat on the side, and direct eye contact is important to them to establish trust in a trading relationship. They greet strangers with a loud “It’s nice to meet you! My name is _____. Do you have any furs to trade?” They think that people from other cultures can understand their language. They usually trade with the males from other groups. Bumbas trade individually, for their own personal benefit. They don’t pay much attention to other Bumbas who are trading, unless they see that another Bumba is being much more successful than they are, in which case he or she may copy the tactics of that Bumba. The Bumbas are very interested in trading for the “furs” that the Alcans have, since they can sell them for a great profit back home.

Alcans
Alcans believe that it is extremely rude to look a stranger in the eyes. It is also taboo for them to touch a stranger. If a stranger touches an Alcan, that person may be shunned from the entire group because they have been dishonored. Alcans trade for the benefit of their entire community, so they are happy to let other Alcans trade furs for them, but trade is conducted by the females, since they are believed to be better negotiators. The Alcans are very interested in getting metal from the Bumbas, since they can melt the metal down to make musical instruments for the community.
Lesson Title: Cultivating Plants (Estimated time: 30 min.)

Objectives: Students will be aware that different cultures have different traditions and beliefs regarding how to plant and harvest food successfully. Students will gain experience cultivating plants and processing compost.

Background/Preparation: Most cultures around the world today cultivate plant foods, and many have for thousands and thousands of years. The word culture itself is based on the root “cul”, which means to dig up. Cultivated foods are considered in some cultures to be sacred, and often have stories associated with them about how they came to the people and what must be done to care for them. Some cultivated foods have guardian spirits that need to be prayed to, sung to, danced for, given offerings, or otherwise appeased.

Materials Needed:
- A garden accessible to the students
- Seeds of food-plants
- Garden implements
- Cultivating Plants Statement Cards
- Map or Globe

Procedure: Gather the students in a circle near a garden and sit down. Inform the students that you will be learning about growing food and composting, and about how diverse cultures interact with their cultivated food-crops. Pass around the Cultivating Plants Statement Cards and ask volunteers to read them out loud. As each one is read, point out the location of the culture being described on a globe or map. Tell the students that you will be going into the garden to learn about growing plants, and that you will be simulating several cultures’ relationships with their cultivated plant-foods.

Split the group up into four smaller groups, or one for every instructor and chaperone present. Have each instructor and chaperone with whom you are working take one of the Cultivating Plants Statement Cards and one of the groups, and proceed to a place in the garden where a simulation for the relationship described in the statement can be accomplished. If you have enough chaperones, station one at the composting area of the garden to explain that process.

Start the simulations, and after a few minutes (when it seems that all others have finished), ask the groups to switch to another station. The instructors and chaperones should stay in one area and repeat the simulation with each new group of students.

If there is more time remaining, ask the instructors and chaperones with whom you are working to supervise the students in other garden activities, such as harvesting, weeding, watering, and planting.
Assessment: Questions: What ideas about cultures’ ways of relating to food-plants did you learn about? Where any of these ideas similar to ways that you relate to food-plants? What do you think about the ways that these different cultures relate to their food-crops?

Day 3, Lesson 7
The Way of the Earth

Teri Melhlan

"Historically, and mystically, the earth... 

Many Zoroastrians believe that... 

(Naipie 1990)

- enough water for the corn fields, 
and to assure that there will be 
lands to grow grain, enough to feed 
small groups of farmers and their 
american people of Peru, Chile, or 
To many of the Quechua and 

(Wallis p. 48)

(Wallis p. 9) 

(Chekh Hamilton Kane (Senator))

- pridion Fremontii, Escobarland
business, without demanding
the position of the earth in search of
the highest position for. I never dare

(Melhlan p. 31)

(Wallis p. 30)

(Melhlan p. 25)

(Wallis p. 47)

(Wallis p. 49)

(Melhlan p. 31)

(Melhlan p. 27)

(Melhlan p. 25)

(Melhlan p. 31)

- Koepi Indian (Columbia)

- as much as any person, 
you have to respect them
because they are your father. Like your 
their roots are in the land. He

Cultivating Plans – Quiz Cards

- What if the corn fails?

- Why do the crops fail?

- What is the responsibility of the

- Why did I not grow my mother and sister, I

- Where did my childhood was spent wander.

- What did I do in the summer?

- What did I do in the winter?

- Where did I play?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?

- What did I do there?
handsome lake

way... "Eminence, Eminence, (It was here
the Goodness is but in its be-
time for you to follow for Gea, who
fell the children of women. It is not
purpose. Ever endure and do not
guard be strong and faithful to your
earth, do not follow me but abide on the
So I replied, "O spirit of the Corn
sustainer of life:
the Corn who had spoken, she the
understood that it was the spirit of
about my shoulders. And then I
only the long leaves of corn which
looked for the damsel, but she
wish to follow you.
the new world above it is our
When you leave this earth for
as she held a her hand; and
wore her arms around my neck and
Suddenly a damsel appeared and
neatly into the hand of the second

The day was bright when I went
Lesson Title: Cultures and Animals, Cultures and Plants (Estimated time: 30 min.)

Objectives: Students will learn diverse cultural ideas about relating to plants and animals.

Background/Preparation: Different cultures have diverse values regarding plants and animals, both specific to species, by genre, or as a whole. Some cultures see specific kinds of animals as representing certain human characteristics, or representing omens of good or evil. Certain plants may be considered to have qualities as charms, or may be considered to provide special attributes to a person consuming it. In addition, some cultures value reciprocity, the practice of giving something whenever something is taken. This can be in the form of a material offering, a statement of gratitude, or a prayer.

Materials Needed:
"Cultures and Animals, Cultures and Plants" Cards

Procedure: Ask the students to sit in a circle and play the Stone-Pass game as described in the earlier lesson plan ("Stone Pass Game"). Ask one of the adult chaperones with the group to send one student at a time down the trail after you at one minute intervals. Tell the students that there will be cards along the trail that they will need to read, and that at the end there will be a quiz about what was on the cards. Show them the cards so they know what to look for, and tell them to stay alert so they see the cards when they are passing them. Ask the chaperone to be the last one to go, and to collect the cards on the way.

Go down the trail and place the cards at intervals that are preferably just out of sight of each other, so the students don't get distracted. Place them where they can be easily seen.

Assessment: Questions: Ask the students which cultural ideas about plants and animals they found most interesting. Reinforce the identity of the culture for the students if the person talking about the idea doesn't remember which culture it was associated with. Ask the students to tell you what idea(s) individual cultures have, listing each of the cultures one at a time. For example, ask "What ideas do the Dine have about plants?"

Sources:

Day 3, Lesson 6
Dakora (Lakota) Elder

"blessing,"

God has stopped and will help and a
place where he has been is all where he
winds, he has been with. The trees
stopped. The Moon, the stars, the
Sun, which is so bright and beautiful
place to make his nest, and in
place to make his nest, and in
place to make his nest, and there, makes stops.

"Everything in it moves, now and

(Maculjum, p. 414)

Asa Bzhanoondah (Dine)

"about."

This is when the people do not know
Each something for curing them.
They pray and give medicine to
Public Health Service does go to
place to find medicine when the
case, sometimes the people come
case, sometimes the people come
doesn't, in case while medicine doesn't
"We have help that cure dis-"
Lesson Title: Cultures and the Night (Estimated Time – 2 hrs. 15 min.)

Objectives: Students will learn about cultural ideas of the night. Students will experience the outdoor environment at night, learn about cultural concepts of the moon and stars, and learn about the effects of darkness on the senses. Students will experience a campfire, and learn about diverse cultural beliefs and activities relating to fire. Students will experience a sweat-lodge, and learn of the use of “sweats” in diverse cultures.

Background/Preparation:

Cultures and the night
All cultures experience the darkness of night. There are diverse ideas about the nature and meaning of the night in different cultures, many of which are most easily accessible through cultural stories. Some of these beliefs are centered around nocturnal animals, while others focus on the moon and stars.

Campfires and Fire
Campfires and fire in general are common to most if not all cultures. Fire is often considered to be one of the basic elements, and is therefore accorded special meanings in many cultures. Campfires not only serve as a source of heat and light, but also serve as a cultural context for certain gatherings, ceremonies and stories. Because fire is considered both dangerous and a valuable gift, there are many stories and rituals related to fire across cultures.

For example:
- In Japan, the fire-demons that can devour entire towns are referred to as “Kami”, a term used for powerful spirits. In the Japanese Shinto tradition, fire is one of the 11 nature gods.
- In the Hopi’s winter Fire Dance, dancers leap into a fire, and leap out again holding live animals.
- A Mongol of the Ordos desert who has touched a corpse purifies himself by jumping over a fire.

Materials Needed:
Dine Story "First People Make the Stars"
A fire-circle or pit and wood

Procedure:
Tell the students that campfires have helped people keep away cold, animals, and fears in the dark in many cultures. Tell them that fire is a very powerful element, and that some cultures such as the Dagara of Burkina Fasso, Africa, associate fire with spirit power. Tell them that fires are used for certain rituals (see above), and that campfires are a natural place for people to gather and share stories.
Tell them the Dine story "First People Make the Stars."

**Assessment:** Questions: What are some culture's ideas about the night, the stars, or the moon (Name cultures)? What is the importance of fire in different cultures (Name cultures)? In what ways are the values of cultures regarding the night, the stars, the moon and fire different than those of your own culture?

**Sources:**

Day 2, Lesson 11
First People Make the Stars

Diné / Navajo

(U.S.)

First Man and First Woman fashioned the discs of Sun and Moon from a great slab of quartz, then decorated them and used lightning to fasten them high in the eastern sky. Then Sun Bearer and Moon Bearer entered the discs and began to move along their paths, guided by the tail feathers of Eagle.

Many chips and pieces of quartz sparkled on the blanket upon which the slab of stone had rested when First Man and First Woman chiseled away the discs of Sun and Moon. Piles of white dust lay about.

"These pieces of stone are beautiful," said First Woman.

"We must make good use of them," First Man agreed.

"Look at the vast empty space still left in the night sky," said First Woman. "These pieces of stone could be used to create patterns of light in the darkness."

Using their stone hammers and chisels to break more pieces of stone, First Man and First Woman then took up their flint knives and carved countless stars. When their work was finished, the blanket was littered with stars and sprinkled with stardust.

"Now," said First Woman, "I am going to arrange these stars in the sky. In these stars I will record the wisdom to guide the human beings. These laws cannot be recorded in the blowing sands or in the changing waters, or they will be altered by the forces of nature. But the People will always be able to look up in the night sky when they are lost and in need of guidance."

First Woman began by creating the star patterns in the sand as a template. While she was drawing, she positioned a strong star in the north.

"This star will be visible to everyone all year long," she explained. "This Campfire of the North will stay in one place. Some will call it the Lodestar, and it will help travelers find their way. There must be a star in each of the four directions, and one in the center." With that, First Woman drew stars in the south, the east and the west. Another star was positioned at the top of the night sky.

Fire Man sent two arrows skyward. These followed a curved path and created a ladder with their trails.

"Be careful, Fire Man," warned First Woman. "Each star must be placed exactly and must follow a certain path." Using a stick, she drew a picture in the
sand that showed Fire Man how the stars should travel through the darkness. Before each star was placed in the sky, First Man fastened a prayer feather to its highest point. Every star was given its own trail to follow, and a special prayer to chant along the way.

Then Fire Man climbed the ladder and placed the North Star in the sky. One at a time, Fire Man placed the larger stars, exactly as First Woman had drawn. First Woman helped by arranging smaller stars in patterns across the sky dome. Coyote, who had been watching from close by, also climbed the ladder and helped place the stars. In this way, they created the constellations.

When most of the larger quartz chips were used up, only tiny fragments and specks of dust remained. With these, First Woman filled Fire Man’s hands. He climbed part of the way up the ladder, lit each quartz fragment and speck of dust with a spark of fire, and sprinkled them here and there across the sky, one handful at a time. These clusters of tiny stars symbolize the glowworm and the firefly, or lightning beetle—the living beings of the night that carry a small spark of fire within them.

Before Fire Man came back down to Earth, Coyote grabbed the blanket by a corner. As he swept the blanket over his head, the remaining stardust flew up and formed a glistening band that stretched across the sky. Although some now call this trail the Milky Way, the Diné call it Yikáisdáhí. Each star along this path is a footprint of one of the spirits who journeys between Heaven and Earth.

“Now it is done,” said First Woman as she looked at the sky. “Someone in each generation will learn the laws of our people as they are recorded in the stars. That person will pass the wisdom down to the next generation so it will be preserved.”
Lesson Title: Ethnobotany Professor Hike (Estimated time: 25 min.)

Objectives: Students will learn traditional cultural uses for local plants and their relatives.

Background/Preparation: Different cultures have used plants in ways and for purposes that are sometimes very similar. Certain plants may be considered to have qualities as charms, while others are used as foods or medicines.

Materials Needed:
Ethnobotany Information sheet

Procedure: Ask the students to sit in a circle and play the Stone-Pass game as described in the earlier lesson plan ("Stone Pass Game"). Ask one of the adult chaperones with the group to send one student at a time down the trail after you at one-minute intervals. Tell the students that there will be other students along the trail that they will learn something from, and that at the end there will be a quiz about what was taught. Ask them not to run or wait up for the next person, as that could mess things up. Ask the chaperone to accompany the last student, and after they encounter the first “Professor” (student lesson-leader) on the trail, to bring that person with them as well to the next “Professor”, and so on. At the end of the trail, when they reach you again, they should be all back together. Ask the chaperone to pick up any paper signs that you might leave along the way to keep the students on the right path.

Begin the Stone Pass game and then proceed down the trail until you have encountered a plant for which there is some Ethnobotanical Information. Stop and wait for the first student to arrive, and give them a one or two sentence lesson to teach about a plant there. Don’t make it longer or more complicated, or you will most likely lose more than you gain in terms of material taught. Ask the student if they understand and are ready to be the teacher for that spot. If you have time, ask them to teach it back to you. Try and leave before the first student comes into sight, and continue down the trail to the next plant. Try and keep the students at intervals that are out of sight of each other, so the students don’t get distracted. If you come to any forks or turns in the trail that might be confusing, either have a student there as a teacher, or leave a sign pointing the way.

Assessment: Questions: Name the plants that were discussed along the trail one at a time, and ask the students which cultural uses for or ideas about the plant they remember. Reinforce the identity of the culture for the students if the person talking about the idea doesn’t remember which culture it was associated with.

Sources: Activity developed and used by the author at Olympic Park Institute in Port Angeles, WA, 1993.
Day 4, Lesson 4
Lesson Title: Imaginary Clan House  (Estimated Time – 10 min.)

Objectives: Students will be able to express the purpose of environmental education, and will be able to describe several different world-views regarding the environment.

Background/Preparation: Environmental education professionals have identified a major goal or purpose for environmental education: To teach students how to identify and resolve environmental issues.

One of the foremost obstacles to resolving environmental issues is that different social, political, and other cultural groups hold completely different and sometimes opposing world-views regarding the environment. This often makes simple compromise irrelevant or impossible, as two or more groups may not even agree on basic premises of value and propriety. It is fundamental for students of environmental education to understand these differences, or at a minimum to recognize that they exist.

Materials:
Statement of Purpose of Env. Ed.
Environmental world view examples
Cultural World View cards

Procedure: Begin by assembling the students in a circle seated on the ground. You may use a place where a primitive “shelter” has been assembled, or a circle of trees, and tell the students that it represents a “clan house”. Explain that clan houses are used in many cultures around the world as a place to conduct important meetings and discussions, and sometimes to share stories.

Ask them what their ideas are about why they are taught environmental education (Keep this relatively brief - maybe 2 or 3 statements). Read a statement about the purpose of environmental education. Discuss it briefly to ensure that it is understood.

Introduce the concept of world-view as it relates to the environment. Explain that people have different ideas about what the environment is and who they are in relationship to the environment. Explain that these differences may be caused by social, political and cultural differences between individuals and groups.

Three major world-views have been identified regarding the environment. (They are major categories only, as a full spectrum of diverse beliefs exists). These include:

Utilitarian - Those who believe that the environment can and should be used in any way that benefits an individual or group of people, regardless of the impact on the resource or resources.
Conservationist - Those who believe that the environment and its resources should be used by people, but that the use should be carefully regulated to insure the greatest availability of the resource(s) for the greatest number of people over the greatest length of time.

Preservationist - Those who believe that resources should be left alone, unchanged and unharmed.

Explain that there are other cultural or spiritual world-views regarding the environment and regarding who people are in relationship to it. Pass out the cultural world-view statement quote cards and ask students to read them. Discuss what different world-view statements might imply about the actions or beliefs of members of the culture or individual from which the statement originates.

Assessment: Questions: What do many environmental education professionals consider to be the purpose of environmental education? What are some examples of environmental world-views?

Sources:

Day 1, Lesson 5
(Australian Aborigines) - Ekahim Kanne

All of the in the land. Natives; keep them human and animal alike. This is the land of the human and animal alike. Their is a special bond between humans and animals.

The Way of the Earth (p. 25)

Terry Melham

Nature serves as a source of nourishment. Natives view nature as a source of nourishment. They see nature as a guide to their survival.

(Chinese) - The Chinese: I, Ch'i

Heaven and Earth:

Humans are the heart and mind of our motherland, our dusty old land. Our old people are still in the land, our land. Our spirits are in our land. We don't want money, we want our motherland, our dusty old land.

Imaginary Charades - Quote Cards

(Peruvian) - Kogi Native American Indians

as much as any person. You have to respect them more. You have to respect them more. You can call them because bananas.

You can call them because bananas.
Meluhhan p. 432

(Chickeasaw)
Linda Hogan (Author)

Justice...

healthily describe such peace and brother. Humans whose minds are peace with all your sisters and brothers, love and the universe. Keep

of nature and the universe. Keep

so that it is in harmony with the rest

self and voice. Remember your

Pray to the Earth. Respect your

life is sacred.

We belong to the world. And all

The world does not belong to us,

of everything in our world. Part of

are one with the land. We are part

live freely with the land. We

medicines)

(from their ancient powertul

speech all is sacred, especially the

I treat all people in creation with re-

create and plan ways to live

everything on Earth. Every

people. Everything on Earth. Every-

people who have witnessed our

without naming the earths and moon-

without naming the earth and moon.

Otherwise, we have none and our

verses in all things. The Earth

Honor Father Sky and Mother

Grandfather Creative Spirit
(Audrey Shenandoah, Oundega Eider)

Meluahan, p. 397

I remember my Grandmother... the hills to appreciate, you know... the water and one of our little... We had happiness... before me and like them I live. I've live my fathers and mothers have brought and they over the land. I know every stream and every wood between the mountain and the plains. I was born where there were not within walls. I know every tree and the stream. I was born to the light of the sun. I am who the sun where there were no enclosures and everything drew a smile on my face and there were no limitations. I was born on the prairie...
To make offerings to it,
know where it is but we decide only
Mother is not to take the gold. We
distinguish how to advice of the
not take it. We know from our
We know that it is there but we do
don't take our Earth's gold.
stealing the gold, it will die. We
is like a person. Robbing tombs,
robbed so many tombs. The world
is dying? It is because they have
stories what the world is dying. Why
could die. We've all heard many
Earth's gold is the same thing. If
the tools it will die. Dieing out the
lype of ice and then pull it up by
If we plan an orange ice of any
is our Mother Earth.
Earth... (We) know that the land
world. We respect our Mother
"We work to take care of the
Lesson Title: Indigenous Learning Hike (Estimated Time 10 min.)

Objectives: To provide students with a nature-learning experience in the style of many indigenous cultures.

Background/Preparation: Many cultures have not traditionally taught their youth about nature in schools. Instead, young people learned things experientially, by watching, listening, and asking questions when curious. In such cultures, knowledge of nature comes directly from nature, with a minimum of interpretation by adults or others. This method is valued because it allows the individual to be guided by personal interest and abilities, without significant interference from others. An exception to this is made for issues concerning safety, in which cases warnings to pay attention are sometimes given.

Procedure: Begin by asking students how they learn about the natural environment. Inform them that many indigenous cultures teach their youth about the environment simply by letting them spend time in it observing and experiencing. Ask them if they think that they could learn in this way.

Ask the students to demonstrate that they can learn in a traditional indigenous way, by observing and experiencing the environment. Emphasize that it is important that they be silent for this section of the hike, because one thing that will keep a person from observing and experiencing the environment is distraction from other people. You might suggest that the students get some space between one another on the trail, to minimize temptation. Also emphasize that stopping to observe or touch something is permissible, as is going off the trail (alone) to get closer to something you saw from the trail. Inform them that they cannot stop for longer than a couple of minutes, and warn them about poison oak! You should also remind them not to pick any living plants or harass any animals. Ask an adult chaperone or one of the students to act as a "sweep" at the end of the group, to make sure that no-one gets left behind. Provide at least 10 minutes of silent walking time for the students.

Assessment: Gather the group together in a circle, preferably seated in a clearing, to share what they observed and learned.

Sources:

Day 1, Lesson 3
**Lesson Title:** Indigenous Tidepool Learning Time (Estimated time: 20 min.)

**Objectives:** To provide students with a nature-learning experience in the style of many indigenous cultures.

**Background/Preparation:** Many cultures have not traditionally taught their youth about nature in schools. Instead, young people learned things experientially, by watching, listening, and asking questions when curious. In such cultures, knowledge of nature comes directly from nature, with a minimum of interpretation by adults or others. This method is valued because it allows the individual to be guided by personal interest and abilities, without significant interference from others. An exception to this is made for issues concerning safety, in which cases warnings to pay attention are sometimes given.

**Materials Needed:**
Intertidal area accessible to students, at low-tide

**Procedure:** Remind the students that many indigenous cultures teach their youth about the environment simply by letting them spend time in it observing and experiencing. Ask them if they think that they could learn in this way.

Ask the students to demonstrate that they can learn in a traditional indigenous way, by observing and experiencing the environment. Explain that the shore is a potentially dangerous place and that every year on the coast of California, people are drowned by being swept out to sea. Ask them to stay far away from any breaking waves. Explain that off-shore earthquakes and large ships can create “rogue waves” that are much bigger than other waves, and that these can take people by surprise.

Assign all adults to stand around the perimeter of the intertidal area and ensure that no students venture out-of-bounds. Assign one chaperone the job of wave-watcher, to alert the group if any abnormally large swells are approaching (give them binoculars).

Explain that tidepool animals need to stay where they are, or be returned to the pool in which they were found if removed for observation. You might make the analogy that picking an animal up from one pool and putting it down in another would be like someone picking them up from their neighborhood and putting them down across town or in a neighboring city. Explain that many of the animals will not be easily removed from the rocks, and that they should not rip or force them off. Explain that some of the animals are exposed on the rocks in the open air and camouflaged, such as anemones, and that they should step carefully so as not to crush them.

Offer the students field-guides and ID charts of tidepool animals.
Once the chaperones are in their positions around the perimeter of the area, allow the students to carefully walk or climb down to the area and begin exploring.

After ten minutes, give the students a five-minute warning. Give them a two-minute warning and a one-minute warning, and then gather them on the side of the area farthest from the breaking waves.

**Assessment:** Questions: What are some of the dangers of exploring an intertidal area? What did you see when you were observing?

**Sources:**

Day 4, Lesson 9
Lesson Title: Medicine Plant Meeting (Estimated time: 10 min.)

Objectives: Students will be aware that in some cultures medicinal knowledge of plants is gained through meditation, dreams, visions, or communicating with plants.

Background/Preparation: Indigenous healers have identified the sources and preparations of countless medicines from plants. Though it is often assumed that the remarkable accuracy with which they have done this is due to trial and error alone, the healers themselves often attribute their knowledge to meditation, dreams, visions, or communications with plants.

Materials Needed: Plants growing in their natural environments.

Procedure: Ask the students how medicines are discovered. Explain that in some cultures, medicinal knowledge about plants comes to healers through meditation, dreams, visions, or communicating with plants directly. Tell them that this method of gaining knowledge has virtually no validity in the eyes of western scientists, but that it is a perfectly valid way of gaining knowledge about plant properties in many traditions. Make these points very clearly:

- You are not saying that any tradition’s methods are right or wrong, you are only pointing out that the people of different traditions have different ways of learning about plants, and they consider their own ways to be valid.
- They should not assume that they can gain knowledge in the way of another tradition without having grown up within the culture of that tradition.

Ask the students to find a plant that appeals to them, and look at it closely. Ask them to try and “hear” from the plant what it could be used for. Tell them that in some traditions, healers do this to learn about medicines.

After about 5 minutes, gather the students together and ask if any of them got any ideas about what their plant could be used for. Allow them to share their ideas if they like.

Assessment: Questions: Ask the students in a blind poll if they think that information about a plant’s medicinal properties can be discovered by communicating directly with a plant, or through visions, dreams, or meditation. (Have them stand facing outward in a circle with their eyes closed, and put a thumb up if they think it is possible, down if they don’t think it’s possible, and to the side if they’re undecided). Share the results of the anonymous poll with the group.


Day 4, Lesson 3
Lesson Title: Mineral Balancing  (Estimated time: 45 min.)

Objectives: Students will learn that some cultures view certain rocks or rocks in general as holders of great power or significance. Students will experience and learn about how one culture approaches the concept of getting people into balance with the natural world.

Background/Preparation: Some cultures use specific practices or rituals to help people stay or get “in balance” with the natural world. A Lakota ritual involves guiding the person through a series of sweats in a sweat-lodge and then placing the person in an open trench or “grave” on a mountain or ridge-top for several days. The person lies there in the trench, which is covered by blankets, and fasts. The ritual is said to bring the individual closer in touch with “the Mother Earth”, and back onto the path of living in the spiritual strength of the traditional ways. In the Lakota tradition, stones are the most spiritually powerful physical things, more powerful than eagles and spiders. They are a part of the Earth itself, and are therefore infused with its quality and characteristics.

The Dagara culture of Burkina Fasso (NW Africa) practices a series of rituals as a part of the rites of passage for boys. One of these rituals is to bury the individual under stones (except for the head) in order to balance them with the mineral elements of the world. The individual is accompanied by an attendant who looks after his needs, supports him, and helps him to get out when he is ready. One of the means of support for individuals in this ritual is the drumming and singing, which community members continue until it is over.

In the Dagara tradition, the mineral element is related to memories and stories. The rocks hold stories from long ago.

Materials Needed:
Many very small stones
One large, attractive rock
Drums

Procedure:
Part 1. Introduce the subject of rocks to the students by showing them an example of a visually appealing rock (Pass it around if it is not too fragile). Explain that in some cultures, certain rocks or all rocks are thought to hold great power or significance. Read three or four quotes from members of diverse cultures about their views on rocks.

Part 2. Introduce the Dagara culture of Burkina Fasso, Africa as a culture that views rocks as having special characteristics. Explain that the Dagara believe that minerals are related to memory and stories, that the minerals hold the stories of long ago.

Discuss the concept of ritual with the students, how rituals are actions done with a specific goal or intention, like recognizing a holiday, or the union of two people, or the
passing of a loved one, or the completion of an education. Explain that some cultures also use rituals with the intention of helping get people to be more in balance with nature, kind of like giving a car a tune-up or an oil change so it will run better.

Explain that you will simulate a Dagara ritual designed to get people in balance with rocks and minerals. The reason this is done is because it is believed that individuals that are balanced with all of the elements of the Earth are the strongest and most capable members of a community. This ritual is a part of a series of rituals that are held for boys who are preparing for the responsibilities of adulthood.

Explain that rituals often require some people to participate as supporters, so not everyone can do the same ritual at any given time. In this ritual, people will be covered up to their necks by small, rounded stones on a beach piled high with such pebbles. Some people will help dig out places for others to be buried in, cover them up, and dig them out again. Others will sing and play drums to support the people who are buried in the pebbles.

The object of being buried in the pebbles is to help the individual get more balanced with the mineral element of Earth. An individual may or may not notice any change or difference from this process, and the process itself might be uncomfortable for some, while others are very comfortable. The point here is primarily to simulate what is done in Burkina Fasso, so students can have a better, more experiential understanding of such cultural phenomena, and therewith have a better understanding for why people might do such a thing.

Start the ritual with teaching the song and drumming that will support it. The words of the song are “Pura-sah-min-ay........, Pura-sah-min-ay........., Pura-sah-min-ay-oh........, Pura-sah-min-ay-ohhhhhhhhh-Ah!............. Pura-mah-min-ay........, Pura-mah-min-ay-oh........, Pura-mah-min-ay-ohhhhhhhhh-Ah!.............

Have an escort guide the students, one at a time, to the place where they will be buried. Once there, two attendants will assist with laying the person down and then covering them with the pebbles (preferably about one-foot of covering). Continue this process until all of the people who want to be buried have been. Let the buried people stay in the pebbles, undisturbed by others, for 10-20 minutes (time-permitting), while the others drum and sing for them from a distance. If a person wishes to come out at any time, of course, they should be assisted. Be sure all of the pebbles are removed from the student’s clothing and shoes.

