Incorporating multicultural education criteria into Project Learning Tree curricula

Alondra Marcela Blandon

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INTEGRATING MULTICULTURAL EDUCATION CRITERIA INTO PROJECT LEARNING TREE CURRICULA

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education:
Environmental Education

by
Alondra Marcela Blandon
June 2007
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INTO PROJECT LEARNING TREE CURRICULA

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Approved by:

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June 7, 2007
ABSTRACT

The demographics of the United States are changing at a rapid rate, but the curricula taught in mainstream schools have been slow to evolve with this transformation. Many environmental educators have realized that in order to effectively teach environmental sensitivity and literacy, they must approach their audience through a cultural context. Thus, environmental education lessons need to incorporate strategies used in multicultural education in order to be more culturally inclusive. This project includes the identification of multicultural education criteria and the application of these to three lessons from Project Learning Tree: PreK-8 Environmental Education Activity Guide. The modified lessons provide models for combining the goals of multicultural and environmental education so that the needs of all learners may be met.
ACKNOWLEDGMENTS

I would like to acknowledge Dr. Darleen Stoner and Dr. Lynne Diaz-Rico for their patience, support, and inspiration during this process. I would also like to acknowledge Kay Antunez, California Coordinator for Project Learning Tree, for giving me permission to use Project Learning Tree and for providing me with a wealth of resources.
DEDICATION

This project is dedicated to all of the wonderful people in my life who gave me the strength and confidence to successfully complete this project, but especially to my mom, Pier Blandon, Manuel Rodriguez, and Laura Borg.
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CHAPTER ONE

INTRODUCTION

Every one of us is ecologically significant. Our thoughts, feelings, and physical sensations, which give us a sense of identity, are all based on our interactions with the Earth and other people. (Caduto & Bruchac, cited in Salter-Stith, Washburn, & Barton, 1994, p. 288)

According to the U.S. Census Bureau (Bergman, 2004) and the U.S. Department of Commerce Minority Business Development Agency (He & Hobbs, 1999), the population of people of color in the United States is projected to surpass the non-minority population after 2050. Ninety percent of the population growth in the United States between 1995 and 2050 is projected to be among minority groups, with the largest growth in Asian and Latino populations. This makeover to the face of the United States in a relatively short amount of time should alert everyone concerned with educating youth that the traditional European-American perspective of teaching
should be reexamined to monitor its effectiveness with non-European-American students.

Environmental education has traditionally used a middle-class European-American perspective (Taylor, 1996) to teach students about their interrelatedness to the natural and human-made environment (Ableman, 2005; Orr, 1994). Valuing the connections between humans and nature is necessary because we are inextricably linked; however historically environmental educators have "packaged and transmitted" their "values and vision" (Taylor, 1996. p. 3) pertaining to the environment, and have excluded the roles and viewpoints of diverse cultural groups. Yet, one of the major factors that shapes learners' perception and knowledge of the environment is the cultural context in which they live (Saul, 2000). This "cultural siting of knowledge" (Saul, 2000, para. 8) greatly influences the way in which a learner relates to the natural world. It is my belief that educators who are sensitive to and acknowledge the cultural perceptions and experiences of diverse populations will better serve not only the needs of those they are educating, but also of society as a whole.

Just as environmental education needs to be ingrained within all levels and disciplines of education, so should
a multicultural perspective. The environmental education community is beginning to recognize that there is a segment of the United States population that is being marginalized because many community educators are not representative of, and the curriculum is generally not sensitive to, the needs of a multicultural audience (Bryant, 1996; Lewis & James, 1995; Taylor, 1996). In an attempt to bring together these two educational approaches—multicultural and environmental—I have made modifications to existing curricula from the environmental education guide Project Learning Tree: PreK-8 Environmental Education Activity Guide (American Forestry Foundation, 2006a).

It has been recognized that within the PLT program there are discrepancies between how environmental education is traditionally taught and how a multicultural audience responds to it. Revision of PLT (American Forestry Foundation, 2006a) over the years had sought to improve the guide to make it more inclusive to a diverse population. I proposed taking it a step further by applying multicultural education criteria, which I identify, into selected lessons that can be used by kindergarten through eighth grade-grade teachers to
further enhance their students' environmental education experience.

Multicultural education works towards educational equity for all cultural groups, and helps students develop a greater understanding and tolerance of other cultural perspectives and diverse experiences. Culture diversity does not just refer to race or ethnicity, but also includes gender, socioeconomic status, religious identity, disability and any other social grouping found in a larger macroculture, such as the United States (Davidman & Davidman, 2001). I delve further into the definition and goals of multicultural education in the literature review. For the purpose of this project, I have primarily focused on infusing different ethnic and racial cultural perspectives into the PLT (American Forestry Foundation, 2006a) lessons. I have also included teaching strategies that are intended to provide a better learning experience for all students, especially students of multiethnic and multilingual backgrounds.

Environmental education focuses on cultivating the relationship between humans and nature, whereas multicultural education focuses primarily on human relationships (American Forestry Foundation, 2006a). Regardless of this difference, there is overlap between
multicultural and environmental education that is often overlooked because initially they appear to be completely separate entities. Environmental and multicultural education both strive to bring about social change by using an interdisciplinary approach to understanding connections and presenting information in an unbiased multi-perspective manner (American Forestry Foundation, 2006a). In addition, environmental and multicultural education share other similar concepts and teaching strategies that I discuss in this project.

As a woman of color who recognizes the importance of finding a sustainable balance between the natural and human world, I find it disappointing that although combining multiculturalism and environmental knowledge has been discussed at great lengths within a small circle of educators and environmentalists, little has been done in education to actually combine them. Therefore, an environmental education curricula that recognizes learners' cultural backgrounds and ways that culture shapes learners' understanding of the world around them will be more effective in teaching environmental principles (Saul, 2000). Moreover, combining multicultural and environmental education can promote a worldview in which nature and culture can not only coexist, but also
blend together to foster a greater understanding of the interrelatedness between the human and natural world.
CHAPTER TWO
REVIEW OF THE LITERATURE

The following literature review provides an understanding of how environmental education lessons can include multicultural applications. The section, Understanding Environmental Education, focuses on how the definition of environmental education has evolved, what are the intended goals of environmental education, and how it is incorporated into traditional educational curricula. The section, Understanding Multicultural Education, discusses the definition, goals, and the criteria required to incorporate multiculturalism into existing curricula. The Finding the Common Ground section compares the areas in which environmental and multicultural education overlap. Lastly, the Standards for Teaching to Diverse Audiences section offers strategies educators can use to create a learning environment that honors the diverse backgrounds and learning styles of all students.

Understanding Environmental Education

Nature has been used as an instructional tool since the introduction of Wilbur Jackman’s *Nature Study for the Common School* in 1891 (Disinger, 2005). Although the realization of the link between the natural world and
education is not a recent development, the term environmental education is fairly new. Antecedents such as nature study, conservation education, and outdoor education have been popular during different evolutionary stages of environmental education, and at times have been used interchangeably with environmental education by researchers and educators (Disinger, 2005).

**Definition**

The first record of the use of the term environmental education was in 1948. However, it was not until 20 years later that the first widely accepted definition of environmental education was developed by William Stapp (Disinger, 2005). Stapp and graduate students in a seminar class (Stapp et al., 1969) from The University of Michigan’s School of Natural Resources defined environmental education as a means to develop a populous “that is knowledgeable of the biophysical environment” (p. 31). According to Stapp et al.’s definition, environmental education would help the average person become aware of potential solutions for environmental problems and motivate them to resolve these problems.

Environmental education is a fairly new concept; however the idea of educating people about the natural world is not new. Stapp et al.’s definition was
significant in the history of environmental education because not only did it establish that the environment is both natural and built, but it also focused on the importance of educating the public so that they could work towards solutions to environmental problems. The development of a clear definition was a guiding light for other environmental educators as they worked to establish goals and objectives for this relatively new field (Disinger, 2005).

Evolving Goals and Objectives

Many aspects of environmental education have evolved as research has continued, and the goals and objectives of environmental education are no exception. The environmental education goals established by Stapp and his students were enhanced by The Tbilisi Declaration (2005), organized by the United Nations Environment Programme (UNEP) in 1977. The Tbilisi goals included specific areas of concern that environmental educators could help rural and urban citizens become aware of, including the interdependence of ecology, the economy, and politics. The expanded goals of environmental education also emphasized that every person should be given the appropriate skills and information needed to “protect and improve the environment” (Tbilisi Declaration, 2005, p. 15), so that
the actions of the society as a whole and as individuals could benefit the environment. Many researchers have also referred to this overarching goal of developing "responsible environmental behavior" (Culén, 2005, p. 40) as the "Superordinate Goal" (Hungerford, Peyton, & Wilke, 2005, p. 107; Winther, 2005).

The Tbilisi Declaration (2005) also established objectives to meet the goals of environmental education. The Tbilisi objectives are awareness, knowledge, attitudes, skills, and participation (p. 15). Awareness works to establish environmental sensitivity and exposure to issues related to the environment, both in individuals and in communities. Knowledge is used "to help social groups and individuals gain" (p. 15) an active familiarity with and a fundamental understanding of the natural and human-made environment, and its associated problems. The attitudes objective refers to assisting communities and individuals to gain "a set of values and feelings of concern for the environment" (p. 15) so that these individuals and social groups are inspired to actively contribute to the betterment and protection of the environment. The skills objective means to provide all individuals and groups in society with the abilities and competence to identify and formulate solutions to problems
in the environment. Participation involves developing opportunities for people to participate "at all levels" (p. 15) in resolving environmental problems.

Environmental education researchers have found that awareness of an environmental problem is not enough to motivate individuals or social groups to work towards solving these problems (Culen, 2005; Winther, 2005). The traditional model of behavior change (Winther, 2005, p. 183), in which knowledge leads to a change in attitudes, which in turn spurs a change in behavior, is no longer supported by most environmental education researchers as a way to develop environmental sensitivity and promote responsible environmental behavior (Culen, 2005; Winther, 2005).

Hungerford et al. (2005) revised The Tbilisi Declaration objectives and categorized them as goals placed into four hierarchical levels (see Table 1). They are summarized below, incorporating variables recognized in the Environmental Behavior Model modified by Hungerford and Volk (Culen, 2005), to show how these variables work together to result in responsible environmental behavior. These levels are: Level I (Ecological Foundations Level), establishing a sound knowledge of ecological concepts to better understand environmental issues; Level II (The
Conceptual Awareness Level: Issues and Values), involving knowledge of environmental issues, attitudes that are environmentally positive, along with establishing an awareness of locus of control in the learner; Level III (Investigation and Evaluation), incorporating knowledge of and skills using action strategies, personal beliefs and values, and evaluation; and Level IV (Action Skills Level: Training and Application), taking action for the environment.