When all have emerged again from the pebbles and returned to the larger group, the drumming and singing can stop, and the ritual is finished.

**Assessment:** Questions: What is significant about rocks in the view of the Lakota culture? What is significant about rocks in the view of the Dagara culture? In what ways
are these cultures' values and interactions with rocks different from those of your own culture?

Sources:


Conversation between the researcher and a Lakota medicine man while performing the ritual mentioned on a local youth outside of Boulder, CO in May of 1987.

Day 4, Lesson 8
Lesson Title: Moon and Tides (Estimated time: 15 min.)

Objectives: Students will understand how the moon and sun influence the ocean’s tides.

Background/Preparation: Tides of varying magnitude occur with all matter on Earth, due to changes in the gravitational pull of the moon and sun in relation to the Earth. Ocean tides vary more than any others that are visible to people.

Tides are influenced by the Moon much more so than by the Sun, because of the moon’s proximity to the Earth. When the Earth, Moon and Sun line up on each full Moon and new Moon, the tidal fluctuations are the greatest (higher high-tides and lower low-tides). This is because the two planetary bodies pull at the Earth’s matter on the same plane. If the Moon and Sun are on opposite sides of the Earth (full Moon), they are each pulling at the Earth in an outward direction. This results in the thinning of water near the Earth’s poles, and a bulging of water around the Earth’s middle. Since the Earth’s axis is at a 23-degree tilt, and the orientation of that axis to the position of the Moon and Sun depend on the time of year, the hours of tides in any particular place are not necessarily simple to predict. What can be predicted is that there will be the highest high tides and lowest low tides around the new and full Moons.

Conversely, when the Moon is in a position 90 degrees from the sun relative to the Earth (first-quarter or third-quarter Moon), their pulls nearly cancel each other out. These times are found to have the least tidal fluctuation.

Many tidepool and ocean species reproduce on the Moon’s cycle. Sea urchins, squid, and many other mollusks are included in this group, as is the grunion fish.

Other interesting Moon facts: Most earthquakes and births happen within three days of a new or full moon. The Moon is getting farther from the Earth, and as it does, months get longer.

Materials Needed:
Sandy beach
Stick to make lines in sand
Story “How Raven Made the Tides” (from Caduto and Bruchac, Keepers of the Earth)

Procedure: Ask the students if they think that the water level of the ocean at the shore is always the same. Ask them what makes the water go up and down. Explain that the sun and moon both effect the tides, but that the moon has the greatest influence.

Draw a diagram in the sand of the Earth, the Sun, and the Moon (remember to make the Sun large and far away). Draw the Moon exactly opposite the Sun first. Ask the students what phase of the moon this would represent. Explain, if necessary, that the Moon
appears “full” because we see its whole face reflecting sunlight back to us. Draw broad bulges around the middle of the Earth to represent the ocean being pulled out. Ask the students if they would expect very high and low tides at this time. Explain that when the Earth is lined up with the Moon and Sun, the greatest bulges occur, which we see as high and low tides. Draw the Moon on the same side as the Sun and ask if anyone knows what phase of the Moon it would be. If necessary, explain that we don’t see any moon from the Earth, because its face that reflects the Sun’s light is facing away from us completely. Explain that the tides at the new Moon are similar to the ones at the full Moon, but slightly more extreme (the spin of the Earth distributes the bulge around the Earth’s center).

Draw the Moon at a 90-degree angle from where the Sun’s rays hit the Earth. Ask if anyone knows what phase the moon would be in if it were there (first or third quarter Moon). Explain that at these times, the Moon looks half full, and there isn’t much fluctuation in the tides because the Moon and Sun are working against each other.

Read the story “How Raven Made the Tides.”

**Assessment:** Questions: At what times of the month would you find the tide at its highest? At its lowest? Why are tides during the first and third-quarter Moons not very high or low? What do you think of the Northwest coastal people’s idea of how the tides were created?

**Sources:**

Day 4, Lesson 6
How Raven Made the Tides

*(Tsimshian—Pacific Northwest)*

A long time ago, the old people say, the tide did not come in or go out. The ocean would stay very high up on the shore for a long time and the clams and the seaweed and the other good things to eat would be hidden under the deep water. The people were often hungry.

"This is not the way it should be," said Raven. Then he put on his blanket of black feathers and flew along the coast, following the line of the tide. At last he came to the house of a very old woman who was the one who held the tide-line in her hand. As long as she held onto it the tide would stay high.

Raven walked into the old woman's house. There she sat, the tide-line held firmly in her hand. Raven sat down across from her.

"Ah," he said, "Those clams were good to eat."

"What clams?" said the old woman.

But Raven did not answer her. Instead he patted his stomach and said, "Ah, it was so easy to pick them up that I have eaten as much as I can eat."

"That can't be so," said the old woman, trying to look past Raven to see out her door, but Raven blocked the entrance. So she stood up and leaned past him to look out. Then Raven pushed her so that she fell through the door, and as she fell he threw dust into her eyes so that she was blinded. She let go of the tide-line then and the tide rushed out, leaving all kinds of clams and crabs and other good things to eat exposed.

Raven went out and began to gather clams. He gathered as much as he could carry and ate until he could eat no more. All along the beach others were gathering the good food and thanking Raven for what he had done. Finally he came back to the place where the old woman still was.

"Raven," she said, "I know it is you. Heal my eyes so that I can see again."

"I will heal you," Raven said, "but only if you promise to let go of the tide-line twice a day. The people cannot wait so long to gather food from the beaches."

"I will do it," said the old woman. Then Raven washed out her eyes and she could see again. So it is that the tide comes in and goes out every day because Raven made the old woman let go of the tide-line.

*Raven knows that low tide must come for the people to gather clams, crabs, seaweed and other food from the beaches. He tricks the old woman and she lets go of the tide-line. Then he bargains with her and she agrees to let the tide go out twice a day.*
Lesson Title: Nature Names Across Cultures (estimated time 25 minutes)

Objectives: To expose students to the fact that many names from diverse cultures are taken from or related to nature.

Background/Preparation: Names from many different cultures come directly from nature, describing places, seasons, animals, plants and other objects and qualities of the natural world.

Procedure: Begin by asking students if they know of any people’s names that describe something in or about the natural environment.

After the names volunteered by students, share some of the names from different cultures that are from nature. You may show the students a list of examples of such names and/or pass the list around, or read some examples from a list.

Ask the students to think of something in nature that they feel a connection with, and that has the same first sound as their own first names. For example, Jessica Jellyfish, Cougar Ken, or Aaron Eagle. As you can see, this does not need to be an exercise in rigid adherence to the rules.

Go around in a circle and ask each student what name they have come up with, and if they have not thought of one, welcome and offer suggestions. If the student will not choose one right away, allow them to pass until the end, and then come back to them. If the student is still not comfortable with any of the suggestions, tell the student that she or he can use a temporary nature name and then change it later if and when they choose one to their liking.

Assessment:
After all students have nature names, challenge anyone to try and remember everyone’s name and nature name. Allow several students to attempt this before moving on, so the repetition of names helps others to learn them.

Sources:
This activity is adapted from one the researcher encountered while working with San Mateo Outdoor Education in La Honda, CA. Names and their meanings are from:

Tutalo, Gia. 1996. What Will We Call The Baby? Boca Raton, FL: Globe Communications Corp.
Examples of Names from Diverse Cultures Pertaining to Nature

Names usually given to girls:
Alani, Allani, Lani = Orange Tree (Hawaiian)
Aleta, Alida = Little Winged One (Spanish)
Anastasia, Ana, Anastasie, Stacy = Of Springtime (Greek)
Arabella, Arabelle, Arabela, Bella, Belle = The Beautiful Eagle (German)
Ariel, Ari, Ariella, Arielle = Divine Feline (Hebrew)
Ashley, Ashlan, Ashly, Ashlee = From the Ash Meadow (Old English)
Avy, Avis = Bird (Latin)
Beverley, Bev, Beverley = From the Beaver Meadow (Old English)
Breena, Brena, Breen = Raven (Irish Gaelic)
Brook, Brooke = The Brook or Stream (Old English)
Cerise, Cherise, Sarise = Cherry (French)
Chandra or Shandra = Like the Moon
Chelsea, Chelsa, Chelsi = Harbor (Old English)
Chloe, Cloe = A Profusion of Blooms (Greek)
Coral, Cora, Corall = Small Stone (Greek)
Crystal, Christal, Christell, Krystal = Ice (Greek)
Cynthia, Cindy, Cyndy = Moon Goddess (Greek)
Dallis, Dallas = Of the Meadows (Scottish)
Danica, Danna, Danika = Morning Star (Slavic)
Dyani = A Deer (Unidentified Native American Language)
Emerald, Esmeralda = A Green Gemstone (Middle English)
Erika, Erica = Flowering Heather (German)
Erin, Erina = The Old Name for Ireland (Irish)
Fala = A Crow (Unidentified Native American Language)
Fawn, Fawna, Fawne = A Young Deer (Latin)
Fern = From the Fern Plant (Old English)
Fiala = Violet (Czech)
Flannery = A Metal (Old French)
GelseY = Jasmine (Italian)
Geva = A Small Mount (Hebrew)
Giacinta = Hyacinth (Italian)
Glenna, Glen, Glenn = Woman from the Valley (Gaelic)
Harley, Harli, Harlie = From the Long Field (Old English)
Heather, Heath = Flowering Heather (Middle English)
Hesper = Evening Star (Greek)
Holly, Holli, Hollie = The Holly Bush (Anglo Saxon)
Honey = Sweet as Honey (German)
Ilana, Elana, Eliet = Tree (Hebrew)
Ilona, Ila, Ilon = Light (Greek)
Ingird, Inga, Inge, Inger = Meadow (Old English)
Iona, Ione, Ionia = Purple Jewel (Greek)
Jacinda, Jacey, Jacie = Hyacinth (Greek)
Jade, Jada = Jewel (Spanish)
Jasmine, Jina, Jasmin, Jasmina, Jessie = Flower (Persian)
Kacie, Kacey, KC, Kacia = Eagle Eyed (Irish)
Kalyca, kali, Kalika = Rosebud (Greek)
Laurel, Lari, Loralie, Lorrie = From the Laurel Garland (Latin)
Lee, Lea, Leigh = Meadow or Fertile Grassland (Anglo Saxon)
Leilani, Lani, Loni = Flower of Heaven (Polynesian)
Lena, Lina = Light (Greek)
Lindsay, Lindsey, Linsey, Linzy = From the Linden Tree Island (Old English)
Maisie, Maizie, Maisy = A Pearl (Greek)
Marina, Marna = Of the Sea (Latin)
Marissa, Marisa, Mariiza = Sea-Born (Latin)
Melissa, Lissa, Millicent, Milly, Missy = The Honey Bee (Greek)
Mika = Wise Little Raccoon (Unidentified Native American Language)
Mora = The Little Blueberry (Spanish)
Morgan, Morgen, Morgana = Sea's Edge (Welsh)
Nerissa, Nerisse, Rissa = Daughter of the Sea (Greek)
Nitara = Having Deep Roots (Hindi)
Nova = One Who Chases the Butterfly (Unidentified Native American Language)
Odina = Mountain (Unidentified Native American Language)
Olivia, Livia, Livvy, Olive = Olive Tree (Symbol of Peace)(Latin)
Oprah, Opra = Fawn (Hebrew)
Pamela, Pam = Sweet as Honey (Greek)
Phoebe, Phebe = Goddess of the Moon (Greek)
Rachel, Raquel = A Female Lamb (Hebrew)
Raisa, Raissa, Razel = Rose (Yiddish)
Rhea = Earth (Greek)
Riva = Riverbank (Old French)
Rochelle, Shelly = Little Rock (Old French)
Roxanne, Roxanna = Dawn (Persian)
Sabrina, Brina, Ina, Bri, Reena = Goddess of the River Severn (English)
Sharon, Sharyn = Plains (Hebrew)
Shoshanah, Shannah, Shanna = Rose (Hebrew)
Susan, Sue, Suzanne, Suzy = Lily (Hebrew)
Tabitha, Tabi = Gazelle (Aramaic)
Tamara, Tammi, Tammy = Palm Tree (Hebrew)
Ula = Jewel From the Sea (Celtic)
Vanessa = Star (Hebrew)
Whitney, Whit = Island (Old English)

Names usually given to boys:
Adair = From the Oak Tree (Scottish)
Adam, Addison = Man of Earth (Hebrew)
Aiden = Fire (Gaelic)
Alon = From the Oak Tree (Hebrew)
Arnold, Arnie = Strong and Bold as the Eagle (Germanic)
Barclay, Burke, Berkeley = Meadow of Birch Trees (Old English)
Barton = From the Barley Farm (Old English)
Benton = Man From the Moor (Old English)
Bernard, Bernie, Barney = Stern Bear (Germanic)
Bjorn = Bear (Swedish,Norweigian)
Blair = A Man of the Flatlands (Gaelic)
Bradley, Brad, Brady = Of the Broad Meadow (Old English)
Brendan, Brandon = The Salmon of Wisdom (Irish)
Broderick, Rick = Fertile, Flat Land (Celtic)
Bruce = Brushwood (French); Courageous (Scottish)
Byron, Byran = Bear (Anglo Saxon)
Calbert, Cal = Shephard (Old English)
Clifford, Cliff, Clifton = The Ford Near the Cliff (Anglo Saxon)
Clinton = The Farm at the Top of the Hill (Anglo Saxon)
Corbin, Corby, Corwin, Corbett = A Raven (Latin)
Cory, Corey = Ravine (Scottish)
Craig = Rocky Hill (Celtic)
Dale = Little Valley (Old English)
Douglas, Doug = The Dark Ocean (Scottish)
Dwayne, Duane, Wayne = Meadow or Field (British)
Everett = Wild Boar (Old Norse)
Fabian = Bean Farmer (Greek)
Floyd = The Hollow (Old English)
Frasier, Fraser = Strawberry (French)
Gavin = White Hawk (Scottish)
Glen, Glenn = Valley (Celtic)
Gordon, Gordy = Pyramid Shaped Hill (English)
Heath = Bare Lands (Middle English)
Jamal = Camel (Arabic)
Jonah = Dove (Hebrew)
Keaton = Where the Hawks Go (Old English)
Keith = The Forest (Welsh)
Kele = Sparrow Hawk (Unidentified Native American Language)
Kelsey = The Island of the Ships (Scandinavian)
Lance = Land (Germanic)
Laurence, Lars, Laurent, Lawrence = Laurel or Bay Tree (Latin)
Leonard, Lionel, Leo, Leon = The Bold Lion (Germanic)
Logan = Cove (Gaelic)
Lyle, Lyell = The Island (French)
Lyndon = Linden Tree (Old English)
Marlon, Merlilr = Falcon (Old French)
Marvin = The Sea (English)
Montgomery, Monty, Montague = Mountain (Latin)
Morgan = Man From the Sea's Edge (Gaelic)
Moses = Drawn From the Bulrushes (Hebrew)
Murphy = Warrior From the Sea (Irish)
Oakley, Oakleigh = A Grove of Oak Trees (Old English)
Oliver, Ollie = Olive Tree (Latin)
Oren, Orin = Cedar Tree (Hebrew)
Orrick = Venerable Oak (Old English)
Orson, Sonny = He Who is Like the Bear (Latin)
Perry, Peary = He of the Place Where the Pear Tree Grows (Anglo Saxon)
Peter, Pedro, Pietro, Pierre = Rock or Stone (Greek)
Philip, Felipe = Lover of Horses (Greek)
Pierce = Rock or Stone (Old Anglo-French)
Raleigh, Lee, Leigh = Deer Meadow (Old English)
Ramsay, Ramsey = Island of the Ravens (Scottish)
Redmond, Red = Protected by Reeds (Old English)
Reed, Reid, Redd = Reed (Old English)
Reynard, Rey, Ray = Fox (Old French)
Rhett = Stream (Old English)
Ross = Wood (Latin)
Samson = As Bright as The Sun (Hebrew)
Slade = Child From the Valley (Old English)
Stanley, Stan = Stony Field (English)
Stephen, Steven, Stefano, Esteban = Garland (Greek)
Todd = Fox (Scottish)
Travis = At the Crossing (French)
Ulric, Rick = Wolf (Danish)
Wade, Wadsworth = River Crossing (Old English)
Walden, Walter, Wally = Woods (Old English)
Walker = He Who Walks in the Forest (Anglo Saxon)
Wayland, Waylon = Land Near the Highway (Old English)
Wesley, Wellesley = The Man From the West (Anglo Saxon)
Wolfgang, Wolfie = The Path of the Wolf (Germanic)
Zeke, Ezekiel = Shooting Star (Aramaic)
Lesson Title: Ohlone Sunrise Competition (Estimated time: 15 min.)

Objectives: Students will participate in a simulation of Ohlone (Costanoan, Central Coast Indian) sunrise ritual. Students will learn the cultural concept that human actions keep the cycles of nature in balance.

Background/Preparation: The indigenous people of the Central California Coast, sometimes referred to as the Ohlone or Costanoan Indians, were known to practice a sunrise ritual. They would get up each morning before the sunrise and go to a place towards the East, and from there shout encouragement to the Sun to get it to rise. They used gestures and expressed themselves often with their whole bodies in a very energetic manner. (A very similar ritual was practiced by Zuni Indians of New Mexico, as recorded by Carl Jung.)

Materials Needed:
Sun, rising
Award (Symbol of Sun)
Treats for cabin

Procedure: Explain to the students on the preceding evening that there will be a competition the next morning to see which group can get the sun to rise. Each group will compete to be the most enthusiastic, creative and expressive in their efforts to get the sun up. The winning group will get an award, as well as treats for all of the cabin members.

Bring the students to a place from where the rising sun can be viewed. When a drumbeat is sounded, each group will commence its efforts to encourage the Sun’s rising. Note that loudness is not the main criterion for success here. Sincere encouragement and gesturing are the most important.

A panel of independent judges will determine which cabin got the sun up.

Assessment: Questions: What relationship did the Ohlone have with the sun and its rising? How is this different from the relationship that you have with the sun in your own culture?

Sources:

Day 2, Lesson 1
Lesson Title: Sacred Mountain Sketching and Poetry  (Estimated time: 20 min.)

Objectives: Students will be aware that special relationships exist between certain cultures and their sacred mountains. Students will gain experience expressing themselves artistically and/or poetically.

Background/Preparation: Sacred mountains are recognized in cultures all around the world. They may be seen as the original emerging point of the people in their creation story, or a place where a spirit or spirits live. They are sometimes sacred because special plants with medicinal properties grow on them. They may also be sacred because of their shape or location on the landscape, or the presence of a spring.

Materials Needed:
Sketching pens and/or pencils
Paper
Examples of images and poems about sacred mountains
Quote cards describing diverse cultural ideas about sacred mountains.

Procedure: Discuss the concept of a sacred mountain with the students. Share with them some images and poems on the subject of sacred mountains. Ask the students to read quotes from diverse cultures about sacred mountains. Ask them what they might find special about a certain mountain.

Point out a prominent mountain visible in the area. Ask the students to imagine that it is a sacred mountain, and to write a poem about or sketch the mountain from that perspective.

Assessment: Have the students share their sketches or poems on a voluntary basis, and ask them to describe anything in particular that they were noticing or trying to express about the mountain.

Sources:
Conversation between researcher and Dine medicine man Buck Navajo at Navajo Mountain, Arizona, July 1996.


Day 2, Lesson 4
Journey to the Sacred Mountains

The sun accompanied me
Thrusting its rays over the mountains of Ndini.
On either side of me, columns of red fire quivered,
Making a corridor of light for my shadow.
The long grass of the hills was bent low
As though to whisper some secret to the earth.
People's shadows walk eternally on earth
I saw them swirling in the wind
I laughed and ran by their power
The Holy Ones spoke and everything was silent;
(All creatures woke from their sleep)
Their voices broke through the waterfalls
Anthems echoed from the mountains
They eddied to the horizon like a great wave.

The whole earth was enveloped in their dream.
Those chosen before us showed us the way.
They led us silently to the sacred mountains.
There we listened to the great epics
We heard the voices of the ancient poets
We were basking in the legends of our Forefathers
Certain the child on our back shall grow without fear,
And all things great and beautiful shall follow him.
were sacred to their god Zeus. The tops of the highest mountains Many ancient Greeks believed that

The forces of majestic power, the most powerful of the 'Makar', are considered mountains to be revered in Many Ojibwa Dakota people

'Kogi Indian (Columbia)'

"The Mother told us to look after all"

"Mamason Puhkora (Japan)"

"The land's essential energies, as a sacred record of their ancestor"

"When Australian Aboriginal speak"

"To know the real (mount)"
Chief John Snow - Stony Stock (Takora)

These mountains are our sacred places. Therefore, these mountains are our
real spiritual peaks, and the holy place where people come to seek
wisdom and guidance. These mountains are our sacred temples, and our
sanctuaries, the Temples of Peace.

Chief John Snow (Takora)

I, Chief John Snow, have witnessed the
mountains throughout my lifetime. These
mountains are our sacred places. They are places of
peace. They are places of refuge,
peace, and serenity. These mountains have
been our sanctuary, our temple, and our
sanctuary. They have always been
the place of peace, the place of
serenity. These mountains have
been our sanctuary, our temple,
and our sanctuary. They have always been
the place of peace, the place of
serenity. These mountains have
been our sanctuary, our temple,
and our sanctuary. They have always been
the place of peace, the place of
serenity. These mountains have
been our sanctuary, our temple,
Mountains were said to be alive. Then houses. We know that all the ceremonies were ceremonial. The Mother told us to look after the mountains we see and all the sacred places.

---

The name of this new kind of being is called the mountain, and his monument is the sun. When wind keeps his name in mind, his hearth is Obsidian the hill. His thunder and his voice is thunder. His heart is Obsidian, the hill. His tongue is straight and his ears red corded shoes his nose. His ears Linux block com in his eyes, and his legs of lightning, White.com forming his feet. His ears are of the sun. White.com forming his eyes break, his hair darkness; his eyes yellow com. His flesh is of day. His knees, and his body is white, and his legs of lightning. White shell forms. His feet are made of earth and hisinverse. pond's black clouds, and sky's. Sacred mountains named Man. He

---

Islam, p. 369

Mama Bermejo

Sacred places, mountains named

Mama Bermejo

Sacred places, mountains named
Lesson Title: Sacred Trees, Sacred Groves (Estimated time: 30 min.)

Objectives: Students will recognize that some cultures consider certain individual trees, species of tree and/or groups of trees as being sacred.

Background/Preparation: Cultures around the world have recognized a special significance for some individual trees or groves of trees. The Hmong people of Laos recognize sacred trees by hanging white cloth from their branches. In Morocco, some consider the olive tree to be sacred because they see the name of God written on its leaves. In India, the fig tree under which the Buddha gained enlightenment, called the Bo Tree, is considered sacred.

Materials Needed:
Statement Cards for Sacred Trees, Sacred Groves

Procedure: Bring the group to an area with some particularly impressive or attractive trees. Ask them if any of them think that any tree or group of trees (including ones in other places) is more special than any other. Ask them to explain the reason(s) for their opinions. After all students have volunteered any ideas they have on the subject, tell them that there are many cultures around the world that consider individual trees or particular groups of trees to be sacred or very special.

Have the students sit in a circle and pass out the Statement Cards on Sacred Trees, Sacred Groves to volunteers who are willing to read out-loud. If there are not enough students willing to read the cards, the instructor may read them. Ask the students why they think people might consider some trees or groves to be so special.

Tell the students that you would like them to choose a tree or group of trees that they think might be seen as sacred. Ask them to agree on one choice, if possible. After they have selected a tree or group of trees, ask them how another culture might treat or recognize the tree(s). Have them pretend that they belong to a fictional culture, in the presence of a sacred tree or trees, and ask them to make up rules or rituals for the members of their culture to observe for this tree or group of trees. Have them act out any that can be done practically, such as giving thanks or an offering.

Assessment: Ask the students to give examples of cultures that consider some trees to be sacred, with details of which tree(s) and why they are considered sacred. (You can tell them the names of the cultures and see if they can remember their ideas about sacred trees.) Ask for examples of what individual cultures do for or around their sacred tree(s).

Sources:


Day 3, Lesson 2
Ancient Greeks worshipped a sacred grove. Dedicated to them can still be seen in Libya as a place where people gathered the sacred grove of Mavica. The sacred grove was a place in honor of the goddess who was associated with the sacred grove. In ancient Egypt, a sacred grove was a place of residence of a spirit thought to be the residence of a spirit. In other parts of the world, sacred groves were considered a place of worship, where people went to pray and ask for blessings.

Sacred groves were not only places of worship but also places where people gathered to celebrate festivals. In many cultures, sacred groves were considered to be places of power and were considered to be places of power. People would gather in the sacred grove to perform rituals and ceremonies.

In many places, sacred groves were considered to be places of power. People would gather in the sacred grove to perform rituals and ceremonies. In some cultures, sacred groves were considered to be places of power and were considered to be places of power. People would gather in the sacred grove to perform rituals and ceremonies.

Sacred groves were not only places of worship but also places where people gathered to celebrate festivals. In many cultures, sacred groves were considered to be places of power and were considered to be places of power. People would gather in the sacred grove to perform rituals and ceremonies.

In many places, sacred groves were considered to be places of power. People would gather in the sacred grove to perform rituals and ceremonies. In some cultures, sacred groves were considered to be places of power and were considered to be places of power. People would gather in the sacred grove to perform rituals and ceremonies.

Sacred groves were not only places of worship but also places where people gathered to celebrate festivals. In many cultures, sacred groves were considered to be places of power and were considered to be places of power. People would gather in the sacred grove to perform rituals and ceremonies.

In many places, sacred groves were considered to be places of power. People would gather in the sacred grove to perform rituals and ceremonies. In some cultures, sacred groves were considered to be places of power and were considered to be places of power. People would gather in the sacred grove to perform rituals and ceremonies.
U)

O

I

=cl

u)

'

c+ ti

r-r

E&=a
=
'o(D=
J-

-s

{

\-/

rJ

,-

='

.,

ESTE:

= H,gE!
g=--I-,x
-o
.-J

t!) a.ai

8 B ls F

)r.
o CD
.,nEE
C) EF
OOa 9.
15 5(DFl
cr

Fjg
G-rrr {

'-t15=.
CDCDt>

4.5 F
r
f\

C)

rr

tr
t-.
l-)

tD

,.

TJ

,

7
t'.5
d aq
; w
=
=
I
T-o
t',nD
dF
D=

cr)

.:i
=

qdS
e G
o E
+.<

-9

EOgi-''
&=

crJ
=
E
F

sD

E.s 6

qu

H

F'EF

+

tSH'H

JaFa'
=
iu)
--'\r a ?=.G'
A.qq=.8.}:oc

o\
\-./

{5}-'Jr-O-

CDCDE}

1|.-c

F

s E cD: CF
\-/

Frg

ES.
'!ilr
p-g*

g''i. o ;

WFD 6
oqq
- $ i.ia
a ;'oQ

V)

2 e.5Eq Fi6 5E +F
g
v E€eef;EHi3s
F=R Pc>
3
F3
r5
SOaqpoO.v)A
='Ao-t
'-6'-.oIl
g'3=F
'=,-= ;

9D|r')OU)

rrt'

S

flfigE;d=5
a
S8-:
= ='<
t xd34at-g
€a+Ee-,i4F

?

".i

lsiEB

'J)

Eg$.$i FI:
tHi;=sgFE
(D
itlr
=
-FadeaH:93

*s+il

B-

ft

H;==p

F-

w7
FFH
EfHE
FfH
}H
+E
E TgqF g
gIH
e'
H
-E
SH3lFt FF; +139:5 Q'€
IHS'
,s=i a?lFi5aiilfFF lifE 1i CDo
i v i 3* iE-g$ g+$aiBF q--o=.-*=
g sg
Fb
Ig
6.3
1 ft?w
:-DE- # : . - a = 3 v,'E
i t = 6Rtrs
;
P
;
EN
g qiE; F E;
iFf
FDd
=
+*g
l=
+f
ta:re35;sv-=or
F€.
lz= := E+...r'o-q5 E i! F J gF 7 Hi g
13 TE
fr *5 g3= .' ?+E
? .' Si s3
l=
=
;aF*TE:
s,=i+==F.H.
i€=.sI
r.^ HF
e,3i
lq iHa gd-xF
=ggg -d€
d
(n=.
F
i
=FAg3E
F,=Egg€
l# r
r f iE
8.?
=v)
CDF
ft{

i

e FS R-3-'{ F-'*F € ts 3ef;E
IHF 7*3=HFiFfTFEHEF

I

3-

55

(t)

lfil
)-.

e.

II

(+

F+)

t-J
,^
t4.

lJ.
ar

s.sJ4 e 3 F 3 c'.
"d
CD
)-,,\
i6
H$E: E ? F€= c0rd|FDH;
CD
V

lJ.

N
lQ. e.
t(D
7\'
F't

(+ f+
EI

lJ

(+
l-J
o
o
e.

€g 6rE- 663s FE
lFe e=aFFigFia{B;iE
U
=
q::F*=
8EA
i
rF!
A.
F
a6 o
lY
f€aacu
lggg+FFH
f*5EAtaFtaF6585q
i rH r
s+
$ FE F ifi€g ?
-t<
|

I

lU)

\,|-ra

,*'

B iJa

.

Ft\.

S. (+H
It
t-

FD

|r

H

H$.€E3F+1g37eelF
zlgEFqrEFIiEiFs

l3
lct)
lP.
to

11
t*.d rfEgF
IFD
i6
i'E{ro
ts*p*

F

l3

d-dF+;aIFHfl*

lP"
Ir-+

IF
l(D

83q' +F*
9- E'
l-)

fd.

(+.

r-..

..-+

F iD
t'+ (DE
RO

5p
X(+

FF

.J

o

_Q

g -{

(v
V)
l-..
)H

H
lj.
O

(D6.

B'aE8 r:H

e+
ts
Ft

--,q?G

a5:
=.P

FD
385,8H
.d)
e6
9,i'q N +

CD

o 6

.

+)

(+
lJ

CD

n

o
e.

7f
o
l-)

li.

v
o sD
sD
c+

E-FE-H ? B FF

IEi
I*F TF;1*[EAgl*gI

iv
-=

.

E'- FEJ €*
o-a ' E :..3

tP O

x

ll

(D

i\)

uaCD=

UJ

l+

(+

(D

3-

tEg
?F:i;rFi-ialc=#t

E

q 9 6:'nE
a

i
-tr ffFF*iieslaearF
=a1FF:-:q3zEI
-='

13
l=
lq

lf

s

=

gE-F 1= aa-1= 4.f Hf; grE
F s3A! i

H6=q qg;+[.eF
'-,n.e

Ed

E

?

**l',r5
F;
* ; *.i.s;FgEE
i, sq f 6' 5
E


Lesson Title: Sarawak Town Meeting (Estimated time: 90 min.)

Objectives: Students will gain experience advocating different points of view regarding what to do about an environmental issue. They will also gain experience with the contentious and diverse value-environments that are typical of environmental conflicts.

Background/Preparation: The Town Meeting is a simulation format that puts participants in the roles of the different stakeholders of an issue. Each student takes on the values and interests of one stakeholder and advocates for that position verbally in an organized forum with a panel of moderators.

The Penan are considered by some to be the last true hunter/gatherer culture to exist on Earth. Inhabiting the rainforests of Borneo, they live a life that is intimately connected to their local environment. The Penan migrate throughout a large area of tropical forest, reducing their impact on any one place by their movements. Their forest home is the target of major international logging corporations, who seek to profit from the liquidation of the forests' arboreal assets. The Penan have sought to protect their environment from destruction, because the existence of their culture depends on it. They have asked for assistance from people and organizations around the world, but local political corruption and a lack of concern for their well being have made their efforts extremely difficult.

Materials Needed:
Copy of StakeHolder Cards for Penan Town Meeting.
Map of Borneo
Tables and Chairs in a room
Gavel

Procedure: Divide the students randomly into ten to twelve groups of five. Give each group a StakeHolder Card and ask them to read the values and perspectives of that group of stakeholders. One of the groups will be a panel of moderators, representing the decision-making body of the town. They will hear statements from representatives of each of the stakeholder groups, and in the end vote on what action to take about the issue at hand.

Introduce the issue to the group. Make it clear that the panel will hear the statements of all stakeholder groups and then make a decision themselves on what to do. The objective of each stakeholder group will be to convince the panel to support their ideas of what, if any, action to take.

The issue: The panel is deciding the fate of an area of forest on the island of Borneo. The area covers over 40,000 acres of coastal rainforest in the northwestern section of the island. It is home to many of the Penan people, and desired by logging companies, Malaysian settlers, and resort developers. International environmental organizations,
Indigenous rights organizations, and the Penan themselves are trying to have the area protected.

Ask each group to spend fifteen minutes developing their position statements and strategies. They should be encouraged to make notes to help them cover their important points while speaking, but preferably not read from a script.

Each group will take turns making statements, as called up to the podium by the panel members. It is possible that not all members of every group will have an opportunity to speak because of time restraints, so the stakeholder groups should plan accordingly.

As stakeholder group members are presenting their statements, the panel members should be encouraged to take notes. Members of other groups may applaud or cheer those with whom they agree, but no booing or interrupting by dissenting groups should be allowed by the panel. (They may apply the gavel).

When there are twenty minutes left to the program, slip a note to the panel telling them that they will now have to close the hearing and confer on a decision. Inform them that they have 10 minutes to do this, and that they should focus on eliminating unpopular options and identifying those that have the most support among their members. During this time others may take a break, use the restrooms, or mingle. After 10 minutes, have the members vote, and reconvene the hearing to present their decision.

After the noise dies down, conduct a short discussion with the students. Begin by congratulating them on their mature behavior and excellent presentations, and tell them that what they have just experienced is very similar to what goes on every day in many places as people seek to make decisions about environmental issues.

Ask them if they think a meeting on an issue like this would proceed in a similar way, and if they think that all stakeholder groups should have had the same amount of time to speak? Why?

Ask them if all environmental issues are decided in this manner. What are some other ways or procedures used to decide environmental issues? Finally, thank them for participating.

**Assessment:** Questions: What are some of the different points of view that stakeholders had on this issue? In what ways do you think this simulation was similar and different to real-life environmental issue decision-making processes?

**Sources:**
Day 1, Lesson 6
Stakeholders:  
Borneo Eco-Tours  
Mitsubishi  
Indigenous Rights Network  
The Penan People  
Ekran Berhad Construction Company  
Malaysian Timber Council  
The Rainforest Action Network  
Sarawak National Parks  
Holiday Inns  
The Dayak People  
Ecological Researchers  
The World Bank

The Malaysian Government Panel:  
(Directors of Tourism, Economy, Parks, Environment, and Native Peoples Affairs)

Background:

Sarawak is located on the Northwest coast of the Malaysian island of Borneo. It is in the center of Southeast Asia, bordered by Indonesian Kalimantan in the south and Brunei and Sabah in the north. Sarawak is the largest state in the federation of Malaysia. It has the world's oldest rainfor-est, many large rivers, rugged mountains, scenic coasts, and the largest cave chambers and passages known. It is rich in natural resources such as oil, gas, gold, tropical timber, and other minerals. Some of the most exotic animal and plant species on Earth can be found in Sarawak. The caves of Sarawak contain evidence of the oldest human inhabitants in all of Southeast Asia.

Sarawak has a tropical climate with wet and dry seasons. The average daily temperature hovers between 72 and 82 degrees. The wet season occurs in two cycles from January to April and from November to February. The dry season is between May and October.

Sarawak also has ethnic diversity, with 26 distinct ethnic groups. Each has its own language, culture and lifestyle. Many people still follow a traditional way of a life, living and working in the 4,500 longhouses along the banks of Sarawak's major rivers. When they are not busy farming, fishing or hunting, they produce some of the finest arts and crafts in Asia, including baskets and furniture made from the woven stems of the rattan plant.

The rivers, mountains, caves and forests in Sarawak provide tourists as well as Sarawak's own inhabitants opportunities for hiking, caving, white-water rafting, and mountain biking.

Sarawak's towns and cities are a mixture of old and new. In Kuching, the state capital, luxury hotels and condominiums share the banks of the river with villages of traditional wooden houses built on stilts. At this time, Sarawak finds itself at a crossroads, with tension between the forces of industrial development and the needs of traditional peoples and cultures. Since industrial expansion and population growth are consuming the forests and lands that traditional peoples live on, it seems the two are incompatible.
The Issue:
The use of one of the last remaining areas of undisturbed (primary) forest in Sarawak is going to be decided. Many different groups of people have an interest in the future if this area, and their ideas about how the land should be used are sometimes in direct conflict.

The Process:
A single public hearing is being held, at which time a government panel will hear the ideas and arguments of the different groups. Each group will have two minutes to explain why their plans to use the area are important or why that use would be beneficial.

A spokesperson from each group will be called up, one at a time, by the government panel members. The spokesperson will introduce the group that she or he is representing, and present their statement or argument. Government panel members may ask spokesperson questions. After hearing statements from each of the different interest groups, the panel of government representatives will call a recess. At that time, the panel will discuss the information they have been presented and make a decision about what to do with the land. They will then reconvene the meeting and announce their decision.

To begin with, the interest groups and the government panel members will be given sheets with information about the situation and how different groups relate to it. The groups will have fifteen minutes to review the information, come up with a statement or major points that they wish to make, and choose a spokesperson to communicate to the panel.

After the panel has heard the statements, voted, and made their decision known, a short discussion will follow.

Stake-Holder Group Descriptions

National Park Representatives
The Sarawak National Park system is interested in expanding one of its ten national parks. The Kubah National Park would absorb the forest reserves surrounding it and almost double its size.

Kubah National Park is closer to the state capitol, Kuching, than any of the other parks (20 km from the city). This makes Kubah easy to reach by road and this is one of the reasons for its establishment as a park. Park representatives believe that expansion of the Kubah park will increase the diversity of the plants and animals found in the park and its importance for research, conservation and recreation.

Each of Sarawak's parks is a conservation zone, totally protected by Malaysian law. Hunting and all commercial activities are banned. In some of the parks, local people are allowed to carry out traditional activities that they have practiced for centuries, but even this is monitored to ensure that the ecosystem is not disturbed. Hunters used to
commonly visit the Kubah area in the past and as a result, animals and birds were almost wiped out. Since the area became a park, the numbers of these animals have slowly grown.

On weekends the parks are crowded with people. They come to enjoy the lush green forest, over 100 different kinds of birds, the world's largest flower (Rafflesia - with 3 foot wide flowers), the cool, refreshing atmosphere, and the many caves. The caves are the largest in the world, and include one with paintings made thousands of years ago, and some with beautiful limestone formations.

The parks support research on tropical animals and forests. To-date, 86 out of 98 known species of palms have been found and identified in the Kubah park. It is highly unusual for so many species to be located in an area of this size anywhere in the world. Kubah is therefore a unique and important area for palm research, conservation and other related activities.

Attractions of Sarawak's National Parks include the Orang Utan (a large ape - the name means "man of the forest"), long-tailed macaques, wild boars, silver-leaf monkeys, monitor lizards, and the rare proboscis monkey that lives near the coastal mangrove trees.

Sources: Sarawak Tourism webpage: http://www.sarawaktourism.com/sarawaktourism/parks/index.html
Sarawak Holiday Inns webpage: http://www.jaring.my/hi-swak/nkubah.htm

The Dayak People
The Dayak people number approximately 150,000 and form about 8% of Sarawak's population. They live in Sarawak's mountains. Like most of the native people in Sarawak, the Dayak raise vegetables and rice in terraces cut into steep mountainsides. They also grow cash crops such as pepper, cocoa and rubber, as well as fruit and vegetables for Kuching's markets. They clear an area to farm by burning the vegetation, and they move from area to area so their impact is spread out. Sometimes they hunt wild deer, monkeys, and other animals in the forest. They also collect wild edible plants such as betel nuts and fruit. The Dayak are famous for their superb rattan basketry work and the beautiful costumes they use for ceremonial occasions. Former headhunters, they would keep their skull trophies in a separate head house, called a “baruk”.

The Dayak depend on having large areas of forest to move around in, so they can find the food that they need to survive. If they stayed in just one area, the soil would get tired and the animals would be hunted out from there. Large areas of forest in the area where the Dayak live have been logged. Companies from foreign countries, mainly Japan, have been cutting down the forest to get cheap disposable wood to use on construction sites. The Dayak are concerned that soon they will no longer be able to continue living as they always have, because of the disappearing forest.
The Dayak have no lawyers, no telephones, no computers. They live a simple life in the forest. It is therefore difficult for the Dayak people to defend their lands against the logging. Decisions about their land are often made in cities far away, and usually no one asks the Dayak about their opinions.

Sources:
Sarawak Department of Tourism webpage:
http://www.sarawaktourism.com/sarawaktourism/group/bidayuh.html

**Borneo Eco Tours**

Borneo Eco Tours (BET) uses the rainforests in and around Kubah National Park extensively for their tours. They depend on access to the natural beauty to attract customers for their trips. BET specializes in eco-tourism trips covering culture, jungle and mountain trekking, whitewater rafting, botanical and bird-watching, wildlife safari trips, and photography.

*At this time BET wishes to establish a new hotel near the park to meet a growing demand for their trips. They feel this would bring money to the economy while protecting the forests and native peoples there.*

BET owns the Sabah Handicraft Center, Apex Hotels and Sukau Rainforest Lodge. It has offices in Kota Kinabalu, Tuaran, Sandakan and Sukau. Its fleet of 15 vehicles includes 3 air-conditioned coaches (30-44 seats), 7 mini-vans (8 seats), 2 limousine cars and 3 land cruisers. It has also 5 rubber dinghies (40 passengers) for whitewater rafting, one 12-passenger speedboat for island tours and 5 6-8 passengers river boats complete with electric motors for river cruises.

The 20-room Sukau Rainforest Lodge is built on stilts using different Borneo hardwood species and blends into its natural surroundings. It is completely self sufficient in water and power supply, utilising rain water and solar energy. Electric motors running on solar batteries are used for river safari tours to wildlife areas to minimize air and noise pollution and reduce stress to the wildlife. Every room has an attached bathroom with solar hot water shower while electricity is supplied at night by solar batteries.

The company has received several awards for its publications, tour packages and videos. These include:
1. Sabah Tourism Gold Award 1990 - Best Tourism Publication.
2. Malaysian Tourism Gold Award 1990 - Best Tour Package / Merit.
3. World Travel and Tourism Council (WTTC) 1996 - Green Globe Achievement Award.
4. Malaysian Tourism Gold Award 1997- Best Tour Operator / Merit.

Source: Borneo Eco Tours webpage: http://www.jaring.my/bet/
**Indigenous Rights Network**

The Indigenous Rights Network (IRN) supports the causes of native peoples around the world. They work for the protection of native lands, access to resources for traditional activities, and freedom of religion. Sarawak is home to 26 different ethnic groups, each with their own beliefs, traditions and languages. The main groups are: Kiput, Kenyah, Kayan, Mulut, Chinese, Malay, Melanau, Bidayuh (Dayak), Orang Ulu, and Penan.

**IRN concerns include:**

- Native rights to land are not recognized in Malaysia. Only those who build permanent houses or farms are given title to land. The native people do not do this in most areas, because the poor soils of the rainforests require that they move at least once a year. A corrupt political system grants huge areas of land to wealthy families so they may log them and get rich.

- The national parks have restricted native people’s access to the parks, requiring permits to collect guano (bird and bat scat) from caves to fertilize their crops, and collect bird’s nests to make bird’s nest soup. The native peoples often do not read or write, and the IRN feels that they should not need permits anyway. If a person is found collecting without a permit, a fine is issued. The native people do not live in an economy that uses much cash, so it is not always possible for them to pay the fines. Jail terms can result, splitting up families and making the people sad and angry. The IRN is suspicious of the Park Service’s claims that access to traditional lands will not be significantly affected by an expansion.

- Logging operations are silting rivers and depleting wildlife. This has caused severe sickness and malnutrition in native children and adults.

- The proposed Bakun Dam would displace 10,000 native people from their homelands. They are being offered government housing in towns, but most people want to continue to live their traditional lives in the forest as they always have. In May 1996, Kajing Tubek, Tahu Lujah and Saran Imu, indigenous people of the Upper Rajang region, succeeded in obtaining the Kuala Lumpur High Court declaration that the Bakun Dam must conform to the federal EQA. That ruling has since been overturned, allowing dam con-struction to proceed without following any environmental laws.

- There have been reports of Penan people being killed under suspicious circumstances by unknown assailants in the forest. Girls and women have been raped by logging workers and police field force personnel. There have been reports that the Police Field Force pointed their M16s at several Penan tribespeople in the upper Baram region. They told them that if they opposed logging they would be shot.


**The Penan People**

The Penan are nomadic hunter-gatherers who live in the deep forests of Sarawak. They number around 10,000. Their main food is wild sago (a starchy root). A group only stays in one area until the sago supply is reduced. They eat wild fruits and vegetables from the forest, and animals such as wild boar and mousedeer. The Penan believe that
there is spirituality in all life. They also believe in a supreme god called Bungan. Penan women weave the finest rattan (cane) mats and baskets in Borneo. The men are excellent blacksmiths and make the best blowpipes, which were once greatly valued by members of other tribes. They trade these handicrafts, along with forest products such as camphor and gaharu (a scented wood) for salt, metal, clothing and cooking utensils.

The Penan are one of the last true hunter-gather tribes left on Earth. They depend on large areas of undisturbed forest for the survival of their traditional ways. Logging has decreased the size of their forest home and may soon make it impossible for them to live in their traditional way. The Penan have resisted logging, forming blockades of logging roads. One blockade lasted for 9 months before being violently broken up by police, soldiers, and loggers in September of 1993. Police killed three Penan, injured 203, and arrested 11. Another blockade was set up in November of 1995. According to the Penan Chief Encik Ajeng Kiew, the forest area where they have set up the blockade is the only one left in their area.

Pollution of rivers and streams, the result of soil erosion from logging, has caused severe sickness in native children and adults. The loss of fruiting trees and wildlife to logging has led to widespread malnutrition among native populations.

The creation of national parks has also caused some conflict for the Penan. They have used some of these areas for thousands of years to collect guano (bird and bat scat) from caves to fertilize their crops, and bird’s nests to make bird’s nest soup. The parks have restricted access for these activities, requiring permits. The Penan often do not read or write. If a person is found collecting without a permit, a fine is issued. The Penan do not live in an economy that uses much cash, so they often can’t pay the fines. Jail terms can result, splitting up families and making the people sad and angry.

A 50 million dollar road project funded by the World Bank will also cut directly adjacent to areas inhabited by some 500 Penan. The road is being built to transport logs from the forest to the coast to export them.

Sources: Sarawak Tourism webpage:
http://www.sarawaktourism.com/sarawaktourism/group/penan.html

The Rainforest Action Network

The Rainforest Action Network (RAN) works to protect the Earth’s rainforests and support the rights of the native people that live in them. RAN supports a ban on the import and use of tropical timber.

Rainforest facts:

Rainforests cover less than two percent of the Earth, yet they support 50 to 70 percent of all life. They are the most productive, complex ecosystems on Earth. When rainforests are chopped down, stumps are burned and the forests are replaced by tree farms with only one or two tree species.

Sarawak facts:

- Sarawak’s rainforests are 160 million-year-old, making them the world’s oldest. They are being logged faster than any other forest on Earth.
- Sarawak’s rivers have been filling with mud because of clearcut logging. Rain washes down the soil from logging roads, making the problem worse. Aquatic life in the rivers has decreased over the years.
- Last summer many fires burned in the rainforests of Borneo. The government has admitted that the fires started on commercial logging sites.
- Many people claim that logging in Malaysia is controlled by corrupt officials who operate similar to the Mafia.
- In Sarawak, the Environment Minister owns a timber company.

**Why the Rainforests Shouldn't be Cut Down:**
- The forests are responsible for protecting and maintaining Sarawak's climate and agricultural land, and safeguarding the quality of water.
- As the forests are home to many different plants and animals, many of which don't exist anywhere else in the world. Sarawak's rainforests are potential sources of new medicines.
- Attractive plants such as orchids, ferns, and palms can be harvested over and over again, allowing people to earn a living without destroying the forests. Other non-wood forest products like gums, resins, oils, herbs and tannin can also be extracted and sold. Using the renewable resources, the forests will continue to make money for people and the state year after year.
- Less than a third of Sarawak's land is suitable for farming because of poor soil conditions, so most of it can't be turned to croplands.

**Global Rates of Rainforest Destruction:**
2.47 acres per second: equivalent to two U.S. football fields
214,000 acres per day: an area larger than New York City
78 million acres per year: an area larger than Poland

Sources: Rainforest Action Network webpage
(http://www.ran.org/ran/info_center/rates.html)

**The Mitsubishi Corporation**
The Mitsubishi Corporation is interested in continuing to log the forests of Borneo and Sarawak, including the area under consideration. They make large profits by taking the ancient tropical forests and selling their wood. Most of the wood is used on Japanese construction sites as concrete forms. After two or three uses it is thrown away.

Representatives of Mitsubishi claim that they are only supplying the economies of the world with the things that they want to buy, that there are plenty of forests in the world to cut, and that the trees will grow back. Nearly three-quarters, or 70 per cent, of Sarawak is forested.

The Mitsubishi Corporation is one of the largest destroyers of the world's forests. It owns logging operations throughout the world. It also buys millions of cubic feet of timber
from other logging companies, making it one of the largest importers of timber in the world.

Mitsubishi logs or imports timber from the Philippines, Malaysia, Papua New Guinea, Bolivia, Indonesia, Brazil, Chile, Canada (British Columbia and Alberta) Siberia and the United States (Alaska, Oregon, Washington and Texas). Mitsubishi is devastating thousands of square miles of forests and broadly contributing to cultural disintegration. In addition to Mitsubishi's forestry operations, it also invests in mining and oil as well as nuclear facilities.

The Mitsubishi Group consists of 160 interlinked companies and hundreds of related firms that together form the world's largest industrial and financial empire. Among these companies are the Mitsubishi Corporation, Mitsubishi Bank, Mitsubishi Motors, Kirin Beer, Union Bank of California, and Nippon Kogaku (maker of Nikon camera equipment).

Source: The Rainforest Action Group webpage: http://www.ran.org/ran_campaigns/mitsubishi/index.html

**Holiday Inns**
The Holiday Inns have three hotels in Sarawak, at Miri, Kuching, and Damai Beach. These are popular tourist destinations, where guests can relax, enjoy their visits to the area, and take trips to enjoy the beauty of the local beaches and forests.

The Holiday Inn representatives are interested in building a new hotel closer to the Kubah National Park than the current one in Kuching. Since many guests are interested in visiting the park, having a hotel close by would be very convenient. This would attract more visitors to the area, and therefore more tourist dollars.

The Holiday Inn representatives emphasize that they are interested in protecting the forests and the environment, because that is what the people come to see and enjoy. They would only need to cut down a small area of forest for a new hotel site, the parking lots, and the road to reach it. Having more people visiting the beautiful rainforests of the area would probably help them gain more popularity and protection.

Sources: Sarawak Holiday Inns webpage: http://www.jaring.my/hi-swak/nkubah.htm

**The World Bank**
The World Bank is an international lending institution that makes loans to countries in order to help them develop their economies. Most of the countries that get loans have trouble paying them back, or even paying the interest on the loans. The World Bank supports actions that help a country to get cash, both to help their economies and also so they can get back the money loaned. The World Bank representatives would like to support the logging of the area being discussed.
**Economic information:**
Sarawak’s economy has been improving: By 1989 only 16 percent of house-holds were living below the poverty line, compared with 44.8 percent in 1973.

The economy has improved because of exports. Logs contributed 42% of Sarawak’s exports in 1994. Other exports include, rubber, tin, palm oil, petroleum and gas, cocoa, pepper, rice and manufactured goods.

**World Bank Plans:**
A $50 million World Bank project would build roads to transport logs from Sarawak’s last remaining primary rainforest to where they can be exported.
(Such a loan would be against the World Bank's own policies, which empha-size protection of native land rights and preservation of tropical forests.)

The Roads Project loan will fund the first phase of a much larger scheme, with a total cost estimated at $100 million. The project will upgrade or open 100 miles of road, linking Sarawak and neighboring Sabah by highway.

The World Bank-funded roads will be used for local traffic, providing access for people and goods to primary forest areas, and for exporting logs. After the forests have been cleared, the roads will pave the way for conversion of the land to large scale export crops such as palm oil and cocoa.

The roads will also cut directly adjacent to areas inhabited by some 500 members of the Penan tribe, the last nomadic, forest dwelling hunter-gatherers in Southeast Asia. The Penan, along with the other 26 Sarawak tribes, claim legal rights to their "ancestral domain," or rain forest homelands.


**Ekran Berhad Construction Company**
The Ekran Berhad Construction Company is interested in building a large dam in the area under discussion. The Bakun Dam would be 670 feet high and supply electricity to the people of Sarawak. When completed, it will be the highest and most powerful dam in Southeast Asia.

The dam will displace 10,000 native people and flood an area the size of Singapore.

The Malaysian Court of Appeals has decided that the project will not be required to comply with any federal laws to protect the environment.

In 1995, a seven-member team of U.S. scientific experts carried out a review of the adequacy of the Bakun Dam project. Their report showed a variety of problems stemming from the dam's construction.
* Serious deterioration of water quality in the reservoir and in the river downstream.
* Significant salt water intrusion in the river due to reduced flows downstream of the dam, potentially affecting tens of thousands of people.
* Forcible relocation of at least 8000 indigenous people living in the reservoir area. (This number has since been revised upward to include an estimated 10,000 people.)
* A substantial risk of the introduction and spread of water-born diseases.
* A risk of catastrophic downstream flooding due to dam failure.
* Degradation of fish habitat and loss of fishery resources downstream of and in the inundation (flooded) area.
* Inundation (flooding) of 269 square miles of terrestrial habitat, significantly affecting 12 totally protected species of animals and 93 protected species.
* Inundation (flooding) of socially and economically important plant species, including 1,230 species used for medicines, food, fiber and other social uses.


**Ecological Researchers**

Ecological researchers are the scientists that study plants, animals, and environments. Sarawak has more than 8,000 species of flowering plants and over 20,000 animal species, most of which are insects. Many species have still never been described or recorded by scientists. There is also very little information about many of the ones that have been discovered and named. Ecological researchers are interested in protection of forests so they can study them and learn more. Many of them hope that they might find chemicals in plants to use as medicines or other products.

Sarawak is interesting to ecological researchers for many reasons. It has the oldest rainforest in the world. It has the largest flowers in the world (Rafflesia - with 3 foot wide flowers), over 100 different kinds of birds, and many interesting species including:
- the Orang Utan (a large ape - the name means "man of the forest")
- long-tailed macaques (a kind of monkey)
- the rare proboscis (PRO-BOSS-US) monkey (Has a big red nose).
- monitor lizards (which can grow 10 feet long)
- coastal mangrove trees (which have roots that stick up out of the water to get air)
- the carnivorous pitcher plant (it traps insects in its sticky pouches and absorbs their bodies)

'Bintangor' trees - The world famous 'Bintangor' trees which have potential in medicinal use, especially for Aids research, are also found here. Sap from the trees is taken by carefully tapping the trunks in much the same way that rubber trees are tapped.
The collected saps are then packed and sent overseas where researchers have reported their usefulness in the search for a cure for Aids. The Bintangor tree is just one example of trees with potential medicinal applications. It is likely that many more useful trees and plants will be found in time to come. These trees can also be looked upon as a vital gene pool for future generation of forest conservation and propagation.

Palm research in Kubah National Park - 86 out of 98 known species of palms have been found and identified in the Kubah park. It is highly unusual for so many species to be located in an area of this size anywhere in the world; therefore Kubah is a unique and important area for palm research, conservation and other related activities. Some of the more common types are Rattans (for furniture, basket making etc.). Kubah also has many species of fruit trees and the scrub forest is also home for many species of wild orchids.

Source: Holiday Inns webpage: http://www.jaring.my/hi-swak/nkubah.htm

Malaysian Timber Council

The Malaysian Timber Council is interested in cutting forests in Sarawak. They think of cutting forests as good for the forests, good for the environment, and good for the native peoples. They think native people like the Penan need to become more "modern", live in houses and have jobs.

Some views of The Malaysian Timber Council:

The "Penan Problem" - There is a conflict between the traditional lifestyle of the Penan and the kind of forest harvesting (cutting) required for the sustainable development of the state. (The two cannot both happen).

Solutions to the "Penan Problem"

The Penans should adopt modern farming methods and settle where services such as piped water, housing and schools can be provided by the government. For those Penans who prefer a traditional existence, the state government has set aside 12,800 hectares of forest where they can practice their traditional way of life. They can also use Gunung Mulu National Park (52,900 ha) to practice their traditional way of life.

The Problem of Native People's "Shifting Cultivation" Agriculture:

To avoid the spread of shifting cultivation (native people's traditional ways) in the forests, a special reforestation program has been introduced. Fast-growing trees are planted in forest areas used by native peoples. Shifting cultivators (native people) are roped in to do the planting as this gives them an income and helps them to understand the role of forestry in rural community development. They can plant crops for their own needs between rows of planted trees.