Table 1. Goals of Environmental Education

<table>
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<tr>
<th>Levels</th>
<th>Description</th>
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<tr>
<td>I. Ecological Foundations</td>
<td>Establishing a sound knowledge of ecological concepts to better understand environmental issues.</td>
</tr>
<tr>
<td>II. The Conceptual Awareness: Issues and Values</td>
<td>Involving knowledge of environmental issues, attitudes that are environmentally positive, along with establishing an awareness of locus of control in the learner.</td>
</tr>
<tr>
<td>III. Investigation and Evaluation</td>
<td>Incorporating knowledge of and skills using action strategies, personal beliefs and values, and evaluation.</td>
</tr>
<tr>
<td>IV. Action Skills: Training Application</td>
<td>Taking action for the environment.</td>
</tr>
</tbody>
</table>
The goals and objectives of environmental education have evolved as our understanding of how individuals learn has become transformed through research (Disinger, 2005). It is imperative that educational fields continue to grow and change with the unearthing of new knowledge (deMarraiss & LeCompte, 1999).

**Characteristics**

Environmental education involves an interdisciplinary, unbiased approach to solving environmental problems and acknowledges all sides of an environmental issue (American Forestry Foundation, 2006b; Education for Sustainability, 1994; Ramsey, Hungerford, & Volk, 2005b; Volk, 2005). Though often used interchangeably, an environmental problem becomes an environmental issue when there is controversy over how to resolve the problem (Ramsey et al., 2005b; Volk, 2005). When learning about environmental issues, students should be made aware of how, as human beings, they are connected to the environmental issue. Human behavior, “influenced by societal concerns such as politics, economics, religion, human health and safety, ethics and morals” (Volk, 2005, p. 143), has an impact on the environment.

The intention of environmental education is not to create “little environmentalists,” but to help learners
develop a systems thinking process so that they have the skills to critically analyze information from all sides of an issue, think creatively about ways to solve environmental problems, and develop their own well-informed perspective on the situation (Education for Sustainability, 1994).

Environmental education, as stated earlier, is intended to be an interdisciplinary approach to integrating themes about the environment into different areas of curriculum. Environmental education can be used in lessons about social issues, mathematics, writing and literature, physics, art and more. It can be easily integrated into many disciplines because the "environment" is such a broad topic. It can be local or global; involve conservation or only natural history; result in action or just study; be used for individual or group work; be done in a classroom, school yard or on a fieldtrip; provide an in-depth or broad overview; and so forth. Environmental education allows for flexibility and creativity at all grade levels.

The interdisciplinary, unbiased, and systems thinking approaches of environmental education are characteristics that make it flexible and easily integrated or combined within a variety of subjects and educational fields.
(American Forestry Foundation, 2006b; Education for Sustainability, 1994; Ramsey, Hungerford, & Volk, 2005b; Volk, 2005).

Multicultural Environmental Education

As stated previously, the goals of environmental education are to develop environmentally literate and sensitive citizens who are aware of environmental problems, and have the skills and initiative to solve them (Culen, 2005). As strong as the goals are, environmental education lessons often do not take into consideration the learner’s cultural experiences and background, which have a profound effect on the way in which they absorb and interpret new information. If learners have prior misconceptions about what the environment is or is not, or even preconceived notions about the value of protecting the environment, any new knowledge they are provided with will be interpreted through this lens (Saul, 2000). Environmental educators who take into consideration the learner’s prior knowledge; what the learner deems to be important, valuable, and interesting; and the cultural, historical, and environmental experiences of the learner, will be better prepared to help the learner relate to the new information and debunk prior misconceptions (Running-Grass, 2005; Saul, 2000; Taylor, 1996).
Multicultural environmental education teaches about the environment through a cultural context. Traditional environmental education curricula tend to focus primarily, and sometimes exclusively, on the natural world; however seventy-nine percent of all people living in the United States live in urban areas (U.S. Census, 2000). For many urban students the natural world is an inaccessible foreign place unrelated to their everyday lives. It is of no fault of the student that they cannot recognize their connection to the natural world since traditional environmental education can fail to bridge the gap between the built and natural worlds (Taylor, 1996).

Multicultural environmental education recognizes that urban neighborhoods constitute the environment for many students (Running-Grass, 2005; Taylor, 1996). A healthy and clean community is just as important, if not more so, than a pristine forest to many people. The way to help learners reevaluate this notion is to start with what they know and value first, and use that prior knowledge to help them make connections to a new idea (Saul, 2000; Taylor, 1996).

Multicultural environmental education is an approach that recognizes that learners' perception of the world is "culturally cited" (Saul, 2000, para. 6). This field uses
a culturally sensitive and inclusive approach to teaching about the environment so that students can begin to reevaluate their prior understanding of the world, and develop new perspectives of and knowledge about the natural and built environments.

In summary, environmental education has evolved tremendously since the era of Wilbur Jackman’s *Nature Study for the Common School*. This evolution has brought about significant changes in the way we educate people to instill a sense of connectedness and responsibility to the environment. As society changes, so can we expect environmental education to continue to change with it, as it has in the past.

Understanding Multicultural Education

The United States is rich in cultural, ethnic, religious, lifestyle, and language diversity. The diverse atmosphere of this country allows for the opportunity to exchange a multitude of perspectives, traditions, and beliefs among different cultural groups (Banks, 2003; deMarra’s & LeCompte, 1999; Duarte & Smith, 2000). The diverse atmosphere of America can also lead to misunderstandings, ethnocentrism, and bigotry when
cultural groups lack exposure to and respect for different viewpoints (Banks, 2003).

**Historical Overview**

Western society has used schooling to shape a national unified culture, forcing various cultural groups to give up their traditions to assimilate into the European-American culture (Banks, 2003; Duarte & Smith, 2000). The idea of America as the "melting pot" reinforces the view that immigrant groups' and indigenous peoples' unique characteristics are melded into a common macroculture (Banks, 2003; deMarrais & LeCompte, 1999). In the beginning of the 20th century, one of the major goals of public education was to reinforce the idea of America as a "melting pot" (deMarrais & LeCompte, 1999, p. 285) by teaching immigrant and indigenous groups the "language, customs, and skills needed to fit into mainstream society" (deMarrais & LeCompte, 1999, p. 285). This process emphasizes "cultural sameness rather that cultural diversity" (Duarte & Smith, 2000, p. 5). Recognizing cultural diversity is an important part of multicultural education, and reflects the "salad bowl" (deMarrais & LeCompte, 1999; Duarte & Smith, 2000) or "stew pot" perspective (deMarrais & LeCompte, 1999), in which cultural groups are allowed to maintain their
distinctiveness, while adding to the flavor of the entire dish, or in this case, the nation.

Multicultural education emerged from the Civil Rights Movement in the 1960s and 1970s in the United States as a response to racial discrimination, social and economic inequality, and sexism directed towards many communities of color and other disenfranchised groups, such as women, in the United States. Despite many advances towards equality, many cultural groups still do not have equal representation and opportunity in all realms of United States society, including education (Banks, 2003; Davidman & Davidman, 2001; deMarrais & LeCompte, 1999; Duarte & Smith, 2000). Although American society is so culturally diverse, the cultural hegemony, or the "social consensus created by dominant groups who control socializing institutions" (deMarrais & LeCompte, 1999, p. 17), within the schools promotes biased and ethnocentric curriculum unreflective of the rainbow of backgrounds from which the students come (Banks, 2003; deMarrais & LeCompte, 1999; Duarte & Smith, 2000).

Multicultural education emerged as a response to social, economic, and political forms of oppression. Institutions such as schools reinforce these oppressive forces through the use of discriminatory practices and
policies (deMarrais & LeCompte, 1999). As described in the following section, the approach multicultural educators take when facing these oppressive forces can vary depending on how they define multiculturalism.

Definitions of Multicultural Education

There are varying schools of thought on what multicultural education means. The “multicultural condition”, as defined by Duarte and Smith (2000), is “the demographic presence of different ethnic groups” (p. 3), and their histories, culture, values, and status within society. Multiculturalism is a response to the multicultural condition and can be defined as “how an individual interprets or sees the world and perceives his/her place in it” (p. 3), how people evaluate their sense of place, and how they respond to the diversity of cultures within society. Davidman and Davidman (2001) defined a multicultural perspective as “a process of thinking, a state of mind, a way of seeing and learning that is shaped by beliefs about cultural relationships and cultural competency in American history and contemporary society” (p. 28). Educating from a multicultural perspective is “a multifaceted, organizational, change-oriented” (p. 13) strategic approach to teaching and learning.
These broad definitions of multiculturalism have lead to a variety of ways in which different people can interpret multicultural education. The lack of a universal definition for multicultural education, due to the variety of ways in which people perceive the world and their place in it, leaves it relatively open to interpretation. Though different educational perspectives can approach the multicultural condition differently, the common thread that brings them together is the recognition of a multicultural condition (deMarrais & LeCompte, 1999; Gay, 1994; Duarte & Smith, 2000).

**Critical Multiculturalism**

As stated before, there are several ways to approach the multicultural condition. The perspective used in this project is critical multiculturalism. In this approach, the structure of power and privilege, as determined by race, class, and gender, are recognized as prominent factors that influence the practices and policies of institutions, such as schools (Nieto, 2000).

In critical multiculturalism, institutional discrimination is viewed as more harmful than discrimination conducted by an individual because of the amount of power institution possess. Discriminatory practices and policies in schools will cause greater
damage to affected cultural groups, whether intended or not, than any one individual could do (Nieto, 2000).

Critical multiculturalism approaches this wielding of power by attempting to establish schools as places “where pacifying and assimilationist pedagogical practices can be undermined” (Duarte & Smith, 2000, p. 18). Critical multiculturalism strives to “dismantle the hegemony of the [European-American] worldview in education” (p. 18), and educate for social justice (Nieto, 2000).

Schools are a reflection of the larger society and can reinforce the oppressive and discriminatory attitudes and practices of those in power. Critical multiculturalism recognizes and attempts to deconstruct the complex system of oppressive power that pervades schools and other institutions (Duarte & Smith, 2000; Nieto, 2000).

Multicultural Education Goals

Despite the lack of a universal definition for multicultural education there is some general consensus regarding the goals of this field. According to several researchers, the goals of multicultural education are as follows: (1) to promote educational and social equity (Davidman & Davidman, 2001; Gay, 1994); (2) to confront and reject all forms of discrimination (Banks, 2003; Gay, 1994); (3) to recognize and affirm cultural pluralism
(Banks, 2003; Bennett, 1999; Davidman & Davidman, 2001; deMarrais & LeCompte, 1999; Gay, 1994); (4) to empower students, parents and teachers (Davidman & Davidman, 2001; Gay 1994); (5) to use critical pedagogy as a means to promote social change (Banks, 2003; Bennett, 1999; Gay, 1994); and (6) to develop an awareness of other cultural perspectives in educators and students (Banks, 2003; Bennett, 1999; Davidman & Davidman, 2001).

It can be difficult to incorporate every goal of multicultural education into every lesson, especially when working with pre-existing curricula. It is however, feasible to attempt to integrate as many of the goals as possible to create a better and more inclusive learning environment for all students (Davidman & Davidman, 2001).

The first goal of multicultural education recognizes that despite steps towards educational equality, educational equity has not been achieved (Davidman & Davidman, 2001). As an example, all students are allocated the same amount of funding for schooling as a result of educational equality. The reality is that many schools with a lower socioeconomic population have to transfer more money to security and special education programs, resulting in less funding for each student. Davidman and Davidman wrote that true equity in education would result
in the redistribution of funds to groups in society that are in the greatest need and that "educators should strive to create equity for all groups and individuals in their population of learners who are being treated unfairly" (p. 105).