Making more tree-farms helps the native people to slowly move away from the traditional practice of shifting cultivation. If the natives work for the logging companies, everything will be under our control and things will work out well. The more native people we can get working for the logging companies to cut forests and plant tree farms, the fewer natives there will be that want to or need to have undisturbed forest to live in.

How Cutting the Forests Down Can Help Stop the Greenhouse Effect:

Cutting forests and planting new young trees helps to stop the "green-house effect." New young trees grow fast and take carbon dioxide out of the air so it won't be there to heat up the atmosphere.
Why all the Trees in the Forest Should be Cut Down:

Clearing out all of the old trees makes space for the young trees to grow. Since younger trees grow faster than old ones, more carbon will be taken out of the air. Contrary to popular misconception, harvesting of natural forests does more good than harm.

Source: Malaysian Timber Council Webpage:
Lesson Title: Sharing Circle/Talking Feather (Estimated Time – 10 min.)

Objectives: To provide students with experience listening to each other respectfully, using a "Talking Feather" as some Native American cultures did and do.

Background/Preparation: Every person has something to offer their community. Much of what can be offered comes in the form of well-considered words or attentive listening. This activity provides an opportunity for students to reflect on their own communication styles and also the styles of others. Importantly, it provides an experience outside of the classroom environment where students can witness the communication that occurs when a social group has established an expectation that each person will be “heard out” and listened to with respect and patience.

Each culture or social group observes an unspoken length of time after one person talks before it is considered appropriate for another person to say something. In some cultures, the time in between spoken words is highly valued as a time to reflect on what was said and consider it. In some groups, the expectation is that no time will occur between statements, and interruption and competitive speaking are the norm.

Procedure: Begin by asking students how they communicate at home, with friends, and in school, specifically how much time they think there usually is between speakers. Inform them that different cultures and social groups have different norms of time that are left silent in between different speakers' statements. Ask them if they ever experience conversations where people interrupt each other, leaving no time at all in between speakers' words. Tell the students that silence is very important in between statements in the views of many indigenous cultures, and that one way that this is regulated is by the use of a "talking stick", "talking feather", or "speaking staff". The speaker holds the item, until it is time for another person to talk, at which point the item is handed over. Ask them if they would like to try and communicate in this way. Sit the group in a circle. You might remind them that a circle is the best configuration to assure that every person can see and be seen by every other person, and that sound is reflected around the circle to the people farthest away, like a natural amplifier. Announce that the communication session will now begin, and that only the person holding the item will be permitted to speak. All others will be expected to listen carefully and respectfully. When each person is finished speaking, they should pass the item on to someone who is raising their hand and is silent.

Assessment: Question: Did you feel more listened to and respected than you usually do when you communicate with others?

Sources:
Researcher's personal experience in talking circle with members of the Red Cliff Ojibwe Band, Stevens Point, WI in June of 1998.
Day 1, Lesson 5
Lesson Title: Shona Sacred Mountain Song – “Ndindinyongwe”  (Estimated time: 10 min.)

Objectives: Students will recognize that some cultures revere certain mountains and even sing to them or about them.

Background/Preparation: Sacred mountains are recognized in cultures all around the world. They may be seen as the original emerging point of the people in their creation story (e.g. Dine, Ohlone, Miwok), or a place where a spirit or spirits live. They are sometimes sacred because special plants with medicinal properties grow on them (e.g. Dine). They may also be sacred because of their shape or location on the landscape (e.g. Kogi).

Materials Needed:
2 Zimbabwean mbiras and a pair of hosho gourds (or a recording of them).
Song: Ndindinyongwe.

Procedure: Introduce the concept of sacred mountains to students. Play the song and sing the words.

Assessment: Questions: Ask the students if they can tell you what the subject of the Shona song that they just heard was? Ask them if they have any songs in their own culture that are sung in recognition of a special or sacred mountain or range of mountains.


Day 2, Lesson 2
Lesson Title: Shona Songs (Estimated time: 30 min.)

Objectives: Students will recognize that in some African countries, students sing songs that include songs about the environment on school buses.

Background/Preparation: Students in some African countries sing songs on their school buses, including some songs that are about the environment. These songs are often of the "call and response" variety, where one person or several people sing one line, and the rest of the group responds with another line.

Materials Needed: Copies of Songs from the Shona people of Zimbabwe.

Procedure: Tell students that you have some songs to share with them on the school bus. Pass out copies of the songs on the bus and teach the students to sing them. Explain the meaning of the songs' words as described on the copies.

Assessment: Questions: Ask the students if they liked the Shona songs. Ask them if they remember what any of the songs meant.


Day 4, Lesson 1

Shona Songs from Zimbabwe, Africa

Song # 2
Zuva Buda

Call: Zuva Buda
Response: Tiende

Call: Kumusha
Response: Ho Ha

Call: Tino Ona
Response: Hama Dzedzu Dzose
Song #2

Isu Tauya Pano

Isu - Tauya, Pano!
Dae - Tauya, Tose!
Dae Tiri Va, Zvinzui!
Nhasi Tauwo, Nana!

Song #3

Zinya Ma Raydu

Call: Zinya - Ma Raydu
Response: Chay Kowa Chay Ka

Call: Zinya - Ma Raydu
Response: Chay Kowa Chay Ka

Translations in English
"Let the Sun Come!"

Call: Let the Sun Come
Response: Out

Call: So That We Can We
Response: Can Go Home

Call: To See
Response: All Our Relatives
We Come Here Right Now

We Come Here Right Now!

If We Come Out!

If We're Many!

Today We Would See Each Other!
Lesson Title: Shona Waterfall Song (Estimated time: 10 min.)

Objectives: Students will be aware that people in some cultures sing songs of appreciation directly to natural features of the environment.

Background/Preparation: Songs of appreciation for natural resources are common to peoples from around the world. These songs are sometimes sung to prepare a person spiritually for a ceremony, a journey, a special occasion, or for prayer. This Shona song from Zimbabwe is sung by people, sometimes directly to waterfalls, in order to cleanse themselves in preparation for prayer.

Materials Needed:  
Voices (or a recording of them)  
Copy of the song  
Map or Globe

Procedure: Ask the students if they can think of any songs about the environment or natural resources that people sing when they are preparing for a ceremony, a journey, a special occasion, or for prayer. (Some examples are “Down by the Riverside”, “The River Jordan”, “Over the River and Through the Woods To Grandmother’s House We go”…)

Tell them that the Shona People of Zimbabwe have a song that is traditional sung in appreciation for waterfalls and waters, and used to prepare them for prayer. Show them where Zimbabwe is on a map or globe.

Teach them the song and sing it with them.

The song: Ah-ha eeyay hey, yeday como ndende,  
Yay eeyay eeyay hay, yeday como ndah

Assessment: Question: Ask the students if they know any songs in their own culture that are sung directly to something in the environment out of appreciation or to cleanse the spirit for prayer.


Day 2, Lesson 6
Lesson Title: Stone Pass Game (Estimated time: 5-20 min.)

Objectives: Students will become familiar with an Indigenous American game used to help young people notice details and changes in the environment. Students will increase their abilities to notice details and changes in the environment.

Background/Preparation: The Stone Pass Game was played by Ohlone (Coastanoan) children to help them notice details and changes in the environment. The game requires keen discernment and observation skills.

Materials Needed:
A walnut-sized stone, shell, cone, or similar object.

Procedure: Ask the students if they think their ability to notice things in the environment can be improved. Inform them that the Ohlone people of California's Central Coast have traditionally thought so, and used a game to help their young people do this. Explain that this activity involves everyone passing around an object or pretending they are passing it, while the person in the middle tries to guess where it is. The activity helps to make people notice small details, such as the sound of the object being accidentally dropped on the ground, or the shape of the hand muscles when they are holding something.

Ask the students to sit in a circle, with a volunteer sitting in the middle. Show the students the object (stone, shell, cone, etc...) and inform them of the rules as follows:
1. The object must be passed in a clockwise direction around the circle.
2. The object must be passed by every person every time.
3. No other object may be substituted (no fakes).
4. The person in the middle may have three guesses to find who has the object as it is being passed. In order to make a guess, the person should say stop, at which time all people must immediately freeze. The person in the middle can then call out one person's name, and that person must open up both hands. If they have the object, they go in the middle.
5. The object must be passed from one hand to one hand (not from two cupped hands to two cupped hands).
6. Fake passing is encouraged, as is bold displaying of the object as it is passed behind the person in the middle's back (the person in the middle may look in all directions).

To start the activity, have the person in the center close his or her eyes. Start passing the object around in a clockwise direction (remind students that everyone has to pretend to be passing the object so the person in the middle won't know where it is). Each time a new person goes to the center, repeat this. Once the person in the middle's eyes are closed, the object may be tossed to someone in another part of the circle one time to begin it in a new place. Anyone may start the passing of the object, as long as the person in the center's eyes are closed. When the starting person is confident that everything is ready, that person instructs the person in the middle to open their eyes and begin.
If the person in the middle doesn't find the object in three guesses, you can grant them another guess or two, or ask them to pick someone else to try it.

This game can be played until students begin to lose interest. It can also be played in situations where students are leaving the group one at a time, until there are only 4 or 5 students left.

**Assessment:** Questions: How would this game help people to learn to see details in the environment better?

**Sources:**

Day 2, Lesson 5
Lesson Title: Story - People of the Maize (Mayan) (Estimated time: 10 min.)

Objectives: Students will be aware of the Mayan cultural belief that plants need to be respected, especially those which feed the people.

Background/Preparation: In the Mayan culture as in many others, it is believed that plants need to be treated with respect. There is often a spiritual personality associated with certain plants, especially those that are food sources for the people. When people are disrespectful or indifferent towards plants, the result is often famine or other problems. Folk tales help to remind people of what the appropriate relationship with plants is.

Materials Needed:
Copy of Story
Map or Globe

Procedure: Ask the students if they have ever heard or read any stories about people disrespecting plants. Tell them that you are going to read them a Mayan story about what happened when people were not thankful and respectful towards corn. Show them where Mexico is on a map or globe. Ask if any of the students have been there. Tell them the story.

Assessment: Question: Ask the students if they believe that disrespecting plants could result in failed harvests or other problems. Ask them if they think that the Mayan believe this today. (Do not answer these questions definitively for them.)

Sources:

Day 4, Lesson 2
The People of Maize
Maya

(Lacandon Maya—Middle America)
[Adapted from the Popul Vuh and Lacandon Maya traditions.]

The Creator and the Maker, Tepeu and Gucumatz, made people first out of earth. Out of mud they made the flesh of human beings. But it was not good. The mud was soft and it melted away. The people made of mud had no strength and they fell down. Their sight was blurred, and they could not move their heads to turn them or to look behind. These people of mud spoke, but they had no minds. The water soaked them and they could not stand.

Tepeu and Gucumatz said, “Our creatures will not be able to walk. They will not be able to multiply. Let us try again.”

Then they broke up the people made of mud and returned them to Earth, to the living Earth.

Then they did a divination to see how they should make the people. And the divination said that it would be well to carve people out of wood.

So the Creator and the Maker carved people out of wood. They took the wood from the rainforest and they said, “These figures of wood will speak, they will walk about Earth.”

And the people made of wood stood up and walked about. They looked like people and they spoke like people. They increased in number and spread about the land. They hunted the animals and they worked the earth. They made clearings in the rainforest to plant their milpas where their food plants could grow. But these people of wood did not have souls. They did not have minds. They had no blood and their cheeks were dry. Their feet and hands were dry. Their knees would not bend and they made no offerings. They did not offer incense to the gods. They continually hunted the animals without mercy. They continually cut the trees of the rainforest without showing thanks. They had no thought for the Creator and the Maker, for those who had created and cared for them. They did not speak with the Creator and the Maker.

So a great flood was sent down by the Heart of Heaven on the heads of the people made of wood. The face of Earth became dark. Black rain fell by day and by night. Then Xecotcovach, the great eagle, flew down to strike at the eyes of the people of wood. Camalotz, the great bat, flew down to strike at their heads. Cotzbalam, the jaguar who waits, came roaring to eat them. Tucumbalam, the tapir, came running to trample them.

Next the small animals and the large animals came to attack those people made of wood. The sticks and stones flew up to strike the people made of wood. Everything began to speak, even the water jugs and the clay plates and the grinding stones.

“You hurt us and you did not thank us,” the dogs and turkeys and hens said. “You beat us and ate us, and now we will kill you.”

“You tormented us every day,” the grinding stones said. “You scraped our faces: boli, boli, baqui, baqui. Now that you are no longer human beings we will grind you up.”

Some of the people made of wood tried to run away. They climbed to the top of their houses,
but their houses fell down. They ran into the rainforests and climbed into the trees, but the trees threw them down. They tried to go into the caves, but the caves cast them out. At last, almost all of those people made of wood were destroyed and their villages were no more. Again the rainforest grew where their milpas had been. Only a few of those original people survived, and they became the howler monkeys who live in the rainforest.

Finally, the Creator and the Maker, Tepeu and Gucumatz, decided to try once again to make human beings. They held council to decide what would be used to make the flesh of the people. They did a divination and were told to ask help of four animals. Those four animals, the parrot, the jaguar, the coyote and the crow, told them of the yellow ears of corn and the white ears of corn. They showed the Creator and the Maker the road to Paxil. They brought the Creator and the Maker to Paxil where the corn grew.

The Creator and the Maker ground that corn and made it into dough. From that cornmeal dough they fashioned the flesh, the arms and legs and the bodies of the people. It was the blood of these new people. These new people were made out of maize.

The people made of maize were intelligent and far-seeing. They were thankful. They sang and praised the Creator and the Maker. They sang and praised the forest and the animals. But the people made of maize could see too far. They could see all of Earth and all of heaven. They saw so far that the Creator and the Maker became worried that these new people would become arrogant. So they darkened the eyes of the new people. Now the new people could no longer see into the farthest heavens. Now their sight was limited to the closest parts of Earth and Sky. Now they would not become arrogant and forget to be thankful. Now they would not forget to take care of the rainforest. The people made of maize would only remember how far they had once seen when they offered incense in the ceremonies and when they gave thanks to those who made them. As long as they remembered to give thanks and to take care of the forest, all would be well for them. So it remains to this day.

**DISCUSSION**

It is fitting that Fox and Blue Jay bring pine, fir, spruce and cedar trees from Sky Land in the Snoqualmie story "How Fox Brought the Forests From the Sky," for the needles among the tallest of these trees seem to brush against the clouds. Fox and Blue Jay then plant these conifers throughout the Cascade Mountains, which is the northern range of the Sierra Nevadas that stretches from northeastern California to western Oregon and Washington. The Cascades contain magnificent expanses of North America's temperate rainforest.

Prior to the coming of European cultures, traditional Native North Americans of temperate and tropical rainforests developed many ways of using local resources and living in balance with their environments. Red alder is used for smoking salmon, and the fruiting bodies of Indian paint fungus are made into a red dye. In the Pacific Northwest, the traditional Kwakiutl, Tlingit, Haida and Tsimshian make large houses and public buildings from cedar planks. The massive, elaborately carved doorways often make it appear that people enter by walking into the jaws of an animal or a human being. Practical uses of cedar include baskets, boats, houses, gum, rope, clothes and totem poles. Parts of the cedar are used without cutting the tree down except when constructing dugout canoes and totem poles.

Far to the southwest, in the region now known as southern Mexico and northern Guatemala, a Mayan story tells how The People of Maize are formed. The first people, made of mud, are inferior and so are returned to Earth. People are then made of wood, but they lack minds and souls and do not pray to the Creator and the Maker. These people are destroyed because they do not respect the animals and trees of the rainforest. The few that remain become howler monkeys. Finally, people are made of maize. These people learn to give thanks and care for the rainforest.

Over the centuries, in the lowland tropical rainforest of what is now southern Mexico, the traditional Lacandon Maya developed a way of living sustainably with their environment. (The Lacandon Mayans are one of several Mayan groups whose traditional homeland includes parts of Mexico, Guatemala and
Lesson Title: Thai Story: "The Deer Buddha" *(Estimated time: 10 min.)*

Objectives: Students will be aware of the Thai cultural belief that deer have spirits and can act in a moral way just as humans can.

Background/Preparation: In the Thai culture, it is believed that animals as well as humans have spirits and consciousness. Animals may act morally, heroically, or courageously towards their own kind or other animals. Folk tales tell stories about some of these animals.

Materials Needed:
Copy of Story
Map or Globe

Procedure: Ask the students if they have ever heard or read any stories about animals where the animals act with morals and courage. After they share the names of their favorites, Tell them that you are going to read them a Thai story about a kind deer king. Show them where Thailand is on a map or globe. Ask if any of the students have been there. Tell them the story.

Assessment: Question: Ask the students if they believe that an animal could act morally. Ask them if they think that the Thai believe this. (Do not answer these questions definitively for them.)

Sources:
Englewood, CO: Libraries Unlimited, Inc.

Day 3, Lesson 5
The Deer Buddha

The Jataka tales, Chadok (shā-dok) in Thai, are stories telling of the actions of Buddha in previous lives. Each of these tales shows his qualities of mercy, self-sacrifice, and wisdom. The Jataka are used as teaching tales by the Buddhist monks. Other stories exemplifying these same qualities have also been told by the monks over the centuries. These too may be known as Chadok.

In a previous life of Our Lord Buddha, the Buddha, in his deer form, was the leader of a herd of deer. The leader of another herd of deer in the same forest was Thewathat (Taw-a-tut). Each herd contained 500 deer. Both herds roamed in the forest of Isipatanamarukhathaiyawan (I-si-p-a-t-a-n-a-m-a-r-u-k-a-ti/ya-wan), the Deer Forest.

In those days, the King of Parannasi (Pā-rā-nna-se), who lived nearby, loved to hunt. He always hunted in that Deer Forest. On each hunt, he and his soldiers would kill many deer.

One day, the King of Parannasi met the Deer Buddha as he was hunting in the forest. The Deer Buddha approached the king and spoke: “Your majesty, every day you and your soldiers come to this forest to hunt. You have killed hundreds of deer with your arrows. If this continues, my friends will all be destroyed and there will be no more deer in this forest. There will be no more prey for you to hunt in the future. Notice also that the deer you do shoot with your arrows are all hungry, thin, and frightened. They have been hiding from you in the forest and could not come
to look for food. They have not dared come out into the open for fear that you might shoot them with your arrows. Even though you kill many deer, their meat is thin and tough.

"I have a proposal for your majesty. Let us live longer and live in peace. Do not slaughter many of us each day. If you need meat, kill only one deer. Let the others browse for their food without being frightened. If you allow our deer to eat in peace, they will not be so thin and hungry. I promise to send you one deer each day. You will receive a deer who is fat and tender for your food. And you will be known as the king who is kind, the king who has saved the deer from extinction in this forest."

The King of Parannasi agreed with the wisdom of the Deer Buddha. He ordered his soldiers back to town. From then on, he hunted every day, but he needed only one arrow to kill his one deer. Everything was as the Deer Buddha had promised. The Deer Buddha and Thewathat took turns selecting the daily deer from their herds. If the king did not come hunting in the forest on that day, the deer was instructed to go to the town gate and wait for the soldiers who would come out and slaughter it. Though it was hard to die, that chosen deer felt good, knowing that its sacrifice enabled its people to live in peace.

All went as planned until one day it became the time of a young doe to be killed. She was nearing the time to bear a child and was so sad that her baby would die when she herself was killed.

The doe went to Thewathat, the herd’s leader and pleaded. "Dear Thewathat, my leader, I know that it is my turn to be killed by the king. I am willing to be killed, but I am soon to have a baby. I beg you to let me have my baby first. Then I will gladly go to be killed."

Thewathat would not oblige her. The doe tried again and again to change his mind, asking for mercy for the sake of the unborn deer. But he would not agree. He told her: "I cannot let you escape your duty. It is your turn to become prey for the King of Parannasi. You must go. Tomorrow, you are to place yourself where the king comes to hunt."
The poor doe asked other deer from the herd to take her place, but no other deer would volunteer to die for her.

At last, desperation drove her to the Deer Buddha, leader of the other herd. She begged the Deer Buddha to help her postpone her death until the baby could be born.

Lord Buddha the Deer pitied her. He felt touched by the love this mother deer held for her unborn child. He said: "I understand your love for your baby. A mother's love is so great that she will do anything for her child. Nothing can compare to the love of a mother for her children. I will help you with all my power. Go back to your home and be content. Take care of yourself and your unborn child. I will take care of everything else. Do not worry."

The next day, it was the Deer Buddha himself who appeared at the city's gate. When the citizens of Parannasi heard that the leader of the deer herd had come to be killed in the doe's place, they gathered to look at the deer king. They whispered among themselves. "It is not fair for this deer king to be killed. He is such a kind and graceful animal." Some said, "This beautiful deer should not be wasted. He should be fed and cared for as the pride of the land. He is such a graceful and lovely animal."

Others said: "This deer is kind and just. He is the one who asked the king not to slaughter the deer en masse. Why is he being killed? He does not deserve to be killed." Nobody wanted the Deer Buddha to be killed.

When the king heard this talk among the people, he went to the city's gate to see for himself. He was amazed to see that it really was the Deer Buddha. This handsome animal king was lying on the ground with his neck outstretched on the cutting block, waiting to be killed. The King of Parannasi approached the Deer Buddha and asked. "You are the leader of the herd, why do you have to come to be killed? If you die, who will lead your herd? You do not have to take a turn in this killing."

The Deer Buddha told the king about the young doe with her unborn baby. He explained his pity for her and her unborn child. He explained that she should have the chance to bear her baby and care for it before being killed.
Lesson Title: Story: The Elephants and The Bees (Thai) (Estimated time: 10 min.)

Objectives: Students will be aware of the Thai cultural values of helping others and keeping agreements.

Background/Preparation: In the Thai culture, it is believed that animals as well as humans have spirits and consciousness. Animals may act morally, heroically, or courageously towards their own kind or other animals. Folk tales tell stories about some of these animals.

Materials Needed:
Copy of Story “The Elephants and The Bees” (from Supaporn, Thai Tales)
Map or Globe

Procedure: Ask the students if they have ever heard or read any stories about animals that help each other out in a jam. After they share the names of their favorites, Tell them that you are going to read them a Thai story about The Elephants and the Bees. Show them where Thailand is on a map or globe. Ask if any of the students have been there. Tell them the story.

Assessment: Question: Ask the students if they believe that animals sometimes help out other species of animals. Ask them if they think that the bees had a right to stay in the elephant’s noses. (Do not answer these questions definitively for them.)

Sources:

Day 3, Lesson 4
The Elephants and the Bees

Working elephants are a common sight in Northern Thailand. For another story about elephants, see “The Good Boy” in this collection. This story tells of an earlier time, when elephants roamed free.

There was a time when elephants did not have long noses as they do now. In those days, elephants had to travel far to find their food. They never stayed at one place for long.

At this same time, there lived a swarm of bees that had built its hive on a low branch of a tree near the forest. Every day, those bees went out to collect honey from the flowers in the area.

One year, the weather became so dry that all the leaves dried up and fell from the trees. The poor elephants could not find anything to eat. Food was scarce. Vegetables and leaves could not grow because of the lack of water. Even the bees were starving.

Then one day, a forest fire started and spread rapidly through the dry forest. The elephants ran away as fast as they could. But they could find no safe shelter. Closer and closer came the fire. Then the elephants saw the bees buzzing ahead of them. Perhaps these flying insects could help them. When the bees realized that the huge elephants were asking them for aid they laughed. Then they said, “Yes, we can tell you about a safe shelter from the fire. But you must help us in return.”

The elephants agreed. To their surprise, the bees asked the elephants to open their huge mouths. Then the bees flew right inside the elephant’s noses. They stayed there. From this safe hiding place, the bees directed the elephants. They guided them to a large pond. “Go right into the middle of the pond. Do not move until the fire has passed on.”

The elephants did just as the bees suggested. Standing in the pond for several days, they waited until the fire had burned itself
out. All the trees of the forest were burnt away. But the elephants and the bees had survived.

Now the elephants emerged from the pond and called to the bees to come on out of their noses and mouths.

But the bees liked living in that spot. They refused to come out! Those elephants were so angry. "Prae Praen! Prae Praen!" they trumpeted. They shook their heavy heads from side to side. They blew hard on their noses. Harder and harder they blew, trying to blow those bees out. And the harder they blew, the longer their noses became! But the bees would not come out. And all of their blowing and trumpeting served only to make their poor noses very, very long.

Now the elephants decided they could rid themselves of those pesky bees with fire. After all, the bees had flown into the elephant's noses and mouths in the first place in order to escape fire. So lighting a fire, the elephants began to inhale the smoke. Opening their mouths they breathed deeply, then shut their mouths tightly and held that smoke inside. It worked. The bees could not stand that smoke. They flew hurriedly from the noses of those elephants.

But now that the bees had become accustomed to living in such a warm dark hole, they looked for a similar place to live. Since then these bees build their homes only in hollow trees. They are called Phung Phrong bees, which means "the hole like an elephant's mouth." But to get their honeycombs is easy, you simply smoke them out. They are still afraid of fire!

As for the elephants, they were glad to be rid of those bees. But they feared another infestation, so to make sure their noses and mouths were kept free of bees, they began to swallow water and blow it out through their noses. To this day they keep that habit. And it is a very good technique, too, for making sure your nose is free of bees!
Lesson Title: Story: The Honest Woodcutter (Thai)  (Estimated Time – 10 min.)

Objectives: Students will understand that some cultures believe that trees have spirits, and that those spirits may have a morally critical characteristic.

Background/Preparation: Some cultures believe that trees, especially very old and very large trees, house spirits. In Thailand, it is believed that these tree spirits may judge people on their moral behavior, and interact with them accordingly.

Procedure: Read the story “The Honest Woodcutter” from *Thai Tales - Folktales of Thailand.*

After reading the story, ask the students to get into a circle, facing outwards, close their eyes, and indicate whether or not they think it is possible that trees have spirits. Tell them that if they put their thumbs up it means yes, if they put them down it means no, and if they turn them in toward each other it means they’re not decided.

Have the students face inward and share the results of the poll with them. Ask them what they think would be the implications to environmental behavior if a culture had the widespread belief that trees have spirits.

Sources:
Englewood, CO: Libraries Unlimited, Inc.

Day 1, Lesson 2
The Honest Woodcutter

This folktale, told throughout Asia, stresses the importance of honesty in one's dealings. *Rukkha* (Rook-kha) is the Thai word for "tree." *Thewada* (Tay-wa-dā) means "god." Old and venerable trees in Thailand are believed to serve as homes for special tree spirits. Even young trees and plants *may* house spirits, but old trees are almost certain to do so.

Once upon a time, there was a poor woodcutter who lived near the edge of the forest. This woodcutter earned his living by cutting firewood from the forest and selling it in the town. Every day, he went into the forest to cut wood, everyday he carried his cut firewood to the market to sell.

One day, the woodcutter was felling trees near a river. Somehow his axe slipped from his hand and flew right into the water. The woodcutter did not know how to swim, and the river was very deep at this point. He poked in the river with a long pole, hoping to pull the lost axe out, but it was no use. The poor woodcutter was desperate. "What should I do," he thought to himself. "I cannot go back home empty-handed. Without my axe I cannot cut any more firewood. Without firewood to sell, I will have no money to buy food. I have no money to buy a new axe. I must retrieve my axe, somehow. The woodcutter tried again to dredge the axe from the river with a long pole. It was useless. Becoming more and more desperate, the poor man sat down and began to pray to the *Rukkha-thewada*, the tree spirit, for help.

Suddenly, a bright light issued from the huge tree. The *Rukkha-thewada*, himself, was emerging from the tree. In the hand of the *Rukkha-thewada* was a golden axe.

"Is this your axe, woodsman?"

The poor woodcutter looked at the axe. It was made of pure gold! What a treasure. How wonderful it would be to own such a lovely and valuable axe. Still, the woodcutter politely told the
Rukkha-thezuda, “No, sir. That is not my lost axe. Mine is an ordinary axe.”

The Rukkha-thezuda waved his hand once. The golden axe disappeared and in its place a silver axe glistened. “Perhaps this is your lost axe?”

The poor woodcutter was tempted. The silver axe glistened in the sun. How wonderful it would be to own such a lovely and valuable axe. Still, the woodcutter politely told the Rukkha-thezuda, “No, sir, that is not my lost axe.”

The Rukkha-thezuda waved his hand once more. The silver axe disappeared and in its place was an old, worn metal axe. “Is this your axe?”

The woodcutter was so pleased to see his old axe returned. “Yes, sir. That is my axe!”

The Rukkha-thezuda was pleased to meet such an honest man. “Here, woodcutter. You may take all three axes. Your honesty pleases me.”

The woodcutter hurried home with a golden axe, a silver axe, and his own battered metal axe!

Soon news of the poor woodcutter’s fortunate encounter with the Rukkha-thezuda spread throughout the village. His neighbor came over to admire the valuable gold and silver axes. He felt envy. He too wanted to own a gold axe and silver axe.