Discrimination can come in many forms, including sexism, racism, homophobia, and xenophobia. The second goal of multicultural education acknowledges and challenges discriminatory and culturally insensitive viewpoints that can exist in traditional and hidden curricula (Banks, 2003; deMarrais & LeCompte, 1999). Multicultural curricula "emphasizes liberation for oppressed groups, social action for social justice, redistribution of political and economic power, and developing skills for combating the insidious ways in which racism is practiced, maintained, and reproduced" (Gay, 1994, p. 39).

Cultural pluralism, the third goal of multicultural education, refers to the opportunity for different cultural groups to keep their cultural identity while also regarding themselves as members of the American culture (Davidman & Davidman, 2001; deMarrais & LeCompte, 1999; Gay, 1994). In this goal, individuals can function in society while participating in two or more different
cultural worlds without being penalized. Cultural pluralism not only includes immigrants, but indigenous peoples, the gay and lesbian community, people with varying physical and mental abilities, and other cultural groups. Teachers can foster cultural pluralism in their students by helping them develop a sense of “respect, appreciation, and/or tolerance” (Davidman & Davidman, 2001, p. 20) for people and groups who differ from them. Teachers can also help students from different backgrounds discover things they have in common with each other as a way to promote unity (Davidman & Davidman, 2001).

In goal four, students, parents, and teachers can become empowered by the development of curriculum that allows them to have more influence over the “educational, political, economic, and social events in their own lives” (Davidman & Davidman, 2001, p. 20). Schools can encourage empowerment by helping students and teachers become aware of the social, economic, and political forces that oppress them, and giving them skills and strategies to overcome these negative forces (deMarrais & LeCompte, 1999). Multicultural education’s use of student-centered pedagogy is reflective of the different learning styles of students and empowers all learners to reach their true potential (Gay, 1994).
Critical pedagogy in multicultural curricula is rooted in the experiences and perspectives of the students rather than just the imposed European-American culture. This pedagogical approach debunks myths and encourages teachers, administrators, and students to reevaluate the way they think, work, and plan (Davidman & Davidman, 2001). Educators and administrators must be able to critically analyze and challenge their "own biases, limitations, and vested interests that" (Sleeter, 2000, p. 131) may prohibit them from truly incorporating multicultural perspectives into curricula. It can be difficult for educators to embrace the idea that colorblindness does not lead to social equity, or that what they have socially constructed to be true may actually be prejudice (Sleeter, 1995). Self-reflection and critical analysis allows educators and students to reshape their perception of reality to include multiple and opposing viewpoints (Gay, 1994; Davidman & Davidman, 2001).

Critical pedagogy also "encourages a learning process" that ideally moves from knowledge to reflection to action "in a flexible, nonlinear manner" (Davidman & Davidman, 2001, p. 68). Curricula that apply critical
pedagogy encourage students to take chances, ask questions, and be inquisitive.

The sixth and final goal of multicultural education helps students develop a crosscultural awareness. Multicultural curricula provide an array of cultural and multiethnic perspectives to encourage teachers, administrators, students and communities to be sensitive to and understanding of alternative perspectives (Banks, 2003; Bennett, 1999; Davidman & Davidman, 2001). Crosscultural awareness helps promote intergroup and intragroup harmony (Davidman & Davidman, 2001).

The six goals for multicultural education encourage not just an external transformation, but an internal one as well. Multicultural education involves more than posting up pictures of diverse and culturally significant people in the classrooms or including multicultural literature in the school library (Banks, 2003). It involves taking a critical look at one’s self and examining the biases and phobias that have been internalized. It also involves providing opportunities for students to do the same so that they can begin to think critically about the way they and others view the world (Banks, 2003; Davidman & Davidman, 2001).
Four Levels of Commitment

Banks (2003) described four approaches that offer varying levels of commitment to multicultural education (see Table 2). The first, the Contributions Approach, is the most commonly used by elementary schools. This is also known as the tour approach (Aldridge, Calhoun, & Aman, 2000) in which students learn about different cultures during select times of the year through macroculturally accepted heroes, food, customs, and holidays.

Table 2. Banks' Four Levels to Integrating Cultural Content

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<tr>
<th>Levels</th>
<th>Description</th>
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<tbody>
<tr>
<td>1. The Contributions Approach</td>
<td>Also known as the tour approach; students learn about different cultures during select times of the year through heroes, food, customs, and holidays.</td>
</tr>
<tr>
<td>2. The Additive Approach</td>
<td>Educators add cultural themes, content, and concepts to existing mainstream curricula, without changing the educational framework.</td>
</tr>
<tr>
<td>3. The Transformative Approach</td>
<td>The curriculum is completely transformed to reflect the various perspectives of different cultural and ethnic groups within the United States.</td>
</tr>
<tr>
<td>4. The Social Action Approach</td>
<td>Students take the perspectives learned from the Transformative Approach and apply it to make significant individual and civic changes in their communities.</td>
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</table>
The second level Banks described is the Additive Approach. Educators use this approach when they add cultural themes, content and concepts to existing Eurocentric and mainstream curricula, without actually changing the educational framework. Adding a book by an author from a different cultural background will still be interpreted from the point of view of the macroculture because the framework remains intact (Banks, 2003).

To achieve truly effective multicultural curricula, complete restructuring of the traditional teaching methodology must occur. This third approach, the Transformative Approach, works best when multicultural education is embedded into the way society “conceptualize[s] the nature of teaching and learning” (Gay, 1994, p. 3). In the Transformative Approach, the curriculum is completely transformed to reflect the various perspectives of different cultural and ethnic groups within the United States (Banks, 2003). Students are given the opportunity to “read and hear the voices of the victors and the vanquished” (Halagao, 2004, para. 1).

Banks’ (2003) final level is the Social Action Approach. In this approach, students take the perspectives learned from the Transformative Approach and apply them to
make significant individual and civic changes in their communities.

The four approaches offer educators the ability to commit to varying degrees of multicultural education, depending on their comfort level. Merely adding a multicultural book to a lesson or eating ethnic food requires less of a commitment to multicultural education, but it also does little to develop culturally sensitive students who will work towards social change. Though they may require more work for the teacher and students, the approaches that best incorporate the goals of multicultural education are the Transformative and Social Action Approaches (Banks, 2003).

Misconceptions of Multicultural Education

There are many misconceptions associated with multicultural education that can confuse educators trying to incorporate a multicultural perspective into their curricula. According to Aldridge et al. (2000) these misconceptions can inhibit the goals of multicultural education and cause more harm than good, even for a well-intentioned educator. An educator who teaches students from the same geographic region or even the same nation, should know that these students do not necessarily share the same culture or language. Latin America and Asia
are two such nations that have many different dialects, languages, religious beliefs and customs.

Another misconception is that children’s books about other cultures are usually genuine. A teacher using a book about another culture should look through it carefully and make sure that the story line is not racist, the illustrations do not project tokenism or stereotypes, and the wording cannot be construed as loaded or biased. Educators should also consider the story’s effect on a student’s self-image (Aldridge et al., 2000).

Educators can sometimes incorrectly assume that multicultural education only focuses on racial and ethnic issues. As described earlier, multicultural education can encompass diversity in gender, socioeconomics, lifestyles, religions, and physical and mental abilities. People may even identify with more than one cultural group (Aldridge et al., 2000).

Some educators believe that when multicultural education is put into practice, unity is lost. Though multicultural education does celebrate cultural differences, it does not promote divisiveness. It acknowledges, not denies, the multitude of perspectives that have always been present in the United States, and helps society become more aware of, tolerant, and
inclusive of these cultural differences (Aldridge et al., 2000; Gay, 1994).

Educators can sometimes make the mistake of taking a tour approach to teaching multicultural education in which the class “visits” a culture during a certain time of year and for a short period of time (Aldridge et al., 2000; Banks, 2003). This also occurs when educators treat multicultural education as a separate subject, instead of using an interdisciplinary teaching approach (Aldridge et al., 2000).

The integration of multicultural education into the curriculum is not just for diverse, urban classrooms, as some educators can mistakenly believe, but also for classrooms with very little cultural diversity (Aldridge et al., 2000; Banks, 2003; Davidman & Davidman, 2001; Gay, 1994). This does not mean that European-American perspectives are excluded, nor does it mean that historical accuracy will suffer with the inclusion of different historical perspectives. Every culture and historical experience, including those of the European-American, needs to be interwoven into a multiperspective curriculum. All students, regardless of their cultural or ethnic identity, can benefit from learning about other
cultural groups and perspectives (Aldridge et al., 2000; Banks, 2003).

When multicultural education is implemented properly, it can attend to the “wholeness” of a child, a fundamental principle of education relating to the development of a humane society. The holistic approach of multicultural education can develop in learners an understanding of the need for social investment and improvement (Gay, 2004).

Finding the Common Ground of Environmental and Multicultural Education

As stated in the introduction, environmental education focuses on human-nature connections, whereas multicultural education emphasizes human-human relationships (American Forestry Foundation, 2006a). Although multicultural and environmental education focus on different types of human interactions, they often use similar strategies, pedagogical constructs, and social concerns. These, commonly used in both educational fields to enhance the effectiveness of the lessons and help learners develop new behaviors and attitudes, include interdisciplinary fields, place-based education, global education, constructivism, multiple perspectives, systems thinking, cooperative learning, and environmental justice.
Interdisciplinary Fields

As stated in previous sections, in order for environmental and multicultural education to be taught successfully, they cannot be isolated from other branches of education. These fields are “inherently interdisciplinary” (Salter-Stith et al., 1994, p. 287) and can be used to enhance language arts and development, mathematics, social studies, history, and physical education lessons, among others.

Environmental and multicultural education can easily be combined due to their flexible and interdisciplinary characteristics. Their ability to be used across disciplines allows for a variety of ways to apply these pedagogical approaches (Banks, 2003; Davidman & Davidman, 2001).

Place-based Education

A placed-based approach is used in both environmental and multicultural education to introduce students to community and global issues. In placed-based pedagogy, students learn skills to actively tackle local problems and issues. Student empowerment is an important by-product of this approach. According to environmental educator David Sobel,
Placed-based education is the process of using the local community and environment as a starting point to teach concepts in ... [all] subjects across the curriculum. Emphasizing hands-on, real-world learning experiences, this approach to education increases academic achievement, helps students develop stronger ties to their community, enhances students’ appreciation for the natural world, and creates a heightened commitment to serving as active, contributing citizens. (2005, p. 7)

Banks (2003) stated that teachers should select multicultural concepts and generalizations that “help students make decisions and take personal, social, or civic actions that reduce prejudice and discrimination in their personal lives, in the school, and, when possible, in the other social settings in which they function” (p. 108).

Place-based education is used heavily in both environmental and multicultural pedagogy. Using places and issues that are familiar to students increases their interest in and passion for learning how to improve or maintain their local communities.
Global Education

Global education is a common thread found in environmental and multicultural education. America is one nation in a world full of nations, and is not isolated and protected from issues that affect the entire world. Both multicultural and environmental education recognize the importance of understanding local and international issues that can influence the policies and relationships within the United States and globally (American Forestry Foundation, 2006a; Bennett, 1995; Davidman & Davidman, 2001; The Watercourse and the Council for Environmental Education, 2003).

Many topics taught in environmental education, such as protecting the rainforest and oceans, are considered global issues because of their profound effect on the entire world (American Forestry Foundation, 2006a; National Science Foundation, 2006; Smithsonian Institute for Education and Museum Studies, 2007). A popular saying in environmental education is, "Think globally, act locally." Environmental problems such as pollution and global warming do not recognize borders. Environmental educators strive to help learners make connections between local and global issues (Korach, Marsh, Seitz, Myers, &
Multicultural education puts a strong emphasis on using a global perspective to teach about events, concepts, and issues (Banks, 2003; Bennett, 1995). The cultural and ethnic makeup of the United States is constantly changing with the consistent arrival of people from around the world. Using Banks’ Transformative Approach to teach students about ethnic perspectives from around the world assists learners in gaining “a global framework for viewing and studying human events and problems” (Banks, 2003, p. 23).

The global perspective of multicultural and environmental education help learners view social and environmental problems and issues as not just local, but worldwide. Students learn to see the “bigger picture” and discover that they are inextricably linked to the rest of the world.

Constructivism

Constructivism refers to the idea that learners construct their own knowledge as they learn. They construct meaning, as well as systems of meaning, based upon their own individual and social experiences (American Forestry Foundation, 2006a; Gay, 1994; Hein, 1991; State
Education and Environment Roundtable, 2005). Students relate what they learn to what they already know — "learning is contextual" (Hein, 1991, sect. 3, para. 7). Multicultural and environmental education use constructivist theory to plan and develop learner-centered instructional strategies. Gay (1994) stated, "learning is an active process in which students are engaged in creating, selecting, and organizing information and experiences into new structures of meaning" (p. 24). She also wrote that classrooms should build on the experiences that individuals bring to learning situations. Prior experiences and knowledge influences how each student reacts to current instructional encounters.

The State Education and Environmental Roundtable (SEER), an environmental education organization, incorporated a constructivist approach in the Environment as an Integrating Context (EIC) Model. Using the constructivist approach, teachers take into consideration the personal learning styles of students, as well as "multiple intelligences and cultural background to insure effective instructional design and practices in the context of the local community" (2005, para. 7). In the EIC model, students are encouraged to develop their own
knowledge of the subject matter under the guidance of teachers.

The constructivist approach is a student-centered pedagogical practice that takes into account the needs of diverse learners (SEER, 2005). Both environmental and multicultural education employ this practice by providing guided opportunities for students to learn by doing (American Forestry Foundation, 2006a; Gay, 1994).

**Multiple Perspectives**

An important concept in multicultural and environmental education is the existence of multiple perspectives. Multicultural education focuses on teaching from the perspective of cultural groups that have traditionally been excluded from the curricula, not just from the viewpoint of the dominant cultural group. This approach helps students understand the origins of many social issues that affect them and their communities. In a country as diverse as the United States, multicultural education helps students develop cultural awareness and inclusiveness so they can have a better understanding and tolerance of other perspectives (Aldridge et al., 2000; Banks, 2003; Bennett, 1999; Davidman & Davidman, 2001).

In environmental education, a multiple perspectives approach is used to give students an unbiased
understanding of environmental issues (American Forestry Foundation, 2006b; Ramsey et al., 2005a; Volk, 2005). This inclusive and unbiased viewpoint helps students understand how an environmental problem can turn into an environmental issue (Ramsey et al., 2005a; Volk, 2005). Students are encouraged to develop their own value systems regarding the environment by learning how to analyze the values of individuals used to develop varying perspectives of an issue. Multicultural and cultural points of view can also be included in environmental education, particularly when talking about natural resources that the world shares. Different cultures may all value the same resource, however how and why they use that resource may vary from culture to culture (American Forestry Foundation, 2006a).

In learning about multiple viewpoints, students discover how environmental issues stem from environmental problems (American Forestry Foundation, 2006a; Ramsey et al., 2005a; Volk, 2005). They also learn how to view the world and social issues from the perspectives of others, which improves their understanding of why issues arise and provides them with the skills to work with a diversity of people with multiple viewpoints (Aldridge et al., 2000; Banks, 2003; Bennett, 1999; Davidman & Davidman, 2001).
Systems Thinking

A systems thinking approach is emphasized in *Education for Sustainability* (1994), a government report developed to provide educators with strategies to incorporate education for sustainability into broader instructional curricula. Educating students about environmental sustainability provides students with an understanding of the interrelatedness and interdependence of humans and nature. Systems thinking provides students with skills that assist them with solving problems, resolving disagreements, building consensus, organizing information, communicating interpersonally, and thinking critically and creatively (*Education for Sustainability*, 1994). These skills help students take a holistic approach to learning (Gay, 1994). According to Sobel (2005) a systems thinking approach is necessary in order to integrate previously fragmented curriculum so that students understand the connections between seemingly unrelated disciplines.

According to Gay (1994), an effective multicultural curriculum incorporates problem-solving and critical thinking skills. Banks (2003) wrote that developing decision-making skills in students is an essential part of multicultural education. As students gain a better
understanding of the various cultural perspectives of their peers, they also tend to develop stronger intergroup and intragroup relationships (Davidman & Davidman, 2001).

A systems thinking approach helps students understand connections between various disciplines that are often taught as unrelated subjects (Sobel, 2005). Systems thinking also incorporates many skills that students can apply to help them critically analyze their and others’ perceptions of the world. These skills also help learners develop solutions to environmental and social problems.

Cooperative Learning

An important teaching tool used in multicultural and environmental pedagogy is cooperative learning. Cooperative learning is an effective student-centered strategy that allows students to work together in small, collaborative groups on a shared project, assisting and learning from each other (American Forestry Foundation, 2006a; Crandall, 1994; Davidman & Davidman, 2001; SEER, 2005; Tharp, Estrada, Dalton, & Yamauchi, 2000). Teacher involvement, though not in a dominant role, with the student groups is essential because it “helps to create a common context of experience in the school itself” (Tharp et al., 2000, p. 23). This role is particularly important
if the teacher and students do not share the same cultural background.

Both environmental and multicultural education agree that the use of cooperative learning, if done properly, is an excellent way to help students with language development skills, stimulate student involvement, increase the effectiveness of educators, get students excited about learning, socialize students, and cultivate respect among learners and teachers (American Forestry Foundation, 2006a; Crandall, 1994; Tharp et al., 2000).

**Environmental Justice**

Environmental justice is a social concern that can be studied in both environmental and multicultural education. According to the Environmental Protection Agency (EPA) (2007), environmental justice is the "fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies" (para. 2).

Many people have become concerned that low-income communities of color are disproportionately exposed to environmental hazards compared to wealthier, European-American communities (EPA, 2007; Pinderhughes, 1996). Low-income communities often have residents with less "political power to determine patterns of industrial
location and land use" (Pinderhughes, 1996, para. 9), and as a result they live in neighborhoods that are often a combination of residential buildings and industrial sites.

Multicultural environmental education recognizes that the health of the ecosystem “and the health of communities and individuals are inextricably linked” (Running-Grass, 2005, para. 9). Students learn best when they live in a clean and healthy environment, which can be ensured when communities are empowered through environmental literacy and direct involvement in “the development and implementation of environmental education curricula, teaching practices, and programs” (Running-Grass, 2005, para. 12).

Environmental justice is often used in multicultural environmental education because it focuses on students’ communities, social inequalities, and environmental health and literacy. Students can become inspired and are encouraged to become involved in making environmental and social changes in their communities (Running-Grass, 2005; Taylor, 1996).

In conclusion, despite the differences between environmental and multicultural education, they do share common ground in several areas. Bringing the two fields together is not difficult, and depending on the topic, can
easily occur (Taylor, 1996). Modifying existing curricula to implement the goals of both fields does require effort from educators to learn as much as they can from and about their students. Using the proper teaching strategies and styles that work best with diverse students is also imperative to successfully integrating a multicultural and environmental perspective into the lessons (Davidman & Davidman, 2001; Tharp et al., 2000).

Standards for Teaching to Diverse Audiences

The impact on students' understanding and appreciation for the natural world can only be amplified with the inclusion of their life histories and prior cultural knowledge into environmental lessons (Lewis & James, 1995; Taylor, 1996). Teaching strategies and styles that have been proven to enhance the learning of students of multiethnic and multilingual backgrounds should be included in culturally sensitive environmental curricula (Lewis & James, 1995). Tharp et al. (2000) developed Five Standards for Effective Pedagogy (see Table 3) to promote excellence, fairness, inclusion, and harmony in a multicultural, multilingual, and multiple intelligences classroom. These standards are not separate entities and often share overlapping ideas.
### Table 3. Five Standards for Effective Pedagogy

<table>
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<tr>
<th>Standards</th>
<th>Description</th>
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<tbody>
<tr>
<td>I. Teachers and Students Producing Together</td>
<td>Teacher guided cooperative learning groups should be used often so that students can learn from their peers as well as their instructor.</td>
</tr>
<tr>
<td>II. Developing Language and Literacy Across the Curriculum</td>
<td>Students develop language and literacy skills through teaching tools that allow them to practice their writing and conversation skills.</td>
</tr>
<tr>
<td>III. Making Meaning: Connecting School to Students' Lives</td>
<td>Lessons should relate students' prior knowledge with information presented in the classroom.</td>
</tr>
<tr>
<td>IV. Teaching Complex Thinking</td>
<td>Students should be provided with challenging work to help them develop their critical thinking skills and learn that there may be multiple approaches and solutions to a problem.</td>
</tr>
<tr>
<td>V. Teaching Through Conversation</td>
<td>Students are seen as active participants in contributing to their own knowledge. Teachers can use guided conversation to learn more about their students' prior knowledge and to develop a positive relationship with their students.</td>
</tr>
</tbody>
</table>

These standards were used in the modifications made to the three PLT (American Forestry Foundation, 2006a) lessons found in the Appendix, and are described in detail below.
Standard I

Lessons do not have to directly include information about other cultures to be considered culturally inclusive, but lessons can include opportunities for different cultural groups to work together to solve a common problem. Cooperative learning is a tool used by teachers to create an atmosphere where students can learn from their peers while working towards a common goal. Task-based and hands-on activities are commonly used in cooperative learning and help concepts and words come alive for students (Crandall, 1994). This student-centered approach offers a greater opportunity for teachers to provide more individual attention to students (American Forestry Foundation, 2006a; Crandall, 1994; Davidman & Davidman, 2001; Tharp et al., 2000). Tharp et al. referred to this process as Standard I: Teachers and Students Producing Together.

Teacher involvement in cooperative group learning is necessary to provide students with "the criteria and metascripts appropriate for them to use in their collaborative groups" in order for educators to help students "produce high levels of conceptual understanding" (Tharp et al., 2000, p. 23).
Tharp, et al. (2000) suggested that teachers incorporate the use of multiple simultaneous cooperative activities when possible, and if prepared. They warned teachers that this task is difficult to do without first getting students accustomed to the idea of working through guided independent activities. Teachers must also prepare themselves and their physical classroom to undertake this task because if done incorrectly the students will not reap the full potential benefits of this strategy.