The next day, this jealous neighbor went into the forest. Instead of cutting and gathering firewood, the neighbor went straight to the river bank and threw his old axe into the river. Then he sat down and prayed to Rukkha-thezuda. Sure enough, Rukkha-thezuda appeared before him holding a golden axe in his hand. “Is this your axe?” asked the Rukkha-thezuda.

The neighbor looked at the golden axe glistening in the sun. How wonderful to own such a lovely and valuable axe. He greedily nodded his head and said, “Yes, sir. That is my axe.”

The Rukkha-thezuda was not pleased with this answer. This man was lying. This was not an honest man. The Rukkha-thezuda reprimanded the neighbor: “You are telling a lie. I see that you do not follow the Lord Buddha’s Five Precepts for Laymen. The Lord

43

The Honest Woodcutter
Buddha has taught us: Do not kill any living things. Do not steal. Do not act unchastely. Do not lie. Do not drink intoxicating beverages. You have just told me a lie. You do not deserve help from me. Go and find your axe yourself."

The Rukkha-thewada disappeared, leaving the neighbor by himself on the riverbank, without his lost axe.
Lesson Title: Story - "The Seven Stars" (Thai) (Estimated time: 10 min.)

Objectives: Students will be aware that diverse cultures use creation stories of plants, animals or other natural resources as a means to teach about human qualities. Students will be introduced to the Thai cultural value of providing food for monks.

Background/Preparation: Stories are told in virtually all cultures to teach and entertain. Many cultures use stories of how something came to be as a way of teaching about human qualities and/or warning about possible pitfalls. In this story, lessons are conveyed about the Thai value of generosity and about when it is appropriate to kill animals. The value of providing food for spiritual seekers is emphasized as a priority here.

Materials Needed:
Copy of the story
Map or Globe

Procedure: Gather the students in a circle and explain that stories are used in many cultures as a way to educate. Read the story to the students.

Assessment: Question: What did you think of the story? What Thai value is being expressed by the couple's decision to kill their chicken to feed the monk? What Thai value is being expressed in the reward for the chicks jumping into the pot? Do you have similar values in your own culture?


Day 2, Lesson 7
Seven Stars

In this tale, a hen and her chicks pay the ultimate sacrifice and are rewarded by becoming a constellation, The Pleiades. Such tales stressing religious upbringing and self-sacrifice are classed as Chadok (shā-dok) in Thai folklore.

It is usual for monks to make their rounds of the neighborhood near their temple each morning with their begging bowls. Into these bowls the villagers place some rice and food for the monks’ daily meal. The monks do not take food after noon each day, and they depend on the villagers for their food. By offering support to the monks, who look after the religious life of the community, the villagers acquire merit which will benefit them in future lives. Each person may acquire merit in this life by good deeds. The good things which occur to you in this life are the result of good deeds performed in past lives. Your misfortunes are the result of bad deeds. It is said “What belongs to you, will come to you.” Looking to the future, devout Thai try to accumulate as much merit as possible.

There once was an old couple who lived in a small hut set in a grove of fruit trees. They tended their fruit trees, raised a few chickens, and survived. Both husband and wife were devout. They meditated often and each morning, when they arose, they would prepare some food to offer the monks.

But one evening the old woman seemed worried. “Dear Husband, what are we going to offer the monks tomorrow?”

Her husband was unconcerned, “Why do you worry over such a small matter. We have plenty of fruit on our trees, there are plenty of fish in the river, there is plenty of rice in the fields. Why worry?”

“Oh, my Dear Husband!” cried the old woman, “Didn’t you notice? We have eaten all of the ripe fruit in our garden. Those fruits which are left are too small to eat. The bananas are just starting to grow. Some of the trees are only blooming. There is no
fruit at all ripe enough to eat. Tomorrow, when the monk stops in front of our house, we will not have anything to offer him. There are not many people on our street who offer food for the monks."

"I see. You are worried that the monk may go hungry tomorrow."

"Yes, that is it. I am worried that tomorrow the monk may have no food to eat. He may have only water for his hunger. I do not want him to starve."

The old man was quiet for a while, then he slapped his leg and exclaimed. "I know what we can do. My Dear Wife, tomorrow we can kill our hen and use its meat to prepare food for the monk."

The old woman was shocked and reluctant. This hen was her pet. She did not want to kill it. Still, she did not want the monk to go hungry. The old man consoled her.

"Don't hesitate, my Dear Wife. We have good intentions in this. We have a good reason for killing our pet. We are making merit by offering food to the monk. It is a proper thing to do. We ourselves will not eat the chicken's meat at all."

Now the mother hen, who lived under the hut, heard all that was said between the old couple. She knew with certainty that she would be killed in the morning. She knew she must provide the food for the monk. This she could bear. But she cried for her six children.

"Kook! Kook! My children! Darlings. Listen to me carefully. I must teach you for the last time. Tomorrow, I am to be killed. This is necessary, in order that the old couple can provide food for the monk. Now listen and remember. Please love each other. Do not quarrel. Do not separate. Unite, all of you."

She was so distressed that she could not say anything else. The six children ran under the hen's wings and cried. "Oh, Mother, Dear Mother, how can we live without you?"

The hen embraced all six of her children. She told them lovingly, "Dears, tomorrow when they come to take me away, do not worry. Do not be sad. I will die for a good cause. You are still too small to go out alone into this world. Remember, do not
wander too far from home. Beware of the eagle. Be careful, and do not play in the old couple's vegetable garden. Do not go into their hut or they will strike you. Be good children and look for your food under the hut and around the hut. Make yourselves loveable so that the old couple will want to keep you as their pets."

The mother hen taught her children until late that night. All the things that young chickens must know, she taught them. Then, as the sun rose, the mother hen embraced her six chicks and said, "Dears, please be good. I must go now to be killed so that the old couple can prepare my meat for the monk. Pray for me and pray that we will meet again as mother and daughters in our next lives. Pray that we will be born and live very long lives later. Because I am so willing to die for the monk and for our owners, I believe we will be granted our wish."

The mother hen began to walk away from them, but she ran back one more time to embrace each of her daughters. The six chicks sobbed quietly. They said, "Once our mother is dead, who is going to look after us? Who is going to teach us what to do and what not to do? Who is going to dry our tears?"

Upstairs, the old man and the old woman had risen early to prepare the fire and boil the water so they could cook the hen. As soon as the water was boiling, the old man came down to catch the hen. When the six chicks saw their mother plunged to her death in the boiling water, they could not contain themselves. They ran to the pot and jumping in after their mother, all six chicks died with her.

Because of their love for each other, because of their courageous act, because of their willingness to die so that their bodies could provide meat for the ordained monk, and because of their fervent wish to be born again as a family, these chicks and their mother were born again as stars. They became a constellation of seven stars and were placed together into the sky. At night you can see them high in the Thai sky. "Dao Luk Kai," the "Seven Chicks" they are called. Look for them if ever you visit Thailand.
Lesson Title: Scottish Story – "The Silkies" (Estimated time: 10 min.)

Objectives: Students will be aware of the Scottish belief that animals and their needs to survive must be respected.

Background/Preparation: In the Celtic cultures (Irish, Scottish, Breton) as in many others, it is believed that animals need to be treated with respect. There are often spiritual personalities associated with animals, which usually serve to protect the animals and represent their interests to humans. When people are disrespectful or indifferent towards animals, the result often includes problems such as illness or poor hunting. Folk tales help to remind people of what the appropriate relationship with animals is.

Materials Needed:
Copy of Story “The Silkies” (from Caduto, Earth Tales)
Map or Globe

Procedure: Ask the students if they have ever heard or read any stories about people disrespecting animals. Tell them that you are going to read them a Celtic story about what happened when people were not respectful towards seals. Show them where Ireland and Scotland are on a map or globe. Ask if any of the students have been there. Tell them the story.

Assessment: Question: Ask the students if they believe that disrespecting animals could result in poor hunting or other problems. Ask them if they think that the Celtic peoples believe this today. (Do not answer these questions definitively for them.)

Sources:

Day 4, Lesson 7
The Silkies &
the Fisherman’s Sons

Gypsy/Traveller
(Scotland)

On the west coast of Scotland, there once lived a hardy crofter, a farmer, and his family. Their sturdy, stone-walled house rose from the rainy, windswept fields carpeted with heath and heather. This crofter’s land swept up from the coast and reached to the next ridge of hills. When the crofter walked in these quiet, open spaces, his spirit soared with the breeze that blew in from the sea to brush the mountaintops. His family had a few horses, some cattle and many sheep that grazed the hillsides.

The farmer and his wife also had five sons. They had added to their wee house with each new member of the family, until it had become a large, comfortable home. Still, the family had outgrown the lands of the crofter, and his sons needed to find work elsewhere in order to survive.

When he was young, the crofter had been a fisherman. He had taken up crofting, in addition to fishing, in order to support his growing family. But now he was weary of fishing and getting too old to sail out upon the sea.

“Father,” said one of his sons, “we’ll have to leave the croft if we can’t find more work. One day we’ll have families of our own. Then what will we do?”

“I’ve been thinking about this very thing,” said their father. “I don’t want you to have to leave. Besides, if you did go, I couldn’t possibly do all of the work around the croft by myself.”

“Well, Father, what can we do?”

“You three young boys take the boat and the nets and do the best you can to make a living from the sea. Your two older brothers and I will have just enough work between us here at the croft.”

The crofter spent many days out in the bay beyond the croft, showing the young boys how to set and haul the nets. Fishing was good there, but it was much better near the large island that lay a few miles offshore. There they could sail and fill their nets to near bursting with fish.

On some days, though, when they hauled their nets, many of the cod and other fish had been eaten. The island was home to hundreds of seals.

“Look, Father,” said his sons, “the seals have been at our fish again!”

“Yes, I see,” said the crofter. “The seal folk have indeed been at the fish. But don’t you forget lads, they have families, too, who need to eat just like we do.”
For many months the fisherman's sons worked hard and had good catches. They took the fish to a nearby town and sold them in the fish market. As the season wore on, however, the seals ate more and more of the fish. Sometimes they chewed holes in the nets, sometimes the fish were missing fins or tails.

“I’m proud of you boys,” their father said one night when they returned home. “You’ve learned well and worked hard.”

“But Father,” complained one of his young sons, “it’s harder and harder to make enough money to live on. The seals eat many of our fish and chew others up so badly that we cannot sell them.”

“Now sons, I lived with the seals my whole life. While you were growing up, I was able to raise you by fishing and working the croft. Sometimes I had to share the fish with the seals. It seems only fair—those seal folk have hungry children of their own. They are good people who only take what they need.”

“Father, that may be true, but one day we are going to have families, too. If we have just enough fish to support ourselves now, what are we going to do when we have wives and children?”

“Enough of that!” yelled their father. “I’m tired of hearing about the seals. Those people have been kind to me, and I to them. If you don’t stop this complaining, only bad can come of it.”

From that day on, although the seals continued to eat the fish and damage their nets, the young men never said another word to their father about it.

On some evenings, as the boys sailed to Seal Island, they sang this song:

\[
\begin{align*}
& \text{Now we fill our sails,} \\
& \text{to the Isle of Seals we go.} \\
& \text{There we'll set our nets adrift} \\
& \text{and haul our catch in tow.} \\
\end{align*}
\]

On every side of the island, steep cliffs faced the sea. There was only one quiet cove where the land dipped down to meet the waves, where driftwood collected and the strong odor of rotting seaweed filled the air. There, at sunset, the young fishermen often saw hundreds of seals hauling out onto the rocks to bask. On one such evening, the oldest of the three boys had an idea.

“This is what we are going to do,” he explained to his brothers. “Tomorrow night, when the seals climb up onto the rocks, we are going to be waiting for them. With clubs and stones we will kill the young seals and drive the older ones away. Then we will have the fish all to ourselves.”

The next day came and went. As their mother cleaned up after dinner, and their father and older brothers were occupied with the evening chores, the three younger boys stole quietly down to the shore. They loaded their clubs into the boat and rowed off to Seal Island. The red rays of sunlight reflected off the calm waters, as their song echoed through the damp stillness.
O'er the sunset waters,
   to the Isle of Seals we row.
There we'll wait the evening hours
   and catch them in the cove.

As the young fishermen neared the island, they hauled in the oars and drifted toward the cove.

"I have a strange feeling," said one of the sons. "There's not a seal in sight. Where could they be?"

"Don't you worry," said the oldest among them. "They'll be here soon enough. They always come."

The young men hid their boat at the mouth of the cove. They climbed the rocks and waited quietly for the seals. About an hour passed in the cold evening breeze. A storm was coming and drizzle began to soak through the boys' clothing. The youngest boy shivered. "We had better build a wee fire to keep warm," he said. They made a small pile of driftwood and set it ablaze.

"What's that?" asked one of the boys. "I hear voices coming toward us."

"No, that's just the wind," said another.

Then dark shapes moved like liquid up the rocks. Soon a few hundred of them stood before the boys. The biggest and oldest were in front, with the young ones behind. The firelight flickered on the faces of the strange creatures, who looked like people but were half-covered with thick coats of fur dripping with seawater. They were Silkies: seal folk who had taken the form of men, women and children of all sizes.

Now the boys were more horrified than they had ever been. The trail to the cove was blocked. The only other way off the island was over the steep cliffs!

The largest, roughest-looking Silkie began to speak in mixed Gaelic and English. Between the words came snorts, growls and grunts. It was a strange, broken language of land and sea. The boys understood the Gaelic language and could just make out the meaning of the words.

"Here they are! Let's get them! We know what you came here for. You came to kill us and our wee children!"

"But we never meant any harm to you and your folk," said the oldest brother. "We do not even know you. Where are you from and why do you think we mean to bring harm to you?"

"Don't you know who we are? Take a good look."

The boys strained their eyes in the dim, dancing light. They gasped.

"That's right, I can see it in your eyes now," said the Silkie. "We are the very seal folk you sailed out here to kill tonight. And now, we are going to do to you as you would have done to us. Prepare to die!"

A mob surrounded the young men, who held on to each other, shaking with fear. The Silkies picked up stones and driftwood and raised them over their heads.

The Silkies & the Fisherman's Sons
Lesson Title: Hmong Story – "Why Birds Never Go Hungry" (Estimated time: 10 min.)

Objectives: Students will be aware that some cultures use stories to explain why things are the way they are, and in the process teach about human qualities. Students will be introduced to the Hmong cultural values of helping others and showing gratitude.

Background/Preparation: Stories are told in virtually all cultures to teach and entertain. Many cultures use stories of how something came to be as a way of teaching about human qualities and/or warning about possible pitfalls. In this story, lessons are conveyed about the Hmong values of generosity and showing gratitude. The value of providing food for the hungry, and especially those who have helped you in the past, is emphasized here.

Materials Needed:
Copy of the story “Why Birds Never Go Hungry” (from Folk Stories of the Hmong)
Map or Globe

Procedure: Gather the students in a circle and explain how stories are used in many cultures as a way to educate. Read the story to the students.

Assessment: Question: What did you think of the story? What Hmong value is being expressed by the birds’ decision to help the lost boys? What Hmong value is being expressed in the promised reward for their help? Do you have similar values in your own culture?

Sources:

Day 4, Lesson 5
long time ago, when the world was new, there were two brothers who went hunting. After the long day of walking through the jungle, they got lost. They were worried and could not remember which way to go to get back home to their parents. For many days, they wandered in the jungle. They did not have anything to eat and became very hungry.

One day the older brother decided that he had to go to find food and wood for the fire. The younger brother also wanted to go to gather water. After they discussed their plans, they each went their own way. They agreed to meet back at the clearing in the forest where they were camping when they had gathered the necessary things.

The younger brother went up and down everywhere through the jungle, but he could not find any water. Finally, he was so tired he sat down on a stone to think. He tried to face in a different direction, thinking he might find water that way. While he was thinking, a bluebird was jumping from one tree to another, singing, "I know where your parents are, I know where your parents are!"

The younger brother was surprised, because he wasn't sure what he was really hearing. He stared at the bluebird and tried to listen more carefully. He hoped the bluebird would sing to him and say those words
again. He watched the bluebird wherever it went. After a time the bluebird started to sing again, saying the same words. The younger brother asked the bluebird, “Did you say you know where our parents are?”

“Yes, I did. But this is a bargain. If you can give me three insects then I will lead you to your parents,” the bluebird chirped.

The boy paused a while and then he said, “Are you sure? If you are sure, will you also follow me now while I go to get my older brother?”

The bird agreed.

As the bargain had been set, the bluebird followed the younger boy to the clearing in the forest, where the older brother was sitting and waiting. He had been there for a long time and had returned without either the food or the wood. The younger brother told the older brother about his bargain with the bluebird. Then the brothers left the bird in the clearing and went to find the insects. It took them quite some time, but they finally returned to the clearing and gave the insects to the bluebird.

After the bluebird had eaten the insects he said, “You boys must follow me wherever I fly and I will lead you to your parents.”

The bluebird flew away, leading the two boys. They followed the bird closely, and after many days they finally got home. They were very happy, and they thanked the bluebird many times for leading them safely home.

Before the bluebird left the two brothers to go back to the forest, the boys told him, “We will never forget how you helped us. We hope that we can help you one day—to save your life, too. We will always give you food when you are hungry.”

And that is why birds are always around people’s houses now—because of the promise given to the bluebird by the two grateful brothers.
Lesson Title: Values Glasses  (Estimated Time – 30 min.)

Objectives: Students will learn that different groups of people, including cultural groups, see the world through the eyes of their own experiences.

Background/Preparation: Psychologists have discovered that people tend to understand new things, information, and experiences by fitting them into what they already think and know. It is sometimes said that people “see through values-glasses” that filter out whatever doesn’t fit with their existing ideas or values. This can happen on the level of the individual, or of the whole culture.

Materials Needed:
Pairs of different style non-prescription glasses (a pair for each student)
A copy of the “Ambiguous Lady” image
Statement cards that express the values of diverse cultures towards the environment.

Procedure:
Part 1. Set-up (Estimated time: 10 min.)
Start with the students sitting in a circle. Ask them if they have ever had the impression that they just see something entirely differently than someone else, even though they’re looking at the same thing.

Pass out the glasses to the students and ask them to put them on.

Show them the image of the “Ambiguous Lady” for 10 seconds, cover it up, and ask the group what they saw in the picture. After the first person shares what he or she saw, ask how many people in the group saw the same thing. Ask if anyone saw something different, and then again how many others saw that. Show them the image again, and tell them that studies have found that younger people tend to see a young woman in the image, while older people tend to see an old woman in the picture. Tell them that ideas can be the same way, that the same thing can be understood by different people in very different ways, as if the people were wearing different kinds of glasses that filtered out certain things.

Part 2. Read the Cultural Values Cards in Small Groups (Estimated time: 20 min.)
Split the Group up into four or five smaller groups (each with 2-4 people). To split the group, you might assign each person a bird identity, like eagle, raven, chickadee, and woodpecker, and then have the members of each of those groups get together. Pass out a Cultural Values Card to each group and ask students to have one person read the value statement to the group. Ask them to talk about what their value statement says, and if there are different ways that the statement could be understood. For instance, if a statement says that “People are related to trees”, ask them to think about different ways of understanding that, like “people are physically related to trees”, or “people are related to trees because they both use air,” or “people are spiritually related to trees.” Ask that they discuss how each of the different points of view might be considered valid or supported.
Ask them to talk about the ideas among themselves for 5 minutes, and then choose a spokesperson to present the Cultural Values Card statement to the group and the different ways of seeing things that they have talked about.

After the spokespeople have presented their group’s statements to the larger group, collect the cards. Explain that differences like these are one of the things that make cultures different, and also one of the reasons that there are disagreements about environmental issues. Ask if anyone can give an example of an environmental issue that different groups of people see in different ways. If no-one has a suggestion, ask them how building a new shopping center on a marshy area by the bay where birds nest might be such an issue, or how damming a river might be such an issue.

**Assessment:** Question: Ask students to give examples of a cultural world-view that could be understood in more than one way, and for each one, ask the student which meaning they think is the one that the author intended.

**Sources:**


Day 2, Lesson 9
Melchizedek (Australiano Aborigen) -
(Exilin Umpare)

and Mother Nature: on studying down Mother Earth through this lifetime, he keeps all things to himself. Birds and animals are his.

The Aboriginal is laugher that the

Melchizedek (Australiano Aborigen)

Land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

The gentle pendence of nature, it not

Earth (p. 30)

Melchizedek. The Way of the Earth

Nature is so critical as to be daim-

The bond between humans and

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land,

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plains to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.

Melchizedek (Australiano Aborigen)

N. Scout Moharep, Eli Savista.

Plainards to the land.
It is a recurring theme in Australian fiction that the mother and father, and brother, all the children were made that are of you. Aborigines, stories that concern just the only purpose of animals is "Atele 1990)."

"We are the keepers of the Earth."

"Cheyennes are aware of their purpose.

"The land is our mother. She is my mother."

"My life and all life, an image of the soil-renewing life. It is a re-creation of the Earth. It is the renewal of the Earth."

"My life is my view of the Earth."

"My childhood was spent wandering.

"My People."
(Melphan, p. 413)

(Dine/Navajo)
Asa Bahnoodoch

"rain."
Black Mesa area is usual to ask for rain from the Earth. That brings rain. That was given us when we came.
We give petition and use the prayer.
When Mother Earth needs rain.

(WNZ Perce)
(Seamaria)

mother's hair.
mean. But how dare I cut off my hair and sell it and be rich like white.
You ask me to cut grass and make money.
When I die I cannot
She will die under her skin.
She will not ask me to die for some.
When I die
She will take a knife and cut my mother's breast.
You ask me to plow the ground.

(Melphan, p. 418)

(Koo'i)
Names ( Elders)

... to give a warning...
... We are all here. We are all here.
... We are dying to discover how to care of the world...
... We are all here.
... We work to take teeth you to stop...
"You are4 propping the Earth and..."
Lesson Title: Wild Rice Dinner (Estimated time: 30 min.)

Objectives: Students will experience and learn about the relationship between a culture and their traditional staple food.

Background/Preparation: Wild rice is an important food in the cultures of several indigenous peoples from Wisconsin, Michigan, and Minnesota. One of these groups, the Menominee, take their name from the plant, Menomin, which means “the good seed”. The yearly harvest of wild rice is a special time for many in these cultures, representing not only the gathering of a food, but also a reconnection with the Earth and their past. Wild rice is still harvested primarily in canoes with bent cedar ricing sticks, and used year-round as a nourishing and satisfying food. One cultural value of the wild rice harvest is that enough wild rice should be left for all of the animals.

Materials Needed:
Cooked wild rice
Table cards depicting and describing the wild rice harvest process
A map or globe

Procedure: Cook and serve wild rice to the students as a part of a dinner. Ask them to look at and read the table cards as they eat.

Assessment: Questions: Ask the students if they have a relationship with any food that is similar to the relationship between the Great Lakes tribes and wild rice. Ask what the differences are between their relationship with food and that of the Great Lakes tribes with wild rice.

Sources: Gokee, Andrew. Presentation given to class at the University of Wisconsin, Stevens Point. October, 1997.

Day 2, Lesson 10
Manomin (Mah-NO-mit) is the Anishinaabe language name of this nutritious grain. It means “the good seed”.

The moon (month) of harvest, in late August or early September, is named after manomin, “Manoominiki Giizis”.

One of the Native American tribes of the Great Lakes area is named after this food. The people are called the “Menominee”, or “people of the good seed”.

Manomin was the most historically important food in the lives of Native people of the area, and is still important today.

The Manomin (Wild rice) plant grows in lakes and marshes with 3-8 feet of water, in northern Wisconsin, Minnesota, and areas to the north of the Great Lakes.

The plant grows as reeds which are 8-12 feet tall when mature.

Many different kinds of manomin grow in different areas. Each is adapted to the very individual conditions of its place. Some of the differences that the plant adapts to include the water quality, temperature, depth, and kind of mud that it grows in. Grains can be green, brown, or black, and they can be different lengths. Native peoples in the Great Lakes have traditionally traded with each other to enjoy more variety in their diet.

Winter Manomin - Traditionally, women would go out to the lakes about two weeks before the manomin was ripe.

The women would take several days to tie bundles of manomin reeds together with twine made from the basswood tree.

The tied grains would be cut off later in the winter and shaken off of the reeds. This “winter manomin” took a longer time to cook, but was thought to be very special.
Bawatam - Knocking the manomin

Canoes are used to gather manomin. Men usually stand up and push the canoe through the reeds with a pole. Women sit in the stern of the canoe with two sticks called knockers. One stick is used to bend the plants over the canoe, and the other is used to hit the seed heads to knock off ripe grains. The grains fall into the canoe.

Manomin is gathered until the canoe is full, which can take from 2 hours to all day, depending on how thickly the reeds grow and how ripe it is. Plenty of grains are always left for the reed beds to re-seed, and for the animals to eat.

A field of manomin may be “riced over” a half-dozen times in a season, as the grains continue to ripen.

Manido: spirit-giver of the manomin

Care is taken to be respectful towards the Manido when harvesting manomin. The Manido is the spirit-giver of the manomin, and if not respected, can cause harvests to be bad. In the old days, if someone was careless and broke up the manomin grains while harvesting, or pulled off the whole seed head of the plants or squashed them down, the elders would ask that person to leave the lake.

In the 1950’s and 1960’s there was a lot of alcohol abuse happening in the “ricing camps” where people were gathered for harvesting. The harvests got very bad in the early 1970’s, and some people thought that it was because the drinking was disrespectful to the Manido.

In Wisconsin, the Northern States Power Company built a dam which changed the water level by one foot and flooded burial grounds of the Lac Courte Oreilles Ojibwe people. Much of the manomin died off, and it didn’t come back when the water level was restored to its original depth.
APPENDIX B

Pre and Post-Test Survey
Appendix B: Pre and Post-Test Survey

Please answer these questions with the answer that most closely describes your opinion:

1). When it comes to beliefs and values about the environment, I would identify my own culture as being __________________. (For example, North American, Asian, African, Indigenous, Ukranian, or any other country, area, or group of people. You may enter more than one ethnic group or geographic area).

2). I don't know very much about how different cultures think about the environment.
   1   2   3   4

3). I know a good deal about how different cultures think about the environment.
   1   2   3   4

4). I understand very little about cultures that are different than my own.
   1   2   3   4

5). I understand a good deal about cultures that are different than my own.
   1   2   3   4

6). I think that cultures that are different than my own could learn a lot from my culture about taking care of the environment.
   1   2   3   4

7). I think that my culture could learn a lot from cultures that are different than my own about taking care of the environment.
   1   2   3   4

8). I am interested in learning more about cultures that are different than my own.
   1   2   3   4

9). I feel like I don't need to learn more about cultures that are different than my own.
   1   2   3   4
10). I have personally learned some valuable ideas about understanding the environment from cultures that are different than mine.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

11). I think that all plants and animals, even ones like poison oak and mosquitoes and wasps, should be respected and treated with kindness.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

12). I think that the ways that people think about and act toward the environment in my culture are generally good, and will allow plants, animals, and the environment to be well cared for into the future.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

13). I think that it is acceptable for humans to use plants, animals, and the environment however they please.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

14). I think that plants and animals have feelings and that they can communicate those with people.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

15). I like spending time outdoors in natural environments.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

16). I am interested in learning about ecology and the environment.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

17). I enjoy spending time with my classmates, and I feel that I get along well with most of them.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>

18). I feel that I am able to understand environmental issues and that I can help to solve some of them.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>
Appendix B: Pre and Post-Test Survey
For any cultural groups whose environmental values or beliefs you know about, please write their name and say if your own values or beliefs about the environment are more similar or more different to theirs.

Example:
Cultural Group: Mayan

Names of Cultural Groups
Aborigine (Australia);
Dagara (Burkina Faso, Africa)
Shona (Zimbabwe, Africa)
Mohawk (New York and Quebec, Canada)
Dine (Navajo) (southwestern U.S)
Ojibwe (Great Lakes, U.S.)
Makah (Washington, U.S)
Ohlone (Coastal California, U.S.)
Lakota, Dakota (North Central U.S.)
Kikuyu (Kenya, Africa)
Chewong (Malaysia)
Eskimo, Inuit (Alaska, Canada)
Okanagen (Washington, U.S.)
Jews (Israel)
Moors (Israel, Lebanon)
Zen Buddhist (Japan)
Ibo (Nigeria, Africa)

My values or beliefs are similar/different.
How are they different or similar? I believe that people are made out of corn.