Students often represent an array of cultural backgrounds, which allows them to learn about multiple perspectives in a way that teachers could not possibly do on their own. The way in which groups are formed is just as important as the activity itself. Native-English-speaking students should be paired as often as possible with students who are still learning English (Buck, 2000). Separating non-native-English-speaking students who speak the same language into different groups is not always the most beneficial way to help students learn English. These students help each other translate the information, which is especially helpful for a teacher who cannot speak the same language as the students (Tharp et al., 2000).
Standard I: Teachers and Students Producing Together, combines cooperative learning with the strategic and intentional involvement of teachers. The role of the educator in a cooperative group is not to dominate the conversation, but to join the conversation to help the students learn the appropriate skills to productive group work. This approach allows students to learn from their peers as well as their instructor (Tharp et al., 2000).

Standard II

The second standard proposed by Tharp et al. (2000), Developing Language and Literacy Across the Curriculum, helps students develop language "through meaningful use and through purposeful conversation between teacher and student" (p. 24). In her article entitled Content-Centered Language Learning, Crandall (1994) proposed techniques such as "dialogue journals, reading response journals, learning logs, process-based writing, and language experience stories" (para. 18) to help students link written and oral language, as well as provide a meaningful and authentic context for the words.

Graphic organizers are also excellent teaching tools that help learners contextualize and organize new information. PLT (American Forestry Foundation, 2006a) uses this tool often in its lessons, and even suggests
graphic organizer software students can use. Graphic organizers are also commonly used with students learning a second language because of their ability to break up complex ideas into a simplified form (Crandall, 1994; Haynes, 2004).

The development of strong written and oral communication skills helps students learn how to convey their ideas and perspectives to others. This is particularly important to students who are not native English speakers. Language and literacy can be developed through the use of various teaching tools that allow students to practice their writing and conversation skills (Crandall, 1994; Haynes, 2004; Tharp et al., 2000).

**Standard III**

According to Tharp et al. (2000), Standard III is Making Meaning: Connecting School to Students’ Lives. This standard is particularly important in multicultural environmental education. Students will not take home environmental concepts learned in school unless they relate these to their daily lives (Lewis & James, 1995; Sobel, 2005; Taylor, 1996). Student’s prior knowledge and cultural experiences must be acknowledged in order to create a meaningful learning experience. “...[Content] of instruction should be drawn from, or carefully related to,
the child’s own environment and experience” (Tharp et al., 2000, p. 27).

Using multicultural children’s literature is one way in which schools can connect with students’ lives. The books selected should “not only reflect the diversity of the students in the classroom and school, but the diverse reality of the world in which we live” (Higgins, 2002, para. 7). A good book, one beyond stereotypes and oversimplifications (Aldridge et al., 2000; Higgins, 2002), will help students feel empowered by the inclusion of their cultural experiences into the curriculum (Davidman & Davidman, 2000; deMarrais & LeCompte, 1999). Learners can gain a better understanding of the diverse experiences and perspectives of their peers, which can help students begin to dispel prejudices and create a classroom community (Higgins, 2002).

Tharp et al.’s (2000) third standard relates the students’ understanding of the world around them with the information presented to them at school. Cultural affirmation can occur with this strategy if conducted in an inclusive and unbiased manner. This strategy offers the opportunity for students to share their prior knowledge and experiences, as well as learn about the experiences and perspectives of others.
Standard IV

Teaching Complex Thinking is Tharp et al.’s fourth standard. This standard involves activities that allow children to develop problem-solving skills by working with teachers and their peers in collaborative groups to gain new knowledge, as discussed earlier. Creating a learning environment where students begin to question their own beliefs and those of others helps them “to expand discussion and promote alternative solutions or perspectives” (p. 31), instead of concluding that there is only one truth.

Students need adequate practice to fine-tune their problem-solving skills. Teachers can create such opportunities by challenging students to think outside of the realm of known or expected answers. Students can develop their critical thinking skills by working collaboratively or individually (American Forestry Foundation, 2006a; Gay, 1994; Tharp, et al., 2000).

Standard V

The final proposed standard for effective pedagogy is Teaching Through Conversation. This standard is incorporated into the other four standards because it involves the development of the relationship between the teachers and students. In this methodology, students are
seen as active participants in contributing to their own knowledge. In this way, teachers recognize that students may have something to contribute to the expected answers the adults may "know." Through conversation, "the culture and knowledge of the learner" can be revealed and allow "the teacher to be responsive, to contextualize teaching in the experience base of the learner, and...to individualize instruction" (Tharp et al., 2000, p. 33).

Teaching through conversation is a skill teachers must develop through practice. Instructional conversation involves seemingly natural conversation that guides students to think critically and draw upon their prior knowledge (Tharp, et al., 2000).

In summary, the standards developed by Tharp et al. (2000) can help educators create a learning environment that recognizes the diverse needs of a multicultural classroom. Using cooperative learning to develop a stronger rapport between students and teachers, helping students develop language skills via interactions with their peers and teacher, connecting the experiences and prior knowledge of students to school learning, incorporating opportunities for critical thinking, and drawing upon guided conversation to help students develop the appropriate social and language skills are all
strategies that work well with students of diverse backgrounds.

Summary

Environmental and multicultural education are relatively new fields, having both been introduced late in the 20th century. The definitions and goals of environmental and multicultural education are centered upon developing socially responsible and knowledgeable citizenry, ready and willing to call to action when worldwide or local environmental or social problems occur.

Environmental education strengthens human-nature relationships, while multicultural education focuses on human-human interactions. Despite these differences, environmental and multicultural education do share some strategies, pedagogical constructs, and social concerns that make it possible for educators to merge them with relative ease. Along with the methodologies that environmental and multicultural education already share, educators can also combine the goals of these two fields, as well as Tharp et al.'s Five Standards, to develop lessons that allow learners to view the environment through the context of culture.
An approach that acknowledges the idea that individual's perceptions of the world are "culturally sited" (Saul, 2000, para. 6) can help learners from a multitude of cultural backgrounds recognize that the environment, both natural and built, can be valued and protected in a variety of ways by both individuals and communities (Lewis & James, 1995; Taylor, 1996).
CHAPTER THREE

INTEGRATING A MULTICULTURAL PERSPECTIVE INTO ENVIRONMENTAL EDUCATION

Multicultural Environmental Education: A Transformative Approach

As discussed in Chapter Two, there are many commonalities between environmental and multicultural education. These common grounds tend to center on teaching strategies and pedagogical constructs, such as cooperative learning and placed-based education. However, the shared principles of environmental and multicultural education do not exclusively focus on teaching techniques, but also include environmental justice, an area of social concern that involves the education of communities about environmental health hazards affecting them.

As previously mentioned, environmental education focuses on human-nature connections, whereas multicultural education emphasizes human-human relationships. This difference between environmental and multicultural education means that these disciplines have diverse goals. Educators trying to incorporate both pedagogical approaches -- in order for environmental education to become multicultural environmental education -- must undergo a transformation in the way they are taught (Lewis
& James, 1995; Taylor, 1996). To achieve a level at or close to Banks' (2003) Transformative Approach (Level III) or Social Action Approach (Level IV), environmental educators must step back and truly analyze their lessons and themselves (see Table 2).

Merely including a Native American story in a lesson or discussing habitat loss only in terms of its effect on animals, does not constitute multicultural environmental education. These additive approaches do not foster an understanding of interrelatedness nor do they give an accurate portrayal of an ethnic group. Introducing learners to multiple Native American belief systems and values, allowing students to recognize how Native American beliefs are similar to or different from those of other indigenous groups and the students' own, and giving students the opportunity to understand the natural and human world through multiple indigenous perspectives can constitute as multicultural environmental education (Davidman & Davidman, 2001). Learners, particularly those in cities, can begin to relate to the effects of habitat loss if these effects are compared to issues of homelessness, which is of considerable concern in many urban environments (Taylor, 1996).
A Transformative Approach to multicultural environmental education calls for not only an in-depth discussion of issues, but also social action.

Theoretical Framework Model

Key components of environmental education are combined with key elements of critical multiculturalism to determine essential principles, which guide the multicultural education curricula. The Theoretical Framework: Major Principles of Common Ground diagram was developed for this project. This diagram (see Figure 1) shows the overlap and differences between the two fields. Below is a description of the theoretical framework.

Components of Environmental Education

According to the goals of environmental education, educators strive to develop a citizenry that is literate about environmental issues, sensitive to the need to care for one’s urban and natural surroundings, and has the skills and willingness to solve environmental problems (Hungerford, 2005) (see Table 1). Educators present environmental issues to learners using an unbiased approach so that learners can be well informed when making decisions about how to approach environmental problems. Environmental issues arise when there is controversy over
Figure 1. Theoretical Framework: Major Principles of Common Ground
how to approach an environmental problem (Ramsey et al., 2005b; Volk, 2005). Environmental educators strive to connect humans with nature so that people recognize that they are part of, not separate from, the built and natural environments (Ableman, 2005; Orr, 1994). Multicultural environmental education uses a culturally sensitive and inclusive approach to teaching about the environment so that students can begin to reevaluate their prior understanding of the world, and develop new perspectives of and knowledge about the natural and built environment. The area on the left side of the Theoretical Frameworks diagram lists the components of environmental education.

Elements of Multicultural Education

Multicultural education involves the following elements: multiple definitions due to different interpretations of multiculturalism (Duarte & Smith, 2000), six goals (see Table 4) used to create a better and more inclusive learning environment for all students (Davidman & Davidman), and Banks' (2003) four levels of varying commitment to integrating multiculturalism into curricula (see Table 2). The standards developed by Tharp et al. (2000) are also included in multicultural education, and provide educators with strategies to make
<table>
<thead>
<tr>
<th>Goals</th>
<th>Description</th>
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<tbody>
<tr>
<td>1. Promote education and social equity.</td>
<td>Though there is equality in the educational system, there is not equity.</td>
</tr>
<tr>
<td>2. Confront and reject all forms of discrimination.</td>
<td>Discriminatory and culturally insensitive curricula should be challenged.</td>
</tr>
<tr>
<td>3. Recognize and affirm cultural pluralism.</td>
<td>Different cultural groups should be acknowledged in curricula.</td>
</tr>
<tr>
<td>4. Empower students, parents, and teachers.</td>
<td>Curricula should help students, parents, and teachers to become aware of and overcome the social, economic, and political forces that oppress them.</td>
</tr>
<tr>
<td>5. Use critical pedagogy as a means to promote social change.</td>
<td>This approach encourages educators, administrators, and students to critically analyze and challenge internal biases that can become incorporated in curricula.</td>
</tr>
<tr>
<td>6. Develop an awareness of other cultural perspectives in educators and students</td>
<td>Helps students and educators develop crosscultural awareness to promote intergroup and intragroup accord.</td>
</tr>
</tbody>
</table>

the classroom a more inclusive learning environment. Educators unfamiliar with the goals of this field can have misconceptions about the meaning of and purpose behind multicultural education. Critical multiculturalism, the approach used in this project, works to deconstruct the complex system of oppressive power and discrimination that
can be found in schools. Teachers using this approach educate for equality, equity, cultural inclusion, and social justice (Duarte & Smith, 2000; Nieto, 2000). All of these elements are represented in the right side of the Theoretical Framework diagram in Figure 1.

**Principles of Common Ground**

As previously discussed, there are several principles of common ground that environmental and multicultural education share. These principles described below can be found in the center section of the Theoretical Framework (see Figure 1).

**Interdisciplinary.** According to Salter-Stith et al., (1994) Environmental and multicultural education are “inherently interdisciplinary” (p. 287) and can be used to in conjunction with language arts and development, mathematics, social studies, history, and physical education lessons, among others.

**Place-based Education.** According to Sobel (2005) and Banks (2003), students become empowered when they learn about their own communities and are involved in solving local problems.

**Global Education.** Learning about global issues helps students recognize worldwide connections and consequences to their own behaviors and attitudes (American Forestry

**Constructivism.** This learner-centered pedagogical strategy utilizes the student’s prior knowledge, peer interaction, and hands-on learning to help students develop new skills and learn new information. (American Forestry Foundation, 2006a; Gay, 1994; Hein, 1999; State Education and Environment Roundtable, 2005).

**Multiple Perspectives.** Students who learn how to view environmental and social problems from the perspectives of others will have an improved understanding of why issues arise, and will develop skills to work productively with a diversity of people (Aldridge et al., 2000; American Forestry Foundation, 2006a; Banks, 2003; Bennett, 1999; Davidman & Davidman, 2001; Ramsey et al., 2005a; Volk, 2005)

**Systems Thinking.** Students develop skills, such as critical and creative thinking, that help them take a holistic approach to learning (Education for Sustainability, 1994; Gay, 1994).

**Cooperative Learning.** This is an effective learner-centered strategy that allows students to work together in small, collaborative groups on a shared
project, assisting and learning from each other (American Forestry Foundation, 2006a; Crandall, 1994; Davidman & Davidman, 2001; SEER, 2005; Tharp et al., 2000).

Environmental Justice. Multicultural environmental education often focuses on this social concern, which is centered on students' communities, social inequalities, and environmental health and literacy (Taylor, 1996).

Transformative Approach. The curriculum is completely transformed to reflect the various perspectives of different cultural and ethnic groups within the United States (Banks, 2003).

Social Action Approach. Students take the perspectives learned from Banks' (2003) Transformative Approach (Level III) and apply it to make significant individual and civic changes in their communities. This is Level IV of Banks' four levels.

Environmental and multicultural education have distinct key components and elements that define these fields. Despite their differences, they also share several common ground principles, as shown in Figure 1, which can be used to provide a curriculum design matrix for ensuring that environmental lessons include a multicultural perspective.
CHAPTER FOUR
DESIGN OF PROJECT

Transforming Environmental Lessons

*Project Learning Tree* (American Forestry Foundation, 2006a) is an environmental education guide used for pre-kindergarten to eighth grade students. Over the years, the creators of PLT have made a deliberate effort to include a multicultural perspective into a number of their lessons by introducing students to the relationships that indigenous cultures have to the natural world, by suggesting multicultural children’s literature, by including food items from around the world, and by acknowledging diverse cultural perspectives.

These are positive steps towards inclusiveness and equity in environmental education; however, these lessons fall into what Banks (2003) calls the “Contributions” and “Additive” (p. 18) approaches to reforming curriculum. In other words, cultural and ethnic content is merely added to the mainstream curricula without changing the fundamental structure of the curricula to include various ethnic and cultural perspectives in a way that allows learners to “extend [their] understandings of the nature, development, and complexity of the United States and the
world” (Banks, 2003, p. 19). This project provides examples of how PLT (American Forestry Foundation, 2006a) lessons can be adapted to meet the several principles of common ground, including Banks’ Transformative and Social Action Approaches, as well as Tharp et al.’s Five Standards for Effective Pedagogy, and the goals of environmental education and multicultural education (see Figure 1).

Adapting Project Learning Tree Lessons

Three lessons were selected from PLT (American Forestry Foundation, 2006a) and modified using Banks’ (2003) Transformative (Level III) Approach and Social Action (Level IV) Approach as a guide to meeting the goals of multicultural education (see Table 2). These PLT lessons were also adapted to include most, if not all of the five standards (see Table 3) developed by Tharp et al. (2000), which were introduced in the Literature Review. These lesson modifications are meant to provide a model for teachers interested in bringing multicultural and environmental education principles together. Each lesson was developed to be used in conjunction with the original PLT lesson, which supplies background information and additional parts to the lesson.
A curriculum design matrix (see Table 5) was used to guide the modifications for three PLT (American Forestry Foundation, 2006a) lessons selected (see Appendix). This design matrix includes all of the common ground principles from Figure 1, Tharp et al.'s standards, and the goals of environmental education and multicultural education. Each lesson was chosen based on its potential to incorporate as many of the design modifications as possible. The relationship of the three lesson designs and the extent to which each of the three lessons meets the design matrix is displayed in Table 5.

Since the five standards proposed by Tharp et al. (2000) (see Table 3) are considered some of the best approaches for working in multicultural settings, these standards are specifically identified when used in each lesson.

Standard V, Teaching Through Conversation (Tharp et al., 2000), was the most difficult to incorporate as it relies upon teachers' ability to communicate with their students. Creating a positive relationship between learners and their teachers cannot be written into a lesson plan, and works best if initiated by the teacher. Small group activities are the most appropriate time for an educator to utilize guided conversation, and provides
Table 5. Curriculum Design Matrix of Project Learning Tree

Lesson Modifications

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<tr>
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<th>Habitat Pen Pals</th>
<th>Tales of the Sun</th>
<th>Pollution Search</th>
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<tbody>
<tr>
<td>Interdisciplinary</td>
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<td>Place-based Education</td>
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<td>Global Education</td>
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<td>Constructivism</td>
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<td>Multiple Perspectives</td>
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<td>Systems Thinking</td>
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<td>Cooperative Learning</td>
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<td>Environmental Justice</td>
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<td>Transformative Approach</td>
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<td>Social Action Approach</td>
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<td>Tharp et al.’s Five Standards</td>
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<td>Meets Goals of Environmental Education</td>
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<td>Meets Goals of Multicultural Education</td>
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educators the opportunity to learn more about each individual student, the student’s knowledge and understanding of the subject matter, and the student’s language proficiency. Standard V was included in a step when a small group activity offered teachers the ability to interact with their students on a more intimate level.
Modifications to Habitat Pen Pals Lesson

The modifications made to the Habitat Pen Pals lesson (see Appendix), include activities designed to precede the original PLT lesson. All of the Tharp et al.’s (2000) standards were met as well as most of the key points in the design matrix. In addition to the objectives for the original lesson developed by PLT (American Forestry Foundation, 2006a), two new objectives were included. The new objectives state that students should recognize that they too live in a habitat, and that their habitat often includes the built and natural environments. The modified lesson also incorporates an opportunity for students to reflect on how changes to their environment affect them, so that they can begin to sympathize with how environmental changes may also affect other organisms.

The lesson modifications also include multicultural literature chosen to provide students with alternative perspectives on how different people live in the United States. Depending on the student, they may even be able to identify with the characters. DeShawn Days is about a young African American boy growing up in a housing project. His poetry uses both positive and realistic descriptions of his experiences and “habitat.” Calling of the Doves/El Canto de las Palomas is a bilingual
collection of poems based on the early childhood of Mexican American author Juan Felipe Herrera, who traveled with his farmworker parents around California. Specific poems are suggested for use; however, several of the poems from the books can be used in this lesson.

**Modifications to Tales of the Sun**

The lesson, Tales of the Sun, is a complete modification of the original PLT (American Forestry Foundation, 2006a) lesson (see Appendix). Most of the key points from the curriculum design matrix (see Table 5) were incorporated. The original objective was expanded to include an opportunity for students to learn how their peers explain or understand the natural occurrences around them.

Along with the Muskogee (Creek) Indian story used in the original PLT (American Forestry Foundation, 2006a) lesson, a local Native American story was also included. In this particular lesson modification, a story was chosen from the Mewan, or Miwok, Indians who lived in and around the Bay Area in California. Educators conducting this lesson are encouraged to search for stories explaining the creation of the sun, or other similar natural occurrences, by tribes in their area. A good source for stories of

**Modifications to Pollution Search**

The final modified lesson from PLT (American Forestry Foundation, 2006a) was Pollution Search. This lesson incorporated every design modification in the matrix (see Table 5), including global education and environmental justice, which the other two lessons did not. This lesson was originally developed for students in grades second to sixth, however with the complexity of the subject matter, the suggested grades for the modified lesson are fifth to eighth grades, although some parts can be used with younger grades. Part B - Cat with an Attitude, from the original PLT lesson is mentioned at the end of the modified lesson. This section is excellent for kindergarten to second grades.

The significant modifications made in this lesson are the inclusion of global pollution concerns, as well as a section about environmental justice. These areas are reflected in the changes made to the objectives, which specifically state that students will learn that pollution disproportionately affects low-income communities, and poverty-stricken countries.
In the environmental justice section, educators are encouraged to find demographic information about two local communities of different socioeconomic levels. In the modified lesson, two local San Francisco communities were chosen. These are the Bayview Hunters Point, a residential and commercial poverty-stricken neighborhood and home to an infamous superfund site, and the Noe Valley District, an upper-middle class neighborhood with million-dollar homes. Students compare the types of pollution affecting these communities and are asked to think critically about why some neighborhoods are affected by pollutants more than others. This section also encourages students to become agents of change in their communities, as suggested by Banks' (2003) Social Action Approach (Level IV).

The three lessons were modified to include a greater emphasis on student's prior knowledge, as well as on local environmental issues and cultural groups. The design matrix (see Table 5) can assist educators in modifying additional PLT (American Forestry Foundation, 2006a) lessons, and lessons from other environmental education guidebooks, to include a multicultural perspective.
CHAPTER FIVE
IMPLICATIONS FOR EDUCATORS

As the population of the United States becomes increasingly culturally and ethnically diverse, the need to include a multitude of perspectives, experiences, and attitudes into the curriculum becomes more urgent. This is not an easy undertaking, and requires administrators, teachers, and communities to reflect on and acknowledge their own biases and misconceptions about other cultural groups, in order to genuinely transform the educational system.

This promises to be a long and arduous process; however educators can begin by use teaching strategies that have been proven to work with culturally and linguistically diverse audiences, such as Tharp et al.'s standards (see Table 3). Educators can also modify existing lessons to include multicultural literature and perspectives, while still meeting mandated standards. The use of multicultural literature is an excellent tool to bring alternative viewpoints and cultural experiences into the classroom; however educators are cautioned to not rely exclusively on the story itself without delving further into an open and thoughtful discussion about it.
One of the goals to adding a multicultural perspective to environmental lessons is to utilize the Transformative and Social Action approaches (Banks, 2003) to curriculum reform. These can be challenging to incorporate into existing curricula; however teachers must be careful not to assume that the Contribution and Additive approaches are adequate, although they are steps in the appropriate direction. The design matrix (see Table 5) is designed to help educators incorporate the proper modifications into pre-existing environmental lessons.