Eko (Nigeria, Africa); Senegalesse (Senegal, Africa); Masai (Kenya, Africa); Jibaro and Canella (eastern Ecuador); Turks (Turkey); Maori (New Zealand); Penan (Sarawak, Malaysia/Borneo); Dayak (Sarawak, Malaysia/Borneo); Thai (Thailand, Asia); Hmong (Laos, Asia); Balinisan (Bali, Asia); Shinto (Japan);
Mayan (Mexico, Guatemala, Belize); Kogi (Columbia, S.America); Quichua, Quechua (Peru); Aymara (Peru); Greeks (Greece); Hindu (India); Buddhist (India, Tibet, Thailand); Celts (Ireland, Scotland, and Wales); Moroccans (Morrocco);
Chinese (China); Italians (ancient) (Italy); Arabs (ancient) (Arabia); Nez Perce (Washington, Idaho, U.S.);

My values or beliefs are similar/different.
How are they different or similar?_____
<table>
<thead>
<tr>
<th>Cultural Group:</th>
<th>My values or beliefs are similar/different. How are they different or similar?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Group:</td>
<td>My values or beliefs are similar/different. How are they different or similar?</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Group:</td>
<td>My values or beliefs are similar/different. How are they different or similar?</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Group:</td>
<td>My values or beliefs are similar/different. How are they different or similar?</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Group:</td>
<td>My values or beliefs are similar/different. How are they different or similar?</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Group:</td>
<td>My values or beliefs are similar/different. How are they different or similar?</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Group:</td>
<td>My values or beliefs are similar/different. How are they different or similar?</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Group:</td>
<td>My values or beliefs are similar/different. How are they different or similar?</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cultural Group: My values or beliefs are similar/different. How are they different or similar?

Cultural Group: My values or beliefs are similar/different. How are they different or similar?

Cultural Group: My values or beliefs are similar/different. How are they different or similar?

Cultural Group: My values or beliefs are similar/different. How are they different or similar?

Cultural Group: My values or beliefs are similar/different. How are they different or similar?

Cultural Group: My values or beliefs are similar/different. How are they different or similar?

Cultural Group: My values or beliefs are similar/different. How are they different or similar?
APPENDIX C

Survey Results
<table>
<thead>
<tr>
<th>name</th>
<th>cabin</th>
<th>preculid</th>
<th>pstculid</th>
<th>pre1</th>
<th>post1</th>
<th>pre2</th>
</tr>
</thead>
<tbody>
<tr>
<td>6A</td>
<td>Con6</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>asian</td>
</tr>
<tr>
<td>6B</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6C</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6D</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6E</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6F</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td>Jewish</td>
<td>Jew</td>
<td>1</td>
</tr>
<tr>
<td>6G</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6H</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6I</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6J</td>
<td>Con6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6K</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td>N.Americ</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>6L</td>
<td>Con6</td>
<td></td>
<td></td>
<td></td>
<td>American</td>
<td></td>
</tr>
<tr>
<td>6M</td>
<td>Con6</td>
<td>3</td>
<td>2</td>
<td>N.Americ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6N</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6O</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6P</td>
<td>Con6</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8A</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>Asian/Am</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>8B</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>Costa Ri</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>8C</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>N.Americ</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>8D</td>
<td>Con8</td>
<td>0</td>
<td>1</td>
<td>Spanish</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>8E</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>Asian</td>
<td>Asian</td>
<td>2</td>
</tr>
<tr>
<td>8F</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>Asian</td>
<td>Asian</td>
<td></td>
</tr>
<tr>
<td>8G</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>Asian</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>8H</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>N.Americ</td>
<td>N.Americ</td>
<td>2</td>
</tr>
<tr>
<td>8I</td>
<td>Con8</td>
<td>0</td>
<td>1</td>
<td>South Am</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>8J</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>European</td>
<td>European</td>
<td>2</td>
</tr>
<tr>
<td>8K</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>Israeli</td>
<td>Jewish</td>
<td>4</td>
</tr>
<tr>
<td>8L</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>Don't kn</td>
<td>hispanic</td>
<td>2</td>
</tr>
<tr>
<td>8M</td>
<td>Con8</td>
<td>0</td>
<td>0</td>
<td>N.Americ</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>7A</td>
<td>Con7</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>post2</td>
<td>pre3</td>
<td>post3</td>
<td>pre4</td>
<td>post4</td>
<td>pre5</td>
</tr>
<tr>
<td>----</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>4</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>14</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>.</td>
</tr>
<tr>
<td>23</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>24</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>27</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>28</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>29</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>30</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>pre6</td>
<td>post6</td>
<td>pre7</td>
<td>post7</td>
<td>pre8</td>
<td>post8</td>
</tr>
<tr>
<td>-----</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>1</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>.</td>
<td>.</td>
<td>4</td>
<td>3</td>
<td>.</td>
</tr>
<tr>
<td>7</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>.</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>.</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>30</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

1-3
<table>
<thead>
<tr>
<th></th>
<th>post9</th>
<th>pre10</th>
<th>post10</th>
<th>pre11</th>
<th>post11</th>
<th>pre12</th>
<th>post12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>1</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>.</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>23</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>24</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>28</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>30</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>pre13</td>
<td>post13</td>
<td>pre14</td>
<td>post14</td>
<td>pre15</td>
<td>post15</td>
<td>pre16</td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>3</td>
<td>.</td>
</tr>
<tr>
<td>14</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>15</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>16</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
</tr>
<tr>
<td>17</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>18</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>21</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>23</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>24</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>30</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>post16</td>
<td>pre17</td>
<td>post17</td>
<td>pre18</td>
<td>post18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>name</td>
<td>cabin</td>
<td>preculid</td>
<td>pstculid</td>
<td>pre1</td>
<td>post1</td>
<td>pre2</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>----------</td>
<td>----------</td>
<td>------------</td>
<td>-------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>7B</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td>good</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>7C</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td>N. Amer</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>7D</td>
<td>Con7</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>7E</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td>Amer,Mex</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>7F</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td>Chinese</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>7G</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>7H</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>7I</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>7J</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td>Korean</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>7K</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td>El Salva</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>7L</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td>Chinese</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>7M</td>
<td>Con7</td>
<td>3</td>
<td>0</td>
<td>N.Americ</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>7N</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>7O</td>
<td>Con7</td>
<td>0</td>
<td>1</td>
<td>Greek</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>7P</td>
<td>Con7</td>
<td>0</td>
<td>0</td>
<td>N.Americ</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>9A</td>
<td>Con9</td>
<td>1</td>
<td>0</td>
<td>N.Americ</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>9B</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>American</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>9C</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>Hispanic</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>9D</td>
<td>Con9</td>
<td>1</td>
<td>2</td>
<td>Filipino</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>9E</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>Arabic</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>9F</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>Black!!</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>9G</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>French,B</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>9H</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>Chinese</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>9I</td>
<td>Con9</td>
<td>1</td>
<td>1</td>
<td>Portugues</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>9J</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>North Am</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>9K</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>Hispanic</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>9L</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>assalvad</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>9M</td>
<td>Con9</td>
<td>0</td>
<td>0</td>
<td>Hispanic</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>1A</td>
<td>Exp1</td>
<td>0</td>
<td>0</td>
<td>Asian</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>1B</td>
<td>Exp1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>post3</td>
<td>pre4</td>
<td>post4</td>
<td>pre5</td>
<td>post5</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>31</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>32</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>33</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>34</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>35</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>36</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>37</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>39</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>40</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>41</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>42</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>43</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>44</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>45</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>46</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>47</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>48</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
</tr>
<tr>
<td>49</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>50</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>51</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>52</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>53</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>54</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>55</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>56</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>57</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>58</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>59</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>60</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>pre6</td>
<td>post6</td>
<td>pre7</td>
<td>post7</td>
<td>pre8</td>
<td>post8</td>
<td>pre9</td>
</tr>
<tr>
<td>---</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>31</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>32</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>33</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>34</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>36</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>37</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>38</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>39</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>40</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>41</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>42</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>43</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>44</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>45</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>46</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>47</td>
<td>.</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>48</td>
<td>.</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>49</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>50</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
</tr>
<tr>
<td>51</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>52</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>53</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>54</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>55</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>56</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>57</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>58</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>59</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>60</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>post9</td>
<td>pre10</td>
<td>post10</td>
<td>pre11</td>
<td>post11</td>
<td>pre12</td>
<td>post12</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>32</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>33</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td>.</td>
</tr>
<tr>
<td>34</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>35</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>37</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>38</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>39</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>41</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>42</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>43</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>44</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>45</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>46</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>47</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>48</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>49</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>50</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>51</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>52</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>53</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>54</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>55</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>56</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>57</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>58</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>59</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>60</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>pre13</td>
<td>post13</td>
<td>pre14</td>
<td>post14</td>
<td>pre15</td>
<td>post15</td>
<td>pre16</td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>31</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>32</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>33</td>
<td>3</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>34</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>35</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>37</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>40</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>41</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>42</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>43</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>44</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>45</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>46</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>47</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>48</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>49</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>50</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>51</td>
<td>4</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>52</td>
<td>4</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>53</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>54</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>55</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>56</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>57</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>58</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>59</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>60</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>post16</td>
<td>pre17</td>
<td>post17</td>
<td>pre18</td>
<td>post18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>1</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>name</td>
<td>cabin</td>
<td>preculid</td>
<td>pstculid</td>
<td>pre1</td>
<td>post1</td>
<td>pre2</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>----------</td>
<td>----------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>1C</td>
<td>Exp1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>1D</td>
<td>Exp1</td>
<td>0</td>
<td>0</td>
<td>Asian</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>1E</td>
<td>Exp1</td>
<td>1</td>
<td>1</td>
<td>Asian</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>1F</td>
<td>Exp1</td>
<td>1</td>
<td>1</td>
<td>Thai</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>1G</td>
<td>Exp1</td>
<td>0</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>1H</td>
<td>Exp1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>1I</td>
<td>Exp1</td>
<td>1</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>1J</td>
<td>Exp1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>1K</td>
<td>Exp1</td>
<td>0</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>1L</td>
<td>Exp1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>1M</td>
<td>Exp1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>1N</td>
<td>Exp1</td>
<td>0</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>1O</td>
<td>Exp1</td>
<td>1</td>
<td>2</td>
<td>Asian</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>1P</td>
<td>Exp1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>2A</td>
<td>Exp2</td>
<td>1</td>
<td>1</td>
<td>Polynesi</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>2B</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>2C</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td>Maltesia</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>2D</td>
<td>Exp2</td>
<td>0</td>
<td>1</td>
<td>Chinese</td>
<td>Chinese</td>
<td>1</td>
</tr>
<tr>
<td>79</td>
<td>2E</td>
<td>Exp2</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>2F</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td>Korean</td>
<td>Korean</td>
<td>3</td>
</tr>
<tr>
<td>81</td>
<td>2G</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td>Chinese</td>
<td>Chinese</td>
<td>1</td>
</tr>
<tr>
<td>82</td>
<td>2H</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>2I</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>2J</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td>Phillipi</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>2K</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td>Japan</td>
<td>Japanese</td>
<td>1</td>
</tr>
<tr>
<td>86</td>
<td>2L</td>
<td>Exp2</td>
<td>1</td>
<td>0</td>
<td>Fijian</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>2M</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>2N</td>
<td>Exp2</td>
<td>0</td>
<td>1</td>
<td>Chinese</td>
<td>Asian</td>
<td>2</td>
</tr>
<tr>
<td>89</td>
<td>2O</td>
<td>Exp2</td>
<td>0</td>
<td>9</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>2P</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>post2</td>
<td>pre3</td>
<td>post3</td>
<td>pre4</td>
<td>post4</td>
<td>pre5</td>
<td>post5</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>62</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>4</td>
<td>.</td>
</tr>
<tr>
<td>63</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>64</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>65</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>66</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>67</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>68</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>69</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>70</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>71</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>72</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>73</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>74</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>75</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>76</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>77</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>78</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>79</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>80</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>81</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>82</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>83</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
</tr>
<tr>
<td>84</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>85</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>86</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>87</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>88</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>89</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>4</td>
<td>.</td>
</tr>
<tr>
<td>90</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>pre6</td>
<td>post6</td>
<td>pre7</td>
<td>post7</td>
<td>pre8</td>
<td>post8</td>
<td>pre9</td>
</tr>
<tr>
<td>----</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>61</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>62</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>63</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>64</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>65</td>
<td>.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>66</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>67</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>68</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>69</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>70</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>71</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>72</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>73</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>74</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>75</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>76</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>77</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>78</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>79</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>80</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>81</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>82</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>83</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>84</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>85</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>86</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>87</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>88</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>89</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>4</td>
</tr>
<tr>
<td>90</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

3-3
<table>
<thead>
<tr>
<th>post9</th>
<th>pre10</th>
<th>post10</th>
<th>pre11</th>
<th>post11</th>
<th>pre12</th>
<th>post12</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>4</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td></td>
<td>4</td>
<td></td>
<td>2</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>63</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>64</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>65</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>3</td>
<td></td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>67</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>68</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>69</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>70</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>72</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>73</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>74</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>75</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>76</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>77</td>
<td>4</td>
<td></td>
<td>4</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>81</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>82</td>
<td>4</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>3</td>
<td></td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>89</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3-4
## Pre and Post-Test Survey Results

<table>
<thead>
<tr>
<th></th>
<th>pre13</th>
<th>post13</th>
<th>pre14</th>
<th>post14</th>
<th>pre15</th>
<th>post15</th>
<th>pre16</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>61</td>
<td>1</td>
<td>61</td>
<td>1</td>
<td>61</td>
<td>1</td>
<td>61</td>
</tr>
<tr>
<td>62</td>
<td>62</td>
<td>1</td>
<td>62</td>
<td>4</td>
<td>62</td>
<td>4</td>
<td>62</td>
</tr>
<tr>
<td>63</td>
<td>63</td>
<td>3</td>
<td>63</td>
<td>3</td>
<td>63</td>
<td>2</td>
<td>63</td>
</tr>
<tr>
<td>64</td>
<td>64</td>
<td>2</td>
<td>64</td>
<td>3</td>
<td>64</td>
<td>1</td>
<td>64</td>
</tr>
<tr>
<td>65</td>
<td>65</td>
<td>3</td>
<td>65</td>
<td>3</td>
<td>65</td>
<td>2</td>
<td>65</td>
</tr>
<tr>
<td>66</td>
<td>66</td>
<td>4</td>
<td>66</td>
<td>2</td>
<td>66</td>
<td>3</td>
<td>66</td>
</tr>
<tr>
<td>67</td>
<td>67</td>
<td>4</td>
<td>67</td>
<td>3</td>
<td>67</td>
<td>4</td>
<td>67</td>
</tr>
<tr>
<td>68</td>
<td>68</td>
<td>4</td>
<td>68</td>
<td>3</td>
<td>68</td>
<td>1</td>
<td>68</td>
</tr>
<tr>
<td>69</td>
<td>69</td>
<td>4</td>
<td>69</td>
<td>4</td>
<td>69</td>
<td>1</td>
<td>69</td>
</tr>
<tr>
<td>70</td>
<td>70</td>
<td>1</td>
<td>70</td>
<td>1</td>
<td>70</td>
<td>4</td>
<td>70</td>
</tr>
<tr>
<td>71</td>
<td>71</td>
<td>4</td>
<td>71</td>
<td>4</td>
<td>71</td>
<td>1</td>
<td>71</td>
</tr>
<tr>
<td>72</td>
<td>72</td>
<td>4</td>
<td>72</td>
<td>1</td>
<td>72</td>
<td>2</td>
<td>72</td>
</tr>
<tr>
<td>73</td>
<td>73</td>
<td>3</td>
<td>73</td>
<td>4</td>
<td>73</td>
<td>1</td>
<td>73</td>
</tr>
<tr>
<td>74</td>
<td>74</td>
<td>1</td>
<td>74</td>
<td>2</td>
<td>74</td>
<td>1</td>
<td>74</td>
</tr>
<tr>
<td>75</td>
<td>75</td>
<td>1</td>
<td>75</td>
<td>2</td>
<td>75</td>
<td>1</td>
<td>75</td>
</tr>
<tr>
<td>76</td>
<td>76</td>
<td>1</td>
<td>76</td>
<td>2</td>
<td>76</td>
<td>1</td>
<td>76</td>
</tr>
<tr>
<td>77</td>
<td>77</td>
<td>4</td>
<td>77</td>
<td>1</td>
<td>77</td>
<td>4</td>
<td>77</td>
</tr>
<tr>
<td>78</td>
<td>78</td>
<td>3</td>
<td>78</td>
<td>4</td>
<td>78</td>
<td>2</td>
<td>78</td>
</tr>
<tr>
<td>79</td>
<td>79</td>
<td>3</td>
<td>79</td>
<td>4</td>
<td>79</td>
<td>2</td>
<td>79</td>
</tr>
<tr>
<td>80</td>
<td>80</td>
<td>3</td>
<td>80</td>
<td>2</td>
<td>80</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>81</td>
<td>81</td>
<td>3</td>
<td>81</td>
<td>3</td>
<td>81</td>
<td>2</td>
<td>81</td>
</tr>
<tr>
<td>82</td>
<td>82</td>
<td>3</td>
<td>82</td>
<td>4</td>
<td>82</td>
<td>2</td>
<td>82</td>
</tr>
<tr>
<td>83</td>
<td>83</td>
<td>3</td>
<td>83</td>
<td>4</td>
<td>83</td>
<td>2</td>
<td>83</td>
</tr>
<tr>
<td>84</td>
<td>84</td>
<td>3</td>
<td>84</td>
<td>2</td>
<td>84</td>
<td>1</td>
<td>84</td>
</tr>
<tr>
<td>85</td>
<td>85</td>
<td>3</td>
<td>85</td>
<td>2</td>
<td>85</td>
<td>1</td>
<td>85</td>
</tr>
<tr>
<td>86</td>
<td>86</td>
<td>2</td>
<td>86</td>
<td>1</td>
<td>86</td>
<td>3</td>
<td>86</td>
</tr>
<tr>
<td>87</td>
<td>87</td>
<td>3</td>
<td>87</td>
<td>3</td>
<td>87</td>
<td>1</td>
<td>87</td>
</tr>
<tr>
<td>88</td>
<td>88</td>
<td>1</td>
<td>88</td>
<td>4</td>
<td>88</td>
<td>1</td>
<td>88</td>
</tr>
<tr>
<td>89</td>
<td>89</td>
<td>3</td>
<td>89</td>
<td>3</td>
<td>89</td>
<td>1</td>
<td>89</td>
</tr>
<tr>
<td>90</td>
<td>90</td>
<td>3</td>
<td>90</td>
<td>3</td>
<td>90</td>
<td>1</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>post16</td>
<td>pre17</td>
<td>post17</td>
<td>pre18</td>
<td>post18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>61</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>62</td>
<td></td>
<td>4</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>63</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>64</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>65</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>66</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>67</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>68</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>69</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>70</td>
<td>4</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>71</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>72</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>73</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>74</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>75</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>76</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>77</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>78</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>80</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>81</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>82</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>84</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>85</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>86</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>88</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>89</td>
<td></td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>name</td>
<td>cabin</td>
<td>presid</td>
<td>presid</td>
<td>pre1</td>
<td>post1</td>
<td>pre2</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>2Q</td>
<td>Exp2</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>3A</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>3B</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td>Asian</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>3C</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td>Greece</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>3D</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>3E</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td>African</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>97</td>
<td>3F</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td>European</td>
<td>European</td>
<td>1</td>
</tr>
<tr>
<td>98</td>
<td>3G</td>
<td>Exp3</td>
<td>1</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>3H</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>3I</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td>Asian</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>3J</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td>N.Amer</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>3K</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>3L</td>
<td>Exp3</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>5A</td>
<td>Exp5</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>5B</td>
<td>Exp5</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>5C</td>
<td>Exp5</td>
<td>2</td>
<td>0</td>
<td>Asian</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>5D</td>
<td>Exp5</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>108</td>
<td>5E</td>
<td>Exp5</td>
<td>0</td>
<td>0</td>
<td>Spanish</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>109</td>
<td>5F</td>
<td>Exp5</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>5G</td>
<td>Exp5</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>5H</td>
<td>Exp5</td>
<td>0</td>
<td>0</td>
<td>Italian</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>5I</td>
<td>Exp5</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>5J</td>
<td>Exp5</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>5K</td>
<td>Exp5</td>
<td>0</td>
<td>2</td>
<td>N.Amer</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>5L</td>
<td>Exp5</td>
<td>0</td>
<td>1</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>116</td>
<td>5M</td>
<td>Exp5</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>117</td>
<td>4A</td>
<td>Exp4</td>
<td>1</td>
<td>4</td>
<td>Excellent</td>
<td>special</td>
<td>1</td>
</tr>
<tr>
<td>118</td>
<td>4B</td>
<td>Exp4</td>
<td>0</td>
<td>2</td>
<td>happy</td>
<td>Asian</td>
<td>2</td>
</tr>
<tr>
<td>119</td>
<td>4C</td>
<td>Exp4</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>4D</td>
<td>Exp4</td>
<td>2</td>
<td>2</td>
<td>Asian</td>
<td>Asian</td>
<td>2</td>
</tr>
<tr>
<td>post2</td>
<td>pre3</td>
<td>post3</td>
<td>pre4</td>
<td>post4</td>
<td>pre5</td>
<td>post5</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>92</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>93</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>94</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>95</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>96</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>97</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>98</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>99</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>100</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>101</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>102</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>103</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>104</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>105</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>106</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>107</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>108</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>109</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>110</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>111</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td>.</td>
</tr>
<tr>
<td>112</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td>.</td>
</tr>
<tr>
<td>113</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>114</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>115</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>116</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>117</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>118</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>119</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>120</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>pre6</td>
<td>post6</td>
<td>pre7</td>
<td>post7</td>
<td>pre8</td>
<td>post8</td>
<td>pre9</td>
</tr>
<tr>
<td>----</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>91</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>92</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>93</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>95</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>96</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>97</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>98</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>99</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>101</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>102</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>103</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>104</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>107</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>4</td>
</tr>
<tr>
<td>108</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>109</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>112</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
</tr>
<tr>
<td>113</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>114</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>115</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>116</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>117</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>118</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>120</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>post9</td>
<td>pre10</td>
<td>post10</td>
<td>pre11</td>
<td>post11</td>
<td>pre12</td>
<td>post12</td>
</tr>
<tr>
<td>----</td>
<td>-------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>91</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>93</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>94</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>95</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>96</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>97</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>98</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>99</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>100</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>101</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>102</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>103</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>104</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>107</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>108</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>109</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>111</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>112</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td></td>
<td>4</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>114</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>115</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>116</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>117</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>118</td>
<td>1</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>120</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>pre13</td>
<td>post13</td>
<td>pre14</td>
<td>post14</td>
<td>pre15</td>
<td>post15</td>
<td>pre16</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>97</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>4</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>108</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>109</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>116</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>117</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>118</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>post16</td>
<td>pre17</td>
<td>post17</td>
<td>pre18</td>
<td>post18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>97</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>.</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>108</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>109</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>3</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>116</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>117</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>118</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>name</td>
<td>cabin</td>
<td>preculid</td>
<td>pstculid</td>
<td>pre1</td>
<td>post1</td>
<td>pre2</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>----------</td>
<td>----------</td>
<td>-------</td>
<td>-----------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>4E</td>
<td></td>
<td>1</td>
<td>4</td>
<td>Good</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>122</td>
<td>4F</td>
<td></td>
<td>1</td>
<td>1</td>
<td>Excellent</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>4G</td>
<td></td>
<td>1</td>
<td>2</td>
<td>Excellent</td>
<td>Da Bomb</td>
<td>1</td>
</tr>
<tr>
<td>124</td>
<td>4H</td>
<td></td>
<td>1</td>
<td>3</td>
<td>Asian</td>
<td>Asian</td>
<td>2</td>
</tr>
<tr>
<td>125</td>
<td>4I</td>
<td></td>
<td>1</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>126</td>
<td>4J</td>
<td></td>
<td>0</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>post2</td>
<td>pre3</td>
<td>post3</td>
<td>pre4</td>
<td>post4</td>
<td>pre5</td>
<td>post5</td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>121</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>122</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>123</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>2</td>
<td>.</td>
<td>1</td>
<td>.</td>
</tr>
<tr>
<td>124</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>125</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>126</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>pre6</td>
<td>post6</td>
<td>pre7</td>
<td>post7</td>
<td>pre8</td>
<td>post8</td>
<td>pre9</td>
</tr>
<tr>
<td>----</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>121</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>122</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>123</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>4</td>
</tr>
<tr>
<td>124</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>125</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>126</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>post9</td>
<td>pre10</td>
<td>post10</td>
<td>pre11</td>
<td>post11</td>
<td>pre12</td>
<td>post12</td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>121</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>2</td>
</tr>
<tr>
<td>122</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>123</td>
<td>.</td>
<td>3</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>124</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>125</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>126</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>pre13</td>
<td>post13</td>
<td>pre14</td>
<td>post14</td>
<td>pre15</td>
<td>post15</td>
<td>pre16</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>.</td>
<td>4</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>122</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>123</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>124</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>126</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>.</td>
</tr>
<tr>
<td>post16</td>
<td>pre17</td>
<td>post17</td>
<td>pre18</td>
<td>post18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>122</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>124</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>126</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D

OBSERVATIONS MADE DURING PILOT-TESTING OF MODEL CURRICULUM

Observation of the administration of the model curriculum were made over the course of the week-long program. Observations include:

1) Instructor and Student interactions during teaching of model curriculum.
2) Entries in journals.

Observations Part 1

Instructor and Student interactions during teaching of model curriculum

--------- From first hike Monday afternoon with group led by “The Husk”: ---------

Lesson: “The Honest Woodcutter” (story from Thailand).

“There are similar stories like that in Korea.” “There’s a story like that in China. This guy had a lump on his cheek… the guy was walking through the woods and heard some music and started dancing. The spirits took the lump away.”

The Husk (instructor) asked for students to answer silently thumbs up or down, with their eyes closed “Do you think the trees have spirits?” Half of the students indicated no, and half of them yes.

The Husk (instructor) asked “What did you learn from this story?” Answers: “You shouldn’t lie.”, “You receive more by telling the truth.”

The Husk (instructor) asked “Can you think of one thing that southeast Asian people believe should be present in the relationship with nature?” No responses

Lesson: Sharing Circle with Talking Feather

The Husk (instructor) asked “Does anyone know what this is (holding up talking stick)?” Answer: “Something Indian chiefs use to quiet people down.”

Lesson: Indigenous Learning Hike

The Husk (instructor) asked “Did anyone learn anything from nature?” Answers: “I learned that nature is a quiet and peaceful place to be.”, “It’s pretty.”, “It’s green and
alive”, “Animals help us.”, “I learned that things can just grow like anywhere. There was a fallen down tree and underneath it were some mushrooms!”, “There were these trees standing next to each other and they were all burned and black. Why was that?”

Stopping at a tree, The Husk (instructor) asked “If this tree was in Thailand, do you think it would have a spirit?” Answer from several students simultaneously “Yes.” (none said no).

**Lesson: Imaginary Clan House**

The Husk (instructor) asked “What do you think we’re here at Outdoor-Ed for?” Answers: “To learn about outdoors and nature.”, “Teaching us about some of the ancient times and how things came to be this way.”, “To learn about nature and different things we can’t experience at home.”, “To learn about the environment and more cultural and to get smarter.”, “To learn about places, culture and nature.”, “How plants and animals adapt to their habitat.”

The Husk (instructor) asked students to read from cultural world-view quote cards, then asked students to explain what was meant by the quotes. One student responded, referring to the quote by Ten Bears of the Native American Comanche tribe: “He feels like he should stay in nature and not go to where there’s pollution, and just be with nature.”

The researcher asked individual students, while hiking, what they learned about how different cultures relate to the environment. Answers: “The Thai. That they have tree spirits.”, “Thailand. They believe about the tree spirits and that if you pray to them they’ll come out.”, “Maori. They have Poi balls and they dance.” (this was not presented in the lessons.), “People love the Earth so much they want to die there.”, “Nature and trees especially have spirits and they can help you and protect you.”

The Husk (instructor) asked students to make a circle at the end of the hike, and to share what they enjoyed. Answer: “I liked learning about nature, but together. I didn’t really like learning alone.”
Lesson: Town Meeting – Sarawak Land-Use Planning

This activity took place with the entire group of five cabins (sixty-seven students) in the treatment group.

Division of students into twelve separate groups was done by passing out a paper slip to each student, on which was printed the name of one of the twelve interest-groups. Students were then asked to gather with the other members of their group at a specified place within the same large room. This was somewhat chaotic, as some students had difficulty locating their group members.

Students had difficulties understanding what they were to do, and understanding the information on their interest-group position summaries. Each group was assisted by the chaperones present, and spokespeople were chosen for each group.

The group that was acting as the decision-making body had an especially difficult time understanding their role, which was to hear spokespeople present their arguments and then make a decision. The focus of members of this group was on who got to use the gavel, and banging the gavel seemed to be more an experiential act of discovery than a focused attempt to gain order or silence in the meeting hall.

In general, spokespeople did an excellent job of summarizing the positions of their interest groups. Some stumbled through, while others were eloquent and impassioned. Positions from all interest groups were heard, after which the decision-making body convened to discuss their decision.