The modifications made to select lessons from Project Learning Tree: PreK Environmental Education Activity Guide (American Forestry Foundation, 2006a) use techniques and strategies designed to maximize teaching and learning for all students, especially students of diverse cultural backgrounds. These techniques and strategies could also be used with other PLT lessons since many of the lessons are not specific to a particular area of the country or cultural group. This feature of PLT provides teachers with the flexibility to modify the lessons to incorporate local and relevant information that may appeal to their students.

The lesson modifications are a prototype for how teachers can expand environmental education activities to
include a multicultural perspective. They are intended to be used as a guided practice for teachers. Educators are encouraged to incorporate similar strategies with other environmental education curricula. These lesson enhancements can be used in classrooms with very few to an abundance of culturally diverse students.

The modifications made to the PLT (American Forestry Foundation, 2006a) activities infuse the principles of environmental and multicultural education, as shown in Figure 1. These principles acknowledge that learners’ interpretations of and relationships with the natural world are formulated through a cultural filter. Educators attempting to cultivate an understanding of environmental concepts and appreciation for the natural world can incorporate a cultural framework into their lessons as a means to connect with a diverse audience. Implementing these principles of environmental and multicultural education helps to ensure that learners’ prior cultural experiences and knowledge will not impede their ability to connect to nature, but instead serve as pathway to a greater understanding of the natural world.
APPENDIX

LESSON MODIFICATIONS
Habitat Pen Pals

Learning Objectives

- Students will learn that they live in a habitat.
- They will learn that their habitat is both built and natural.
- See PLT for original objectives

Grade

3-6

Duration of Lesson

6-7 hours

Activity Background

See PLT Activity 7, p. 37

Summary of Activity

Students will fill out a KWL chart about habitats. They will go through magazines and cut out different kinds of habitats. They will draw or write about their own habitat. Students will read poems about two children who live in very different habitats, and write their own poems about their habitat.

Materials

1. Magazines (Ask students to bring these in, or ask your local librarian if they have any extra old magazines they could spare)
2. Scissors for every student
3. Handouts: KWL Chart (duplicate for each student)
4. Books: DeShawn Days, Calling the Doves (duplicate poems used for each student)
5. Student journals

Doing the Activity

Part A. What Students Know

1. Brief students. “Today we are going to learn about habitats. You will each fill out a KWL chart so that I know what you already know and what you want to know about habitats. We will then do an activity looking for different habitats in magazines. We will then write some poetry about our own habitats, and look at the similarities and differences between animals that live in different habitats. Finally, we’ll end with writing letters to our habitat pen pals.”

2. Have students fill out the first two sections of the KWL graphic organizer about habitats on their own. When they are done with the
chart, have them get in groups and share with each other what they think a habitat is. [Standards I, II, III]

3. Have students share what they came up with in their groups. Give them background on habitats based on what they already know. [Standard III]

Part B. What Belongs in a Habitat

1. Have them go through a variety of different magazines, such as Nature, National Geographic, Smithsonian, even cooking magazines, and have them cut out at least three different kinds of habitats they find. Have all of the students glue their pictures on a large piece of butcher paper at the front of class. Under their pictures they can write some of the plants and animals that might live there. [Standards II, III]

2. If any of the students put up a human-made habitat, point it out. Why is this a habitat? If they didn’t, ask them, do you live in habitat? What is your habitat? Where do you live? They may answer their room, neighborhood, and/or city. Who lives in your habitat with you? Do you visit other habitats sometimes? List on the board the different habitats students tell you they visit (i.e. grandparent’s homes, religious center, school). Are some of these places part of your larger habitat, i.e. neighborhood? [Standard III]

Part C. Neighborhoods as Habitats

1. Have students on their own make a list of or draw the non-living and living things that make up their habitat at home and their neighborhood. Encourage them to include the built and natural parts of their habitat. Have them include animals they might see sometimes, including their own pets. [Standards II, III]

2. Journaling. If students haven’t already created a journal, have them make one and decorate it in a separate pre-exercise. Have them answer the following questions, or variations of, in their journals: What different things do you have to do in each habitat to “survive”? Do you have to change your behavior, clothes, and/or attitude when you go into different habitats? How do you adapt? [Standards II, III]

3. Have the students meet up in groups and share their habitats. Have them write out how they are similar or different on a piece of butcher paper. Post up for the class. [Standards I, II, III]
Part D. Changing Habitats

1. Give students time to answer the following questions to discuss in their groups: How would you feel if you had to move to a farm? How about to another city? Which one do you think it might be harder for you to adapt to and why? How might these places differ from one another? Standards I, III, V

2. Then have the students discuss the following questions: How might it be difficult for animals that are used to a particular natural habitat, to suddenly have buildings and pavement built on their habitat? Do you think it would be difficult for them to adapt to a new habitat? Have you seen any wild animals that are able to live in the city with humans? How do they survive? Do you think any animal could do this? Why or why not? Have them share their thoughts with the class. Standards I, III, IV, V

Part E. Writing Habitat Poetry

1. Have the students silently read the selected poems from DeShawn Days and Calling the Doves. “In My House” and “What is Life Like in the ‘Hood” are two suggested poems that describe DeShawn’s habitat. In Calling the Doves, the poems on p. 4, 6, 8 and 23 are examples of poems that describe Juan’s habitat. Then read the selected poems aloud for them a couple of times, or have student volunteers read them aloud. How do the authors describe their habitats? What or who is special to them in their habitats? Is your habitat similar to those described in the poem? How do you think the author feels about their habitat; are they proud, sad, angry, happy? How do you feel about your habitat? Standard II

2. Have students each say one word that describes their habitat and write the words on the board. They should try not to repeat a word. Allow them to pass if they choose to. Have them create their own poem about their habitat. Allow students to share if they choose to. Standards II, III

3. Continue from the beginning of the original PLT lesson.

Part F. Assessment for Modified Lesson

1. Have students complete the last part of their KWL Chart. Have students write in their journals how their understanding of a habitat has changed. They can finish the following statement in their
journals to get them started, “Before I thought..., but now I know....” Have students share their thoughts with the class. [Standard II]


<table>
<thead>
<tr>
<th>KWL Chart</th>
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<tbody>
<tr>
<td><strong>What I Learned</strong></td>
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Tales of the Sun

Learning Objective
Students will develop an understanding of how groups of people, or cultures, including their own classmates', use stories to explain the natural occurrences around them.

Grade Level
3-6

Duration of Lesson
4-6 hours

Activity Background
See PLT Activity 18, p. 86

Summary of Activity
Students will do a journal activity where they describe where their knowledge about the sun came from. Using journal entries, students will describe how their understanding about the sun is similar or different to their peers. Student will read two Native American traditional stories about the sun and create a class Venn diagram to compare similarities and differences.

Materials
1. Map of world or USA
2. Butcher Paper
3. Pictures of animals
4. Markers
5. Tape
6. Student journals
7. 8x11 pieces of paper cut in half or in quarters (long ways). Provide enough for 4-6 strips of paper per student.
8. Handouts: copy of Muskogee (Creek) and local tribe story, Worksheet A (duplicate for each student)
9. CD or tape of Native American music (optional)

Getting Ready
1. Decide how students will be grouped. 4-6 students per group works best. Try to match students of varying skills and strengths together to offer optimal learning.
2. Find pictures of the animals (characters) used in the activity to show the students. Many of the animals may not be familiar to them. For the Muskogee (Creek) Indian story, find pictures of a bear, fox, possum,
spider, and buzzard. For the local Mewan Indian story, find pictures of a coyote, sandhill crane, and turtle. (Pictures will vary according to local tribe story chosen.)

3. Have a map available to show geographically where the different Native American groups live.

4. Brush up on the history and lifestyle of each tribe for background information.

Pre-exercise

1. Have students create a journal. Have them write in their journal answers to the following questions: What do you know about the sun? Where did the sun come from? Why is the sun important to people? Why is the sun important to plants and animals? How did you learn these things (parents, family, stories, observations, other ways)? Expand on or alter the questions as you see fit. Inform students that you will read their journal so that you can learn more about them. Collect the journals before the lesson to learn what the students understand about the sun and where they acquired their knowledge. Before the activity, post up quotes around the classroom from the students’ journals (not including names), to share what the class understands about the sun. [Standards II, III]

Doing the Activity

Part A. Understanding Peers

1. Allow students time to silently walk around the classroom and read each other’s quotes. On a sunny day this can also be done outside in the playground or nearby park so that students can feel the sun as they read the excerpts. They might also have more space to spread out and write in their journals. Quotes can be taped to walls, playground equipment, or trees. After they have read and reflected on the ideas posted around the classroom (or outside), have students answer the following questions in their journals: What new things did you learn about your classmates? Is there any quote that really stood out to you? If so, why? Are some of these ideas about the sun similar to what you have learned? How are they different? Why might they be different? [Standards II, III, IV]

2. In groups, students will discuss their answers and make a chart on butcher paper to display what they have discovered about each other and themselves during this exercise. Groups can share their discoveries with the class. Other groups can add new information, but should not repeat what has already been said. When a group says something that other groups also found, they can touch their
nose or raise their hand, or any other physical (but silent) showing of agreement. Post the charts around the class. [Standards I, II, III]

Part B. How Stories are Created

1. Encourage students to share the different ways in which they have learned information about the sun, or any thing else in nature (i.e. parents, grandparents, friends, teachers, observations, songs, stories). You may consider sharing one of your own learning experiences with the class. Have them brainstorm about things that occur in nature that they have wondered about and write their ideas on the board. You can start them off by writing on the board “I wonder why ...” and underneath it: the sky is blue, fish live in the water, zebras have stripes, or anything that will help them come up with creative questions. [Standards I, III]

2. Ask students if any of them would like to share stories they have heard about how or why something in nature occurs, perhaps to explain one of the questions put up on the board. [Standard III]

3. Introduce traditional stories. See PLT Background. What is a traditional story? Can any of the stories or information students shared be considered traditional stories? Why are they considered traditional stories, or not? [Standard III]

Part C. Traditional Stories

1. Brief students on the activity: “Today we are going to read two traditional stories about the sun from different Native American groups, the Muskogee (Creek) Indians from Oklahoma and a local native tribe, the Southern Mewan (or Mewok) Indians of California. [Insert a Native American tribe from your local area here]. We will learn about the habitat they lived in and some of the animals they shared the land with. Listen carefully to each story because we will compare and contrast the stories.” Briefly explain what a habitat is or do a habitat lesson, such as Lesson 7, before this activity. Modify briefing as needed.