The decision made was not initially stated clearly or definitively. The spokesperson for the decision-making body repeatedly looked over to the researcher with questions such as “What should I say?” and “Did I say that right?” With perseverance, the decision-making body clarified its position, and the students applauded.
----- From Tuesday morning activity led by the researcher and The Husk (instructor): -----

**Lesson: Ohlone Sunrise Competition**

All students in the treatment group hiked up a wooded hillside before sunrise and prepared to compete in attempting to make the sun rise. Students were excited and enthusiastic, and the creative process went well for all five of the cabin groups.

Students were completely respectful of one-another as each group took its turn singing and/or dancing to encourage the sun to rise.

The teachers present were designated as judges, and their decision was not contested by any of the students. A golden star, representing the sun, was given to the winning cabin group to display on their awards banner at the dining hall.

No complaints were heard by the researcher or any of the chaperones regarding the fact that students had to get up earlier, make an additional hike, or come up with an idea and perform it. During the hike back down the hillside, the researcher noted a very positive attitude among the students.

------------------ From Tuesday hike with group led by “Cove”: ------------------

**Lesson: Attitude of Gratitude**

After reading the quote by Chief John Snow of the Native American Stoney Sioux tribe, Cove (instructor) asked, “What’s a way that that shows gratitude?” Answer: “I don’t understand it.”

After reading the quote from a chant of the Native American Dine (Navajo) tribe, Cove (instructor) asked, “What’s a way that that shows gratitude?” No answer.

After reading the statement about the Classical Greek relationship with the environment, a student said “I don’t get it.” Cove (instructor) responded, “You all know where Greece is, right? Here’s Europe (pointing to a map), and down here’s Greece in southern Europe. I want to visit there, don’t you?”

During part of lesson where students are asked to simulate the Balinisian practice of making an offering of grain to the environment, one student said, “I don’t want to do
that. I’m Christian.” Six students spontaneously chose to offer rice to an 8-foot diameter redwood stump with a burned-out center.

Cove (instructor) asked, “Why do you think people in Bali give offerings of rice?” Answer: “Maybe they think the trees will give them something.”

Cove (instructor) asked, “Why did you do it?” Answer: “You told us to.”

Cove (instructor) asked, “Was it fun?” Answer: “I’m just having fun giving the trees a present because they gave me a present.” Cove (instructor) asked, “What did they give you?” Answer: “They gave me air to breath.”

Following the part of the lesson where students are introduced to the practice of thanking plants and animals, Cove (instructor) asked, “Did you see things differently when you were walking along and saying thanks to things?” Answer: Almost all students said “Yes.” No students said “no.” Cove (instructor) asked, “Why?” Answer: “We saw lots of banana slugs” (during this hike, students counted 73 banana slugs, which is more than anyone had ever seen on a hike before as far as instructors and program directors could remember. Banana slugs are the “totem animal” or mascot of the SMOE program.)


**Lesson: Sacred Mountain Sketching and Poetry**

Five students kept drawing or writing after Cove (instructor) asked the students to stop and gather in a circle.

Cove (instructor) asked, “Do you remember any of the cultures that we talked about?” Answer: “The, the, the, it starts with an O...They thought that...I forgot.”

Cove (instructor) asked, “What did the Greeks believe?” Answer: “They believed the landscape was honored.”

Cove (instructor) asked, “What about the Australian Aborigines? What did they think about mountains?” No answer.

Cove (instructor) asked, “What were some of the ways that different cultures gave thanks to things in nature?” Answers: “They throw seeds.”, “Zimbabweans give those things that are smaller than rice (millet).”
Lesson: Shona Waterfall Song
Cove (instructor) asked, “What culture did the song we just sang come from?”
Answer: “Shaman?”
Cove (instructor) asked, “What country was it from?” Answer: “Zimbabwe.”
During lunch, several students sang the song on their own.

Lesson: Bumbas and Alcans
Cove (instructor) asked, “Can you think of times in your life when you might encounter problems like these?” Answer: “When you meet someone who speaks sign language.”
Cove (instructor) asked, “If the Alcans and Bumbas spoke the same language, would there still be problems?” Answers: “Yes.”, “It makes one group or the other go against their religion.”

While walking, one student commented, “Moving and sitting, moving and sitting, that’s all we do.”

Lesson: Values Glasses
Students interpreted statements and quotes regarding diverse cultural ideas about relationships with the environment. Regarding a quote by Native American Dine (Navajo) tribe author M. Scott Momaday, “That a person must respect nature and stuff.”, “That a person who goes into nature feels...”, “That the landscape is overwhelming. They just wanted to give themselves up for it.”, “Every person that comes into a forest just has to respect it.”
Regarding another quote by Native American Dine (Navajo) tribe author M. Scott Momaday, “It’s critical, they need to bond with the land.”, “That man and nature need to bond together, work with each other.”
Regarding a quote by Australian Aboriginal tribe member Elkin Umbagai, “All animals are his friend and he plans to learn more about them.”, “I thought that the animals were there to help him succeed.”
Regarding a quote by Cheikh Hamidou Kane of Senegal, “You never kill an animal without thinking first ‘do I really need this?’”, “It’s like the story we read earlier about the woman who lives in the Earth: You have to show gratitude.”, “Don’t just take
something from the forest to be selfish.”

Regarding a quote by a member of the Kogi tribe of Columbia, “Maybe they’re like one. You wouldn’t reject one or the other. They’re a part of you.”

Cove (instructor) asked students to share what they remembered about different cultures and their beliefs from the day’s lessons. Answers: “The Bali - They used to throw pieces of rice into the trees and thank them.”, “I don’t know what the tribe in Africa was called, but they throw that other stuff (millet) to thank trees.”, “I remember the waterfall song.”

Cove (instructor) asked, “What about mountains?” Answers: “Some cultures like the mountains.”, “Mt. Fuji, Japan.”, “Other people, if they look at the same thing, they sometimes wouldn’t see the same thing.”, “The Greek god Zeus would take the mountains and make them sacred”, “They had alot of different views.”

Cove (instructor) asked, “Do you remember we told the story of the chickens? Where was that from?” Answer: “Thailand.”


Lesson: Wild Rice Dinner

In addition to the students’ regular dinner, a dish of wild rice was provided, and background information on the meaning of wild rice to the Native American Ojibwe tribe was placed at each table.

Out of twenty-two tables, the researcher saw only two chaperones sharing the information with the students at their tables, and no students were seen to be interested in the information. Approximately one-half of the students appeared to try a taste of the wild rice.

Lesson: Cultures and the Night

Students listened attentively to the story “First People Make the Stars.”
Lesson: Balinisian Water Spirit Ritual

Students were attentive and appeared interested in this activity. The dramatic tension of seeing treat-filled balloons float away from the dock created some excitement for students, as the researcher reached out with a stick and pulled them back in. Some students seemed very excited to receive and pop their balloons.

Following the activity, the researcher asked, “Can anyone tell me the name of the culture that this activity comes from?” Several hands went up, and the person who was asked to share their response said “Bali.”

The researcher asked, “Can anyone tell me why the Balinisians do or did this ritual?” Several hands went up, and the person who was asked to share their response said “To make the spirit of the lake happy and to have a good harvest.”

Lesson: Thai Story – The Elephant and the Bees

This story was told as students sat under an oak tree eating lunch. They appeared to be attentive and interested. Following the story, Jessica Jellyfish (the instructor) asked the students if they had any ideas about what the story meant or was meant to teach. One student said, “Not to lie.” Another said, “Not to let bees in your nose.” A third student said, “I liked that story.”

Lesson: Mineral Balancing

This activity was done as a split-group activity, with the first group consisting of three cabin groups and the second group consisting of two cabin groups.

With the first group, students seemed restless at the start of the lesson when background information on the cultural groups was being presented. This was not the case for the second group, which seemed interested and attentive at the start.
With the first group, there were more students interested in being buried in the pebbles than could be accommodated. However, no student was greatly disappointed by not being able to get buried, and all seemed enthusiastic about participating in the process. With the second group, the number of students interested in being buried was not greater than the group's capacity could support.

Students were not interested in joining in the singing and clapping with any energy. Several students were playfully dropping pebbles on the heads of their buried friends and had to be repeatedly reminded not to abuse the vulnerable students who were buried.

Students seemed in good spirits throughout the lesson, and no negative comments were heard by the researcher regarding the lesson.

**Observations Part 2**

**Entries in Journals**

The following entries relating to the model curriculum were noted in student journals, which the students added to over the course of the week:

1) "I liked the beach day the most because we didn’t have to hike much and you got to explore new stuff. *I liked looking at seals, burying people,* and watching the crabs and hermit crabs do stuff." (Emphasis added on relevant text. Journal entry made on page titled “Beach day reflections”)

2) "Beach day was fun and we did lots of different things. The tidepools were my favorite, because we got to see lots of different things. I saw lots of starfish, fish, sea enemies, and mucusles, and lots of different things, but my favorite animals I saw was the seals. *Pebble beach was really fun too, I helped berry someone.*" (Emphasis added on relevant text. Journal entry made on page titled “Beach day reflections”)

3) "I'm thankful for walking alone, because it’s so nice and quiet and you get to enjoy the beauty of the outdoors. I give thanks to the forest and to the sun, and to the earth.” (Journal entry made on blank page.)

4) "I awoke to the sound of Erin in the other rooms voice, she thought it was 6:45 but, it was only 5:45. We all got dressed and went to the rising of the sun. It was like a
rain dance but, we were bringing up the sun. My cabin won, singing, “You are my sunshine”, then, repeated “come up sun” and “Dende Mashlanga”. We won a star and were late for breakfast. I ate and went for a hike. It was so fun.” (Journal entry made on Daily Journal page under “Tuesday” heading).

5) “(Tuesday) Today we did a fabulous 6 hour hike. We played a game that were excellent. Are naturalist is Raven. She is so the bomb. I really enjoy being here. (Wednesday) Today we helped grow in the garden and learned a fascinating tradition of the people of Bali. And played a very fun game. (Thursday) Today I went to the beach. I had so much fun. I didn’t get buried in those pebbles though. I saw those neat sea annemiys. They were so cool.” (Emphasis added on relevant text. Journal entry made on Daily Journal page under “Tuesday” heading).

6) “I’m greatful for the trees that give me oxygen and the water that keeps me alive. I’m also greatful for the sun for bringing me light and the moon for bringing me the night so I can sleep!” (Journal entry made on Green Day Reflections page.)

7) “I think I should give the earth a billion thanks because it provided me with good care. It gives me water, food, happiness, warmth, etc. The earth is fantastic. These are some ways you can discrib the earth: Helpful, thankful, beautiful, wonderful, clean, fantastic… I can’t finish it all. There’s too much to describ.” (Journal entry made on Green Day Reflections page.)

8) “Some things I’m grateful for is the beautiful trees, flowers and animals. Without them, we wouldn’t live. I’m also grateful for water and friends. I don’t know how I could live w/o water and friends to stick by you.” (Journal entry made on Green Day Reflections page.)

9) “I am thankful for all the trees around me so I can breath. I am thank for the water I drink. I am thankful for all the food nature provides for me. I am thankful for all the wonderful smell of nature, I am thankful for all the cool animal mother nature contains.” (Journal entry made on Green Day Reflections page.)

10) “My mountain is called the Mexican Mountain is special because it represents our country and it also represents our people. My mountain has a big M in the middle of it.” (Journal entry made on Magic Spots page.)
11) “Mountain (title) The silence lies still. The wind went over the mountain tops. Spirits guarding the ancient mountain. Quiet and peace lies everywhere. People come and worship the mountain. What the people doesn’t know is that their ancestors are watching over them.” (Journal entry made on blank page.)

12) “My mountin is sacrit because of the trees, of the flowers and birds. My mountin is sacrit because of the people, of the forest. That is why my mountin is sacrit.” (Journal entry made on blank page.)

13) “This mountain far away, I tell you everything I have to say, this place for hope, this place for worship a holy place here on this mountain.” (Journal entry made on blank page.)

14) “My grandma’s moutian that she livies on this is sacred to me because I’m can be alone and its quite.” (Journal entry made on Magic Spots page.)

15) “My sacred mountain is cool with a breeze Not hot nor cold, but perfect as can be. It’s steep and nature brings it praises. I can rest and it has lots of mazes. There is no other mountain like this one for it is the ‘sacred one’. “(Journal entry made on blank page.)
APPENDIX E

Transcription of Interviews
APPENDIX E

INTERVIEWS WITH INSTRUCTORS TEACHING WITH THE MODEL CURRICULUM

--- Interview with instructor Rachel Raven following the first hike Monday afternoon:---

Lesson: “The Honest Woodcutter” (story from Thailand).
Two students, one a recent immigrant from Taiwan and one a recent immigrant from Japan, said that they knew the story and clapped after it was told.

Lesson: Imaginary Clan House
All of the students wanted to read the cultural world-view quote cards, and they interpreted their meanings as follows: Regarding the quote by Simon Ortez of the Native American Tewa Pueblo tribe: “We gotta take care of the Earth cause we need it.” Regarding the quote by Audrey Shenandoah of the Native American Onondaga tribe: “She’s part of nature and there’s no difference between her and the trees or her and nature.”

Rachel Raven (instructor) asked students “How do you learn?” Answers: Books, Library, Teachers, “I learned that deer chew like this (imitating deer chewing).”

------- Interview with instructor Cove following the first hike Monday afternoon: -------

Lesson: “The Honest Woodcutter” (story from Thailand).
Students from Thailand and one other student recognized the story.
Cove (instructor) asked for students to answer silently thumbs up or down, with their eyes closed “Do you think the trees have spirits?” One third of the students indicated no, and two-thirds of them yes.

Lesson: Indigenous Learning Hike
“We found scat with hair in it, and students said they were carnivores.”

Lesson: Imaginary Clan House
“We read a few quotes.”
General feedback from Cove (instructor): “The lessons were very wordy. For the first day, it would be better for lessons to be more kinetic.”

------------- Interview with instructor Cove following Tuesday’s hike: -------------

**Lesson: Sacred Mountain Sketching and Poetry**

“I liked the Sacred Mountain activity. It was nice for a quiet journal activity, especially if you have a great site.”

------------- Interview with instructor The Husk following Tuesday’s hike: -------------

“Not enough high-energy activities. Too much reflection.”

**Lesson: Ohlone Sunrise Competition**

“The sunrise thing was fun. All day long kids were saying, ‘See the sun? We got that up!’”

**Lesson: Attitude of Gratitude**

“They liked the appreciation hike.”

**Lesson: Sacred Mountain Sketching and Poetry**

“Sacred Mountain Sketching and Poetry would be good if I had a high energy day, but as it was it was too mellow. I read the cards, but none of them remembered.”

**Lesson: Stone Pass Game**

“They loved the stone passing game.”

**Lesson: Shona Waterfall Song**

“The waterfall song went really well.”

**Lesson: Thai Story – The Seven Stars**

“I didn’t tell the story. I didn’t really like it.”

**Lesson: Bumbas and Alcans**

“I really liked it. It didn’t take fifty minutes though.”
Lesson: Values Glasses

“I didn’t do it. I read it and didn’t really like it. It would be good for a diversity lesson, starting with each kid drawing one tree from their own perspectives, then move into ambiguous lady. There wasn’t any nature in it. Cards would be good for one activity, like the Clan House, but they were getting sick of using them and I was.”

“I asked to name one way you show gratitude and how other cultures do. They said ‘Show respect,’ ‘Offer rice.’ A lot of them brought up the woodcutter story. About half brought up the waterfall song, and a couple of them remembered where it was from. One kid remembered The Woman in the Earth story. I didn’t get any complaints for the whole day, which is really unusual.”

------------- Interview with instructor Rachel Raven following Tuesday’s hike: -------------

Lesson: Values Glasses

“The Values Glasses didn’t work for me. It would have been better with colored glasses and images that can only be seen through certain colored glasses.”

Lesson: Bumbas and Alcans

“We did it as groups from outer-space.”

------------- Interview with instructor Mike/Juniper following Tuesday’s hike: -------------

Lesson: Attitude of Gratitude

“The kids came up with reasons to thank trees. They were really into it. One Philippino-American student said he thanked plants all the time. The kids understood that different cultures have different values and what a value-set is. They liked the millet/medicine bags. They said it would be dishonorable to brag about it. They had good things to say in making their offerings. One said, ‘Thank you tree for giving me oxygen, shade, and wood.’ Kids were respectful when giving thanks, and they gave
thanks to the person who was giving thanks. ‘The Woman who lives in the Earth’ was a good story. Students remembered the origin.”

**Lesson: Sacred Mountain Sketching and Poetry**

“The Sacred Mountain sketching went pretty well.”

**Lesson: Shona Waterfall Song**

“The waterfall song went well. Kids liked that.”

**Lesson: Thai Story, “The Seven Stars”**

“It was difficult, during lunch.”

**Lesson: Bumbas and Alcans**

“Bumbas and Alcans didn’t work as well as I wanted it to. The kids didn’t stick to the rules on their cards. Discussion on how to resolve cultural conflicts went well.”

**Lesson: Values Glasses**

“It went well. Kids enjoyed reading the cards. It seems they’re grasping the ideas of cultural concepts.”

**Lesson: Town Meeting - Sarawak Land-Use Planning** (from previous evening)

“It took a long time to get kids in groups.

---------- Interview with instructor Jessica Jellyfish following Tuesday’s hike: ----------

**Lesson: Attitude of Gratitude**

“It had lots of potential. It worked really great. All of the students in my cabin threw their millet on the cabin leaders. Their statements of gratitude were really great – they found a lot to be grateful for.

The cards didn’t work for me.”

**Lesson: Sacred Mountain Sketching and Poetry**

“The poem worked. Sacred Mountain was fun – a lot of them chose to draw volcanoes like the one they saw. I would suggest breaking them into groups of four with the poem and the picture and ask them to compare and see if they fit together. Then you’re bringing in their input and can go from there.”
Lesson: Bumbas and Alcans

“‘It worked great. Afterwards, there was some stereotyping, like ‘I liked being Indians.’ (I suggest that you) allow room in the curriculum for stereotyping, like on the first hike give a historical perspective of ‘who are we?’ You could start with that and then do an all-day Indigenous Learning hike.

It’s dangerous to appropriate different cultures. You should be really aware of role-playing being misinterpreted or offensive.”

--------------- Interview with instructor Kohlrabi following Wednesday’s hike: ---------------

(Kohlrabi substituted for Jessica Jellyfish for several hours on this day)

Lesson: Four Elements, Four Directions

“We talked about the Lakota. It might have been good to have them find little representations of each element to have them participating. They were really attentive and into it. The Four Directions circle was made a little small.”

Lesson: Sacred Trees, Sacred Groves

“Kids went out in ones, twos, or threes. Some kids came up with little dances or chants. The last group decided to do a silent thanks, sitting down. Some of the kids kissed a tree and bowed. Two girls put their hands together like prayer. The cabin leaders did a cheer.”

--------------- Interview with instructor Rachel Raven following Wednesday’s hike: ---------------

Lesson: Four Elements, Four Directions

“We read the Lakota quote and talked about it.”

“You know that thing about the four elements? Well the Chinese have five.”

Lesson: Sacred Trees, Sacred Groves

“I was worried at first that they wouldn’t know what a ritual was, so they just gave thanks.”
Lesson: Balinisian Water Spirit Ritual

"Going to the pond was a long way out of the way. It took.... We were walking back (from the pond) and this kid, Po-en, said he and his family did that, but they do it differently - Always in Fall, because that’s when they plant rice. They make a full table of good food with a statue on it, and then give thanks and eat it."

Lesson: Cultures and Animals, Cultures and Plants

"I skipped the cards. I didn’t think the cards worked that good the first days. They weren’t specific enough to gardening. I really like my garden time. I kind of have a handle on it and I just wanted the kids to have some fun, to have that experience."

Lesson: Cultivating Plants

"After planting I asked how we could give thanks to the plants. The kids suggested the Lakota practice of touching the Earth."

Lesson: Campfire (from previous evening)

"I liked the campfire after Night-hike."

---------- Interview with instructor Cove following Wednesday’s hike: ----------

Lesson: Sacred Trees, Sacred Groves

"The kids liked that. They thanked trees for guiding us on our night-hike."

Lesson: Balinisian Water Ritual

"The water ritual was fun."

---------- Interview with instructor The Husk following Wednesday’s hike: ----------

Lesson: Four Elements, Four Directions

"I liked it. I made a circle and cross of redwood leaves, and put down the symbols. I forgot to read the activity beforehand, so I just talked about each symbol and how some cultures associate different elements with different personalities. I liked the quotes with that one."
Lesson: Sacred Trees, Sacred Groves

“I combined Sacred Trees with the Tree Interview, but that was too much for them, so none of them did a song or dance. I asked them, ‘Who really heard the tree answer?’, and half of them gave a thumbs up. I asked them, ‘Who believes that trees have spirits’, and half of them gave a thumbs up. I asked them how many of them believed that other cultures believe that, and almost all of them gave a thumbs up.”

Lesson: Thai Story – The Deer Buddha

“I read the Deer Buddha (story) - They listened and gave good feedback. Their comprehension was good. It’s not necessarily a good set for Oh Deer though. A story about balance would be better.”

Lesson: Cultures and Animals, Cultures and Plants

“I used six cards - It took them forever because they were reading all of them.”

Lesson: Cultivating Plants

“I didn’t do the cards. We talked about the importance of agriculture. It would be better to first introduce a historical perspective of agriculture, then individual cultures.”

--------- Interview with instructor Rachel Raven following Beach Day (Thursday): ---------

Lesson: People of the Maize - skipped
Lesson: Medicine Plant Meeting - skipped
Lesson: Ethnobotany Professor Hike - skipped
Lesson: Hmong Story - “Why Birds Never go Hungry” - skipped

“We were singing one of the (African) songs on the way back (from the marsh walk). Three people were doing it. We were gonna read the Maize story but we forgot.”

Lesson: Moon and Tides

“We told the story of ‘Raven makes the Tides’ and the ‘science story’ about tides. On the bus I asked ‘Who can tell me why we have tides?’, and a student raised his hand and said, ‘Because of you.’ (Her nature-name is Raven).

Lesson: Scottish Story - “The Silkies” - skipped
Lesson: Mineral Balancing

“I don’t know how much they really got of listening to the stones. I don’t know if they were listening. It’s kind of middle of the road. It wasn’t a disaster.”

--------- Interview with instructor The Husk following Beach Day (Thursday): ---------

Lesson: People of the Maize - skipped
Lesson: Medicine Plant Meeting – skipped

“Didn’t do, mostly because there wasn’t time.”

Lesson: Ethnobotany Professor Hike – skipped

“Didn’t do, but I did some ethnobotany with the kids in front. I got into my interest in birdwatching.”

Lesson: Hmong Story - “Why Birds Never go Hungry” – skipped

“Didn’t do, mostly because there wasn’t time.”

Lesson: Moon and Tides

“I read it.”

Lesson: Mineral Balancing

“I liked that. Introductions could be better, i.e. ‘this rock can talk’. I don’t know what the kids got out of that. It would be awesome to do that in a riverbed.”

--------- Interview with instructor Cove following Beach Day (Thursday): ---------

Lesson: People of the Maize - skipped
Lesson: Medicine Plant Meeting - skipped
Lesson: Ethnobotany Professor Hike - skipped
Lesson: Hmong Story - “Why Birds Never go Hungry” - skipped

“Marsh hike – There wasn’t enough time.”

Lesson: Scottish Story - “The Silkies”

“I didn’t tell the silkies story. It wasn’t the right energy, the kids wouldn’t be focused with the seals there.”
Appendix E

Interview with instructor Jessica Jellyfish following Beach Day (Thursday): ------

Lesson: People of the Maize - skipped
Lesson: Medicine Plant Meeting - skipped
Lesson: Ethnobotany Professor Hike - skipped
Lesson: Hmong Story - “Why Birds Never go Hungry” – skipped
   “There was no time for the medicine plants and story. It’s too mellow for the marsh – that’s why we didn’t do it. We saw an egret and a heron and a snake.
Lesson: Moon and Tides
   “I liked it.”
Lesson: Mineral Balancing
   “It was hard to limit who could get buried. They didn’t really get into the song. Rather than force them all to get into it, you could ask, ‘Who would like to take part in a rock ritual?’ Then the people participating would be more into it.”

-------------------------- From final interview with instructor Rachel Raven: --------------------------

In general, what I’ve got out of it is that kids can deal with more stories than I ever thought. I appreciated that a lot. I’m going to definitely tell more.

I think it would have gone more smoothly if you had spent a week here before to get to know how we do things, our schedules.

Having all of the materials ahead in advance would have made us feel more organized, solid in working with it.

(The curriculum schedule) didn’t take into account moving time. The first day there was too much sitting, especially right at the beginning. There was no time to do anything in-between.

Stories and then cards don’t work. It’s too much sitting, and too much talking on my part.

Overall, it would work better if you picked three or four cultures, and included more crafts or skills like using thule rushes to weave with.
The survey was over their heads. I would have made the first page of the survey the one where they write their own beliefs.”

----------------- From final interview with instructor The Husk: -----------------

“Thumbs up to the Woodcutter story, Indigenous Learning Hike, and Talking Feather. The Clan House - I didn’t really like it. I don’t know if kids are really ready to make definitions like that. The Attitude of Gratitude - I liked it but it was way too long as one straight block. I didn’t do the gratitude hike. (contradicting interview that day.) I merged it with making offerings. They really liked the story, all the stories.

Making offerings - I liked that, because it involved both observation and gratitude. There was too much talk about cultures and how they do things.

The Sacred Mountain (Sketching and Poetry) would have been good if it wasn’t such a long, slow day.

The Stone Pass Game was awesome.

The Shona Waterfall Song - Kids really liked that.

Some of the activities didn’t have a good hook to get the kids’ interest.

----------------- From final interview with instructor Cove: -----------------

“A lot of the stuff was a little too old or a lot too old. I really liked the more kinesthetic stuff, like Bumbas and Alcans. A lot of it could have been done as a lead-in or as a post-thing.

The stories were great. I liked the stories and the kids loved the stories. For the kids that were ready they could understand the concepts.

I liked the appreciation stuff – It taught about other cultures and tied into other teaching stuff and doing stuff.

Kohlrabi was saying that when he was giving out apples, kids from our village (treatment group) were thanking him.
I liked the songs. I would recommend you teach instructors songs more thoroughly.
I would recommend more flexibility, variation of thinking, and more experiential/kinesthetic activities.”

From final interview with instructor Jessica Jellyfish:

“(The curriculum needs to be) more age-appropriate, regarding the vocabulary. It should be something that could be done for different levels and language abilities, and adapted more to the outdoors and interacting with the environment.
(It would be good to) have students share their (ethnic) backgrounds, who we (Americans) are, many cultures coming together. Sometimes it felt like there was an “us” and an “other,” even though it wasn’t in words.
Things that worked best were the songs.
Rather than you (researcher) dictating the schedule, it would be better to have it be flexible so instructors could cut and paste.
We had to hike (all the way) to the pond just for (the Balinisian Water Ritual).
The stories worked, Raven and the Tides, The Woman who Lives in the Earth, The Dine Make the Stars. The Seven Stars was weird. It disturbed some kids. The woodcutter story would fit in if you gave more background. It was confusing with the Buddhism, “don’t kill any living things.”
There were too many different cultures. Less would be more. Maybe (it would work better to have) one hike with three religions. Then basic principles could be introduced.
I felt like a lot of concepts were just introduced and assumed concepts, but kids didn’t have them.
If students don’t believe in the spiritual part, they don’t have anywhere to go with the lesson.
The focus on religion sometimes became very cerebral, and took the focus away from the environmental, and then I lost them and couldn’t get them back in.
There were many down-energy-focused activities. They need to be balanced with more active things. The cards didn’t work for me, except with the Sacred Trees (lesson). (I recommend) more smaller group discussions.

The music was great – hearing them sing on the way home. It would be nice to have a song for each day so the naturalist (instructor) could use that while hiking and doing activities – that would build the energy. Then at the end a wrap-up could be done asking what they liked.”

Regarding the training in-service: “I would have liked more model demonstrations, Ideas of what you (researcher) hoped to get from students.

More flow and continuity suggestions, using the conceptual framework of ‘Into, through and beyond’. Into would be the students’ input, where they’re coming from; Through would be guidance, information, and context; Beyond would be application.

Empower the naturalists with more knowledge of cultures next time. Structure and plan the in-service more, with a half-hour at the end for questions. Make it more tightly organized and directed, and don’t give options.”

Regarding the survey: “The first pages were really vague and intimidating. Multiple choices would have been better. It was too cerebral and heady. Open-ended questions would have been easier, like what impacted them.”
APPENDIX F

Statistical Results of Survey
## Appendix F
Statistical Results of Pre and Post-Test Surveys

### Treatment Group

Paired Samples Statistics

<table>
<thead>
<tr>
<th>Pair</th>
<th>Pre</th>
<th>Post</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PRE</td>
<td>POST</td>
<td>0.28</td>
<td>67</td>
<td>0.55</td>
<td>6.66E-02</td>
</tr>
<tr>
<td>2</td>
<td>PRE2</td>
<td>POST2</td>
<td>1.82</td>
<td>49</td>
<td>0.91</td>
<td>0.13</td>
</tr>
<tr>
<td>3</td>
<td>PRE3</td>
<td>POST3</td>
<td>2.98</td>
<td>48</td>
<td>1.04</td>
<td>0.15</td>
</tr>
<tr>
<td>4</td>
<td>PRE4</td>
<td>POST4</td>
<td>2.27</td>
<td>48</td>
<td>0.98</td>
<td>0.14</td>
</tr>
<tr>
<td>5</td>
<td>PRE5</td>
<td>POST5</td>
<td>3.11</td>
<td>47</td>
<td>0.96</td>
<td>0.14</td>
</tr>
<tr>
<td>6</td>
<td>PRE6</td>
<td>POST6</td>
<td>2.07</td>
<td>44</td>
<td>0.97</td>
<td>0.15</td>
</tr>
<tr>
<td>7</td>
<td>PRE7</td>
<td>POST7</td>
<td>1.96</td>
<td>45</td>
<td>1.00</td>
<td>0.15</td>
</tr>
<tr>
<td>8</td>
<td>PRE8</td>
<td>POST8</td>
<td>2.32</td>
<td>47</td>
<td>1.14</td>
<td>0.17</td>
</tr>
<tr>
<td>9</td>
<td>PRE9</td>
<td>POST9</td>
<td>2.07</td>
<td>44</td>
<td>0.97</td>
<td>0.15</td>
</tr>
<tr>
<td>10</td>
<td>PRE10</td>
<td>POST10</td>
<td>2.69</td>
<td>45</td>
<td>1.10</td>
<td>0.16</td>
</tr>
<tr>
<td>11</td>
<td>PRE11</td>
<td>POST11</td>
<td>1.85</td>
<td>39</td>
<td>0.99</td>
<td>0.16</td>
</tr>
<tr>
<td>12</td>
<td>PRE12</td>
<td>POST12</td>
<td>2.17</td>
<td>36</td>
<td>1.06</td>
<td>0.18</td>
</tr>
<tr>
<td>13</td>
<td>PRE13</td>
<td>POST13</td>
<td>3.08</td>
<td>37</td>
<td>1.04</td>
<td>0.17</td>
</tr>
<tr>
<td>14</td>
<td>PRE14</td>
<td>POST14</td>
<td>1.95</td>
<td>37</td>
<td>1.03</td>
<td>0.17</td>
</tr>
<tr>
<td>15</td>
<td>PRE15</td>
<td>POST15</td>
<td>1.97</td>
<td>36</td>
<td>1.06</td>
<td>0.18</td>
</tr>
<tr>
<td>16</td>
<td>PRE16</td>
<td>POST16</td>
<td>1.94</td>
<td>36</td>
<td>1.07</td>
<td>0.18</td>
</tr>
<tr>
<td>17</td>
<td>PRE17</td>
<td>POST17</td>
<td>1.57</td>
<td>37</td>
<td>0.69</td>
<td>0.11</td>
</tr>
<tr>
<td>18</td>
<td>PRE18</td>
<td>POST18</td>
<td>1.97</td>
<td>37</td>
<td>0.90</td>
<td>0.15</td>
</tr>
</tbody>
</table>
## Appendix F
### Statistical Results of Pre and Post-Test Surveys

#### Treatment Group

**Paired Samples Correlations**

<table>
<thead>
<tr>
<th>Pair</th>
<th>IDs</th>
<th>N</th>
<th>Correlation</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>PRE IDs &amp; POST IDs</td>
<td>67</td>
<td>.268</td>
<td>.028</td>
</tr>
<tr>
<td>Pair 2</td>
<td>PRE2 &amp; POST2</td>
<td>49</td>
<td>-.175</td>
<td>.230</td>
</tr>
<tr>
<td>Pair 3</td>
<td>PRE3 &amp; POST3</td>
<td>48</td>
<td>.089</td>
<td>.549</td>
</tr>
<tr>
<td>Pair 4</td>
<td>PRE4 &amp; POST4</td>
<td>48</td>
<td>.235</td>
<td>.108</td>
</tr>
<tr>
<td>Pair 5</td>
<td>PRE5 &amp; POST5</td>
<td>47</td>
<td>.259</td>
<td>.078</td>
</tr>
<tr>
<td>Pair 6</td>
<td>PRE6 &amp; POST6</td>
<td>44</td>
<td>.503</td>
<td>.001</td>
</tr>
<tr>
<td>Pair 7</td>
<td>PRE7 &amp; POST7</td>
<td>45</td>
<td>.360</td>
<td>.015</td>
</tr>
<tr>
<td>Pair 8</td>
<td>PRE8 &amp; POST8</td>
<td>47</td>
<td>.461</td>
<td>.001</td>
</tr>
<tr>
<td>Pair 9</td>
<td>PRE9 &amp; POST9</td>
<td>46</td>
<td>.360</td>
<td>.014</td>
</tr>
<tr>
<td>Pair 10</td>
<td>PRE10 &amp; POST10</td>
<td>45</td>
<td>.059</td>
<td>.698</td>
</tr>
<tr>
<td>Pair 11</td>
<td>PRE11 &amp; POST11</td>
<td>39</td>
<td>.545</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 12</td>
<td>PRE12 &amp; POST12</td>
<td>36</td>
<td>.175</td>
<td>.308</td>
</tr>
<tr>
<td>Pair 13</td>
<td>PRE13 &amp; POST13</td>
<td>37</td>
<td>.448</td>
<td>.005</td>
</tr>
<tr>
<td>Pair 14</td>
<td>PRE14 &amp; POST14</td>
<td>37</td>
<td>.253</td>
<td>.131</td>
</tr>
<tr>
<td>Pair 15</td>
<td>PRE15 &amp; POST15</td>
<td>36</td>
<td>.433</td>
<td>.008</td>
</tr>
<tr>
<td>Pair 16</td>
<td>PRE16 &amp; POST16</td>
<td>36</td>
<td>.464</td>
<td>.004</td>
</tr>
<tr>
<td>Pair 17</td>
<td>PRE17 &amp; POST17</td>
<td>37</td>
<td>.236</td>
<td>.160</td>
</tr>
<tr>
<td>Pair 18</td>
<td>PRE18 &amp; POST18</td>
<td>37</td>
<td>.105</td>
<td>.535</td>
</tr>
</tbody>
</table>
# Appendix F

## Statistical Results of Pre and Post-Test Surveys

### T-Test: Treatment Group

**Paired Samples Test**

<table>
<thead>
<tr>
<th>Pair</th>
<th>Paired Differences</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pair 1</td>
<td>PRE IDs POST IDs</td>
<td>-.45</td>
<td>1.42</td>
<td>.17</td>
<td>-.79</td>
<td>-.10</td>
<td>2.586</td>
<td>.012</td>
</tr>
<tr>
<td>Pair 2</td>
<td>PRE2 - POST2</td>
<td>-.67</td>
<td>1.36</td>
<td>.19</td>
<td>-1.06</td>
<td>-.28</td>
<td>3.466</td>
<td>.001</td>
</tr>
<tr>
<td>Pair 3</td>
<td>PRE3 - POST3</td>
<td>.71</td>
<td>1.37</td>
<td>.20</td>
<td>.11</td>
<td>1.11</td>
<td>3.588</td>
<td>.001</td>
</tr>
<tr>
<td>Pair 4</td>
<td>PRE4 - POST4</td>
<td>-.27</td>
<td>1.30</td>
<td>.19</td>
<td>-.65</td>
<td>.11</td>
<td>1.433</td>
<td>.156</td>
</tr>
<tr>
<td>Pair 5</td>
<td>PRE5 - POST5</td>
<td>.72</td>
<td>1.17</td>
<td>.17</td>
<td>.38</td>
<td>1.07</td>
<td>4.224</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 6</td>
<td>PRE6 - POST6</td>
<td>.11</td>
<td>.92</td>
<td>.14</td>
<td>-.17</td>
<td>.39</td>
<td>.819</td>
<td>.417</td>
</tr>
<tr>
<td>Pair 7</td>
<td>PRE7 - POST7</td>
<td>6.67E-02</td>
<td>1.10</td>
<td>.16</td>
<td>-.26</td>
<td>.40</td>
<td>4.08</td>
<td>.685</td>
</tr>
<tr>
<td>Pair 8</td>
<td>PRE8 - POST8</td>
<td>.15</td>
<td>1.12</td>
<td>.16</td>
<td>-.18</td>
<td>.48</td>
<td>.910</td>
<td>.368</td>
</tr>
<tr>
<td>Pair 9</td>
<td>PRE9 - POST9</td>
<td>-.33</td>
<td>1.32</td>
<td>.19</td>
<td>-.72</td>
<td>6.52E-02</td>
<td>1.679</td>
<td>.100</td>
</tr>
<tr>
<td>Pair 10</td>
<td>PRE10 - POST10</td>
<td>.58</td>
<td>1.37</td>
<td>.20</td>
<td>.17</td>
<td>.99</td>
<td>2.822</td>
<td>.007</td>
</tr>
<tr>
<td>Pair 11</td>
<td>PRE11 - POST11</td>
<td>.13</td>
<td>.92</td>
<td>.15</td>
<td>-.17</td>
<td>.43</td>
<td>.868</td>
<td>.391</td>
</tr>
<tr>
<td>Pair 12</td>
<td>PRE12 - POST12</td>
<td>.33</td>
<td>1.20</td>
<td>.20</td>
<td>-.711E-02</td>
<td>.74</td>
<td>1.673</td>
<td>.103</td>
</tr>
<tr>
<td>Pair 13</td>
<td>PRE13 - POST13</td>
<td>-.14</td>
<td>1.03</td>
<td>.17</td>
<td>-.48</td>
<td>.21</td>
<td>.797</td>
<td>.431</td>
</tr>
<tr>
<td>Pair 14</td>
<td>PRE14 - POST14</td>
<td>-2.70E-02</td>
<td>1.21</td>
<td>.20</td>
<td>-.43</td>
<td>.38</td>
<td>.136</td>
<td>.893</td>
</tr>
<tr>
<td>Pair 15</td>
<td>PRE15 - POST15</td>
<td>.11</td>
<td>1.04</td>
<td>.17</td>
<td>-.24</td>
<td>.46</td>
<td>.644</td>
<td>.524</td>
</tr>
<tr>
<td>Pair 16</td>
<td>PRE16 - POST16</td>
<td>-.22</td>
<td>1.07</td>
<td>.18</td>
<td>-.58</td>
<td>.14</td>
<td>1.244</td>
<td>.222</td>
</tr>
<tr>
<td>Pair 17</td>
<td>PRE17 - POST17</td>
<td>-.22</td>
<td>1.03</td>
<td>.17</td>
<td>-.56</td>
<td>.13</td>
<td>1.276</td>
<td>.210</td>
</tr>
<tr>
<td>Pair 18</td>
<td>PRE18 - POST18</td>
<td>-2.70E-02</td>
<td>1.19</td>
<td>.20</td>
<td>-.42</td>
<td>.37</td>
<td>.138</td>
<td>.891</td>
</tr>
</tbody>
</table>
Appendix F
Statistical Results of Pre and Post-Test Surveys

Control Group
Paired Samples Statistics

<table>
<thead>
<tr>
<th>Pair</th>
<th>PRE Cultural Identifications</th>
<th>N</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.20</td>
<td>56</td>
<td>.62</td>
<td>8.23E-02</td>
</tr>
<tr>
<td>2</td>
<td>1.96</td>
<td>49</td>
<td>.82</td>
<td>.12</td>
</tr>
<tr>
<td>3</td>
<td>2.67</td>
<td>48</td>
<td>.91</td>
<td>.13</td>
</tr>
<tr>
<td>4</td>
<td>2.25</td>
<td>48</td>
<td>.93</td>
<td>.13</td>
</tr>
<tr>
<td>5</td>
<td>2.32</td>
<td>48</td>
<td>.87</td>
<td>.12</td>
</tr>
<tr>
<td>6</td>
<td>2.13</td>
<td>45</td>
<td>.97</td>
<td>.15</td>
</tr>
<tr>
<td>7</td>
<td>1.73</td>
<td>45</td>
<td>.81</td>
<td>.12</td>
</tr>
<tr>
<td>8</td>
<td>1.77</td>
<td>43</td>
<td>.81</td>
<td>.12</td>
</tr>
<tr>
<td>9</td>
<td>1.84</td>
<td>43</td>
<td>.95</td>
<td>.14</td>
</tr>
<tr>
<td>10</td>
<td>2.93</td>
<td>44</td>
<td>1.00</td>
<td>.15</td>
</tr>
<tr>
<td>11</td>
<td>1.74</td>
<td>39</td>
<td>.85</td>
<td>.14</td>
</tr>
<tr>
<td>12</td>
<td>1.97</td>
<td>33</td>
<td>.92</td>
<td>.16</td>
</tr>
<tr>
<td>13</td>
<td>2.86</td>
<td>35</td>
<td>1.06</td>
<td>.18</td>
</tr>
<tr>
<td>14</td>
<td>2.21</td>
<td>33</td>
<td>.93</td>
<td>.16</td>
</tr>
<tr>
<td>15</td>
<td>1.91</td>
<td>33</td>
<td>.91</td>
<td>.16</td>
</tr>
<tr>
<td>16</td>
<td>1.76</td>
<td>33</td>
<td>.97</td>
<td>.17</td>
</tr>
<tr>
<td>17</td>
<td>1.82</td>
<td>33</td>
<td>.77</td>
<td>.13</td>
</tr>
<tr>
<td>18</td>
<td>1.94</td>
<td>32</td>
<td>.91</td>
<td>.16</td>
</tr>
<tr>
<td></td>
<td>POST Cultural Identifications</td>
<td>.20</td>
<td>.52</td>
<td>6.94E-02</td>
</tr>
<tr>
<td>2</td>
<td>2.20</td>
<td>49</td>
<td>.93</td>
<td>.13</td>
</tr>
<tr>
<td>3</td>
<td>2.63</td>
<td>48</td>
<td>.94</td>
<td>.14</td>
</tr>
<tr>
<td>4</td>
<td>2.25</td>
<td>48</td>
<td>.93</td>
<td>.13</td>
</tr>
<tr>
<td>5</td>
<td>2.32</td>
<td>48</td>
<td>.87</td>
<td>.12</td>
</tr>
<tr>
<td>6</td>
<td>2.13</td>
<td>45</td>
<td>.97</td>
<td>.15</td>
</tr>
<tr>
<td>7</td>
<td>1.67</td>
<td>45</td>
<td>.83</td>
<td>.12</td>
</tr>
<tr>
<td>8</td>
<td>1.77</td>
<td>43</td>
<td>.81</td>
<td>.12</td>
</tr>
<tr>
<td>9</td>
<td>1.84</td>
<td>43</td>
<td>.95</td>
<td>.14</td>
</tr>
<tr>
<td>10</td>
<td>2.93</td>
<td>44</td>
<td>1.00</td>
<td>.15</td>
</tr>
<tr>
<td>11</td>
<td>1.74</td>
<td>39</td>
<td>.85</td>
<td>.14</td>
</tr>
<tr>
<td>12</td>
<td>1.97</td>
<td>33</td>
<td>.92</td>
<td>.16</td>
</tr>
<tr>
<td>13</td>
<td>2.86</td>
<td>35</td>
<td>1.06</td>
<td>.18</td>
</tr>
<tr>
<td>14</td>
<td>2.21</td>
<td>33</td>
<td>.93</td>
<td>.16</td>
</tr>
<tr>
<td>15</td>
<td>1.91</td>
<td>33</td>
<td>.91</td>
<td>.16</td>
</tr>
<tr>
<td>16</td>
<td>1.76</td>
<td>33</td>
<td>.97</td>
<td>.17</td>
</tr>
<tr>
<td>17</td>
<td>1.82</td>
<td>33</td>
<td>.77</td>
<td>.13</td>
</tr>
<tr>
<td>18</td>
<td>1.94</td>
<td>32</td>
<td>.91</td>
<td>.16</td>
</tr>
<tr>
<td></td>
<td>POST Cultural Identifications</td>
<td>.20</td>
<td>.52</td>
<td>6.94E-02</td>
</tr>
<tr>
<td>2</td>
<td>2.20</td>
<td>49</td>
<td>.93</td>
<td>.13</td>
</tr>
<tr>
<td>3</td>
<td>2.63</td>
<td>48</td>
<td>.94</td>
<td>.14</td>
</tr>
<tr>
<td>4</td>
<td>2.25</td>
<td>48</td>
<td>.93</td>
<td>.13</td>
</tr>
<tr>
<td>5</td>
<td>2.32</td>
<td>48</td>
<td>.87</td>
<td>.12</td>
</tr>
<tr>
<td>6</td>
<td>2.13</td>
<td>45</td>
<td>.97</td>
<td>.15</td>
</tr>
<tr>
<td>7</td>
<td>1.67</td>
<td>45</td>
<td>.83</td>
<td>.12</td>
</tr>
<tr>
<td>8</td>
<td>1.77</td>
<td>43</td>
<td>.81</td>
<td>.12</td>
</tr>
<tr>
<td>9</td>
<td>1.84</td>
<td>43</td>
<td>.95</td>
<td>.14</td>
</tr>
<tr>
<td>10</td>
<td>2.93</td>
<td>44</td>
<td>1.00</td>
<td>.15</td>
</tr>
<tr>
<td>11</td>
<td>1.74</td>
<td>39</td>
<td>.85</td>
<td>.14</td>
</tr>
<tr>
<td>12</td>
<td>1.97</td>
<td>33</td>
<td>.92</td>
<td>.16</td>
</tr>
<tr>
<td>13</td>
<td>2.86</td>
<td>35</td>
<td>1.06</td>
<td>.18</td>
</tr>
<tr>
<td>14</td>
<td>2.21</td>
<td>33</td>
<td>.93</td>
<td>.16</td>
</tr>
<tr>
<td>15</td>
<td>1.91</td>
<td>33</td>
<td>.91</td>
<td>.16</td>
</tr>
<tr>
<td>16</td>
<td>1.76</td>
<td>33</td>
<td>.97</td>
<td>.17</td>
</tr>
<tr>
<td>17</td>
<td>1.82</td>
<td>33</td>
<td>.77</td>
<td>.13</td>
</tr>
<tr>
<td>18</td>
<td>1.94</td>
<td>32</td>
<td>.91</td>
<td>.16</td>
</tr>
<tr>
<td></td>
<td>POST Cultural Identifications</td>
<td>.20</td>
<td>.52</td>
<td>6.94E-02</td>
</tr>
<tr>
<td>2</td>
<td>2.20</td>
<td>49</td>
<td>.93</td>
<td>.13</td>
</tr>
<tr>
<td>3</td>
<td>2.63</td>
<td>48</td>
<td>.94</td>
<td>.14</td>
</tr>
<tr>
<td>4</td>
<td>2.25</td>
<td>48</td>
<td>.93</td>
<td>.13</td>
</tr>
<tr>
<td>5</td>
<td>2.32</td>
<td>48</td>
<td>.87</td>
<td>.12</td>
</tr>
<tr>
<td>6</td>
<td>2.13</td>
<td>45</td>
<td>.97</td>
<td>.15</td>
</tr>
<tr>
<td>7</td>
<td>1.67</td>
<td>45</td>
<td>.83</td>
<td>.12</td>
</tr>
<tr>
<td>8</td>
<td>1.77</td>
<td>43</td>
<td>.81</td>
<td>.12</td>
</tr>
<tr>
<td>9</td>
<td>1.84</td>
<td>43</td>
<td>.95</td>
<td>.14</td>
</tr>
<tr>
<td>10</td>
<td>2.93</td>
<td>44</td>
<td>1.00</td>
<td>.15</td>
</tr>
<tr>
<td>11</td>
<td>1.74</td>
<td>39</td>
<td>.85</td>
<td>.14</td>
</tr>
<tr>
<td>12</td>
<td>1.97</td>
<td>33</td>
<td>.92</td>
<td>.16</td>
</tr>
<tr>
<td>13</td>
<td>2.86</td>
<td>35</td>
<td>1.06</td>
<td>.18</td>
</tr>
<tr>
<td>14</td>
<td>2.21</td>
<td>33</td>
<td>.93</td>
<td>.16</td>
</tr>
<tr>
<td>15</td>
<td>1.91</td>
<td>33</td>
<td>.91</td>
<td>.16</td>
</tr>
<tr>
<td>16</td>
<td>1.76</td>
<td>33</td>
<td>.97</td>
<td>.17</td>
</tr>
<tr>
<td>17</td>
<td>1.82</td>
<td>33</td>
<td>.77</td>
<td>.13</td>
</tr>
<tr>
<td>18</td>
<td>1.94</td>
<td>32</td>
<td>.91</td>
<td>.16</td>
</tr>
</tbody>
</table>
Appendix F
Statistical Results of Pre and Post-Test Surveys

Control Group
Paired Samples Correlations

<table>
<thead>
<tr>
<th>Pair</th>
<th>Description</th>
<th>N</th>
<th>Correlation</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>PRE Cultural Identifications &amp; POST Cultural Identifications</td>
<td>56</td>
<td>.503</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 2</td>
<td>PRE2 &amp; POST2</td>
<td>49</td>
<td>.366</td>
<td>.010</td>
</tr>
<tr>
<td>Pair 3</td>
<td>PRE3 &amp; POST3</td>
<td>48</td>
<td>.175</td>
<td>.233</td>
</tr>
<tr>
<td>Pair 4</td>
<td>PRE4 &amp; POST4</td>
<td>48</td>
<td>.135</td>
<td>.361</td>
</tr>
<tr>
<td>Pair 5</td>
<td>PRE5 &amp; POST5</td>
<td>47</td>
<td>.221</td>
<td>.136</td>
</tr>
<tr>
<td>Pair 6</td>
<td>PRE6 &amp; POST6</td>
<td>45</td>
<td>.604</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 7</td>
<td>PRE7 &amp; POST7</td>
<td>45</td>
<td>.374</td>
<td>.011</td>
</tr>
<tr>
<td>Pair 8</td>
<td>PRE8 &amp; POST8</td>
<td>43</td>
<td>.444</td>
<td>.003</td>
</tr>
<tr>
<td>Pair 9</td>
<td>PRE9 &amp; POST9</td>
<td>44</td>
<td>.415</td>
<td>.005</td>
</tr>
<tr>
<td>Pair 10</td>
<td>PRE10 &amp; POST10</td>
<td>44</td>
<td>.343</td>
<td>.022</td>
</tr>
<tr>
<td>Pair 11</td>
<td>PRE11 &amp; POST11</td>
<td>39</td>
<td>.400</td>
<td>.012</td>
</tr>
<tr>
<td>Pair 12</td>
<td>PRE12 &amp; POST12</td>
<td>33</td>
<td>.559</td>
<td>.001</td>
</tr>
<tr>
<td>Pair 13</td>
<td>PRE13 &amp; POST13</td>
<td>35</td>
<td>.465</td>
<td>.005</td>
</tr>
<tr>
<td>Pair 14</td>
<td>PRE14 &amp; POST14</td>
<td>33</td>
<td>.355</td>
<td>.042</td>
</tr>
<tr>
<td>Pair 15</td>
<td>PRE15 &amp; POST15</td>
<td>33</td>
<td>.484</td>
<td>.004</td>
</tr>
<tr>
<td>Pair 16</td>
<td>PRE16 &amp; POST16</td>
<td>32</td>
<td>.700</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 17</td>
<td>PRE17 &amp; POST17</td>
<td>33</td>
<td>.558</td>
<td>.001</td>
</tr>
<tr>
<td>Pair 18</td>
<td>PRE18 &amp; POST18</td>
<td>32</td>
<td>.571</td>
<td>.001</td>
</tr>
</tbody>
</table>
Appendix F
Statistical Results of Pre and Post-Test Surveys

Control Group
Paired Samples Test

<table>
<thead>
<tr>
<th>Pair</th>
<th>Paired Differences</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Significance (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PRE1 IDs POST IDs</td>
<td>.00</td>
<td>.57</td>
<td>7.64E-02</td>
<td>-.15</td>
<td>.15</td>
<td>.000</td>
<td>55 1.000</td>
</tr>
<tr>
<td>2</td>
<td>PRE2 POST2</td>
<td>-.24</td>
<td>.99</td>
<td>.14</td>
<td>-.53</td>
<td>.95E-02 -1.731</td>
<td>48</td>
<td>.090</td>
</tr>
<tr>
<td>3</td>
<td>PRE3 POST3</td>
<td>4.17E-02</td>
<td>1.18</td>
<td>.17</td>
<td>-.30</td>
<td>.39</td>
<td>.244</td>
<td>47  .808</td>
</tr>
<tr>
<td>4</td>
<td>PRE4 POST4</td>
<td>-.729E-02</td>
<td>1.18</td>
<td>.17</td>
<td>-.42</td>
<td>.27</td>
<td>-.426</td>
<td>47  .672</td>
</tr>
<tr>
<td>5</td>
<td>PRE5 POST5</td>
<td>.11</td>
<td>1.18</td>
<td>.17</td>
<td>-.24</td>
<td>.45</td>
<td>.616</td>
<td>46  .541</td>
</tr>
<tr>
<td>6</td>
<td>PRE6 POST6</td>
<td>6.67E-02</td>
<td>.88</td>
<td>.13</td>
<td>-.20</td>
<td>.33</td>
<td>.507</td>
<td>44  .615</td>
</tr>
<tr>
<td>7</td>
<td>PRE7 POST7</td>
<td>6.67E-02</td>
<td>.91</td>
<td>.14</td>
<td>-.21</td>
<td>.34</td>
<td>.489</td>
<td>44  .627</td>
</tr>
<tr>
<td>8</td>
<td>PRE8 POST8</td>
<td>-6.98E-02</td>
<td>.94</td>
<td>.14</td>
<td>-.36</td>
<td>.22</td>
<td>-.489</td>
<td>42  .628</td>
</tr>
<tr>
<td>9</td>
<td>PRE9 POST9</td>
<td>-4.55E-02</td>
<td>1.06</td>
<td>.16</td>
<td>-.37</td>
<td>.28</td>
<td>-.286</td>
<td>43  .777</td>
</tr>
<tr>
<td>10</td>
<td>PRE10 POST10</td>
<td>.11</td>
<td>1.08</td>
<td>.16</td>
<td>-.22</td>
<td>.44</td>
<td>.696</td>
<td>43  .490</td>
</tr>
<tr>
<td>11</td>
<td>PRE11 POST11</td>
<td>-7.69E-02</td>
<td>1.04</td>
<td>.17</td>
<td>-.41</td>
<td>.26</td>
<td>-.464</td>
<td>38  .645</td>
</tr>
<tr>
<td>12</td>
<td>PRE12 POST12</td>
<td>3.03E-02</td>
<td>.81</td>
<td>.14</td>
<td>-.26</td>
<td>.32</td>
<td>.215</td>
<td>32  .831</td>
</tr>
<tr>
<td>13</td>
<td>PRE13 POST13</td>
<td>-8.57E-02</td>
<td>1.09</td>
<td>.19</td>
<td>-.46</td>
<td>.29</td>
<td>-.463</td>
<td>34  .646</td>
</tr>
<tr>
<td>14</td>
<td>PRE14 POST14</td>
<td>.30</td>
<td>1.05</td>
<td>.18</td>
<td>-6.76E-02</td>
<td>.67</td>
<td>1.665</td>
<td>32  .106</td>
</tr>
<tr>
<td>15</td>
<td>PRE15 POST15</td>
<td>-6.06E-02</td>
<td>.90</td>
<td>.16</td>
<td>-.38</td>
<td>.26</td>
<td>-.387</td>
<td>32  .701</td>
</tr>
<tr>
<td>16</td>
<td>PRE16 POST16</td>
<td>-9.38E-02</td>
<td>.69</td>
<td>.12</td>
<td>-.34</td>
<td>.15</td>
<td>-.770</td>
<td>31  .447</td>
</tr>
<tr>
<td>17</td>
<td>PRE17 POST17</td>
<td>-.15</td>
<td>.97</td>
<td>.17</td>
<td>-.50</td>
<td>.19</td>
<td>-.895</td>
<td>32  .377</td>
</tr>
<tr>
<td>18</td>
<td>PRE18 POST18</td>
<td>.00</td>
<td>.88</td>
<td>.16</td>
<td>-.32</td>
<td>.32</td>
<td>.000</td>
<td>31  1.000</td>
</tr>
</tbody>
</table>