2. Use the map to point out the historic and present day territories of the two indigenous groups. Describe the geography and habitats they lived in. Draw upon students’ knowledge of the local area. Have students fill out Worksheet A individually. Students can then discuss their answers in groups. [Standards I, II, III, V]
3. Play Native American music (optional), preferably by either the Muskogee or local native group, softly in the background. Pass around or show students the pictures of the animals from the story. If possible, send around or post up pictures/accurate drawings of the two indigenous groups, past and present. Offer students unbiased, reliable resources to learn more about Native Americans, present day and past, in your school library, or the library corner in your classroom. [Standard III]

4. Pass out the stories for the students to follow along as you read, or have them read them aloud. You can also have them do this in groups. Read the traditional stories in any order. [Standard II]

5. Have students work together to create a class Venn diagram. Students can draw or write out a similarity between the traditional stories. Each similarity should be on a separate piece of paper. When comparing differences between the stories, they will need to use two pieces of paper; one paper will be for the Muskogee (Creek) Indian tribe, and the other for the local tribe. In other words, if the students describe the animals used in the Muskogee story, they must also describe the animals in the local tribe story, each on separate pieces of paper. Each student per group should complete at least one piece of paper. Guiding questions can include: How were their stories similar? How were they different? Who was the “hero” of the story? What did the stories explain about the sun and/or the characters? What qualities of character helped the animals resolve their problem (i.e. cleverness, courage, persistence, strength)?

6. Draw a large Venn diagram on the board, labeling each circle with the tribe names. Ask each group, one at a time, to tape a similarity or the differences they found in the appropriate part of the diagram and briefly explain it. If other groups have the same or similar points, have them quickly come up to the board and add their papers as well. Move on to the next group and repeat the process until all the students’ papers are up. [Standards I, II, V]

Part D. Debrief/Assessment

1. Have students answer the following questions in their journals. Why do you think the Muskogee (Creek) Indians and Mewan Indians chose to use the animal characters they did? What did the Muskogee story explain about how the different animals came to have the characteristics they have? What characteristics of the sun did the Mewan story explain? What do these stories tell us about
the Muskogee (Creek) and Mewan Indians? Why was the sun important to them? Could we live without the sun? In what ways do we depend on the sun? What would happen to the animals if green plants were gone? Follow up with a class discussion.

Standards II, IV

Extensions

1. In groups, students can read other traditional stories about the sun. See http://www.windows.ucar.edu/tour/
   link=/mythology/planets/sun.html for examples. Have each group choose one story to act out in front of the class. Every student should participate, either as a character, reader, voice, or prop. [Standard I]

2. In groups have students use maps (topographic for 6th graders) to help them find landscape differences between the historical geographic locations of each tribal group such as mountains, oceans, rivers, flat plains, etc. How might this affect the kinds of animals they used in their stories? How do you think this affected their way of life? Standards I, IV, V

3. Students can work in groups or write in their journal their own story describing a natural occurrence. Worksheet A can be used as a prompt. If you have students do this activity in groups, they can each contribute three sentences to the story. They can then read their story out loud to the class, or act it out. Standards I, III, V
Worksheet A:  
Sun Stories

1. Many traditional stories use animals as the main characters. Why might the animal characters of a story from a Native American tribe that lived in the middle of the United States be different from a tribe that lived near the ocean?

2. If you were to write a story about something that occurs in nature, what animals that live in your habitat (neighborhood/city) might you use as your main characters?

3. What natural occurrence would you write a story about?
A Tale of the Southern Mewuk

How Coyote Stole the Sun for the People of the Valley

Sandhill Crane was chief of the People of the Valley, and Coyote lived with them. Their land was cold, dark, and foggy and Coyote often traveled about trying to find a better place for his people. After a while he found a small village in the foothills, where it began to be light. He saw the People of the Foothills and wanted to learn more about them. Because he was able to do magic, Coyote turned himself into one of the village people. He saw that the People of the Foothills had fire, which made light and became the Sun.

As soon as Coyote returned home, he told Chief Sandhill Crane what he had discovered. Coyote tried to convince the Chief to buy the Sun, but the Chief did not want to because he did not know how to use it. Coyote was not satisfied with this and he visited the People of the Foothills many times. The more he saw of the Sun the more he wanted it, and the more he begged the Chief. Finally Chief Sandhill Crane allowed Coyote to ask how much it would cost to buy the Sun.

Coyote returned to the village and asked to buy the Sun, but the people did not want to sell it. He decided that the only way to get the Sun would be to steal it. Stealing it would be very difficult because Turtle, the keeper of the Sun, was always on the lookout.

Coyote waited until all the men, including Turtle, went out to hunt. Using magic, he turned himself into a broken tree limb and waited on the trail for Turtle. Soon Turtle came along, saw the crooked limb on the trail, and carried it home on his shoulder for firewood. Turtle threw it right into the middle of the fire, but Coyote did not burn. He kept perfectly still and waited until Turtle fell asleep. Then Coyote changed back into his own form and grabbed the Sun. He ran away quickly with it down through the fog to the People of the Valley.

But when the people in his village saw it they were scared and turned away from it because the brightness hurt their eyes. They were afraid that the bright light would never allow them to sleep. Coyote took it to Chief Sandhill Crane, but he did not want it either. The Chief did not know what to do with it and asked Coyote to make it go away, for he knew that Coyote had seen how the People of the Foothills send the Sun away at night so they could sleep.

When Chief Sandhill Crane refused to have anything to do with the Sun, Coyote was disappointed, for he had worked very hard to get it. Still he said, "Well, I'll make it go." So he carried the Sun west to the place where the sky meets the earth, and found the west hole in the sky. Coyote told Sun to go
through the hole and down under the earth and climb up through the east hole in the sky. This way Sun could provide light for the People of the Foothills first, then come down and give light to the People of the Valley. Sun would then return through the west hole and travel under the earth so the people could sleep. Sun would have to travel like this all of the time.

Sun did as he was told without complaint. Then Chief Sandhill Crane and all the People of the Valley were happy because they were able to see, hunt, and stay warm during the day. The People of the Foothills were satisfied too, for they had the light in the daytime so they could also see. At night, Sun returned to the west hole in the sky so that all the people could sleep.

Pollution Search

Learning Objectives

■ Students will learn about various sources and forms of pollution and the effects pollutants can have on humans, animals, and plants.

■ Students will learn that pollution disproportionately affects low-income communities, and poverty-stricken countries.

Grades

5-8

Duration

6-7 hours

Activity Background

According to the Environmental Protection Agency (EPA), Environmental Justice (EJ) is defined as the “fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies.” There has been a growing concern that minority populations and low-income communities are exposed to more environmental pollutants and as a result have more health problems, than non-minority or wealthier communities. According to the EPA, a low-income community is a community where a large percentage of the population is at or below the poverty level. You can find more information about Environmental Justice at, http://www.epa.gov/region5/superfund/sfd_ej/htm/ej_guidelines.htm#link3. See PLT Activity 36, pp. 153-155 for more background on pollution.

Materials

1. Student journals
2. Pictures of pollution affected places (see Getting Ready)
3. Camera, notepad, pencil/pen (see Getting Ready)
4. Sound or visual recording device (optional)
5. Butcher Paper
6. Markers
7. Handout: Data Sheets for Neighborhoods #1 and #2 (duplicate one per student)

Getting Ready

For Part A, print out (with permission) or bookmark images from the internet, or find pictures in magazines or books, that show places that are greatly affected by air and water pollution. Try to include images that have people and/or wildlife in them. Examples can include poverty-stricken cities or towns along the border between Mexico and the United States, or areas in Central or South America, India, Africa, or Asia.
For Part D, you will need to visit two local or nearby communities of different socioeconomic status, such as the Noe Valley and Bayview Hunters Point districts in San Francisco. Take an inventory or pollutants and causes of pollution in each neighborhood. Take photos, notes and, if possible, make visual and/or sound recordings to share with the students. Compile statistics on the neighborhoods and make a Data Sheet to pass out to the students. You can find population, economic, housing, and geographic statistics for different communities based on their ZIP codes at http://factfinder.census.gov/home/saff/main.html?_lang=en.

Part A. Pollution Problems

1. Brief students on the activity. "Today we are going to learn about the importance of a clean and healthy community. We will learn about environmental problems that can contaminate, or make our neighborhoods unsafe or unhealthy. We will also explore our own neighborhoods to look for contaminants in our air, water, and land. Finally, we will also learn about how some communities end up with more environmental and health problems than others."

2. Ask students to describe what life would be like without clean air. What about life without clean water? Have you ever been to or do you know of a place where the people did not have one or both of these things? What did this place look like? What did it smell or sound like? (Or, what do you think it might smell or sound like?) Why? [Standards II, III]

3. Place students in groups. Pass out to each group pictures of cities or towns from other countries that do not have access to clean air or water might look like. If you have access to computers, bookmark the images to show them. (Have students create journals prior to this lesson if they have not already done so.) Ask the students describe in their journals what these communities look like, how they might feel and smell like. How is your habitat (or community) the same or different from these communities? Have the students discuss in their groups how they think the people who live in these areas might feel towards their habitat? How would you feel if you did not have clean air or water? Why do you think some places have contaminated air or water? Have groups share their ideas with the class. [Standards I, II, III, IV, V]

Part B. Where We Find Pollution

1. Have students get back into their groups and make a list of as many sources of contamination, or actual contaminants that affect the air
we breathe and water we drink. The groups will compete with one another to come up with the longest list. One group will name one contaminant then give the next group the opportunity to share one. Write each one on the board. Once one group names one contaminant or cause of contamination, the other groups cannot say it. You can add a check next to contaminants that other groups also listed, but it will not count towards their final points. Tally up their points. Whichever group has the most points will earn the title of Contamination Experts and receive an award as determined by you. Standards I, II, III

2. Ask student to tell you what words people use to describe the contaminants listed on the board (“pollutants” or “pollution”). Discuss with them what “pollution” means. Standard II

Part C. Pollution in Our Neighborhoods

1. Assign students to do a pollution inventory for the next week of their neighborhoods, houses/apartments, or backyards. Have them keep a record in their student journals of what pollution they see, hear, smell, taste, and even feel. They should also keep notes on where they think the pollution came from and why. Have the students create a chart in their journals to keep track of land, water, and air pollution, similar to the chart at the end of this lesson. Standard II

2. To prepare students for this assignment, have them come up with examples of what pollution they might find in their inventory areas. The “taste” and “feel” sections can be combined, as these can be more difficult to find. Examples of pollution they may taste or feel may be exhaust or grit thrown into the air by cars or buses. Standard III

3. When they have completed the assignment, have students join in groups and discuss what they have found. Have them created a large chart on butcher paper separating the different kinds of pollution they found based on the senses they affect. Have students share their charts with the class.

- Discuss whether some pollutants affect more than one sense. Which ones?
- Are some pollutants found in more than one area, i.e. land and water?
- What effects might the pollutants you found have on people’s health? Have you been affected by any of these pollutants? How might they affect plants or animals?
- Do you think there may be some kinds of pollution that we may not know we are being exposed to? Can you give any examples?  

Part D. Environmental Justice

1. Write the definition of Environmental Justice (EJ) on the board (see Activity Background). Clearly define what a low-income community is.

2. Inform the students that you also did an inventory of pollutants in two different local neighborhoods. Put pictures of your findings on the board or on two separate poster boards, one for each neighborhood. Allow them to take a closer look at the photos and any notes you may have taken to go along with the images. If you were able to make sound or video recordings of each neighborhood, play them for the students.  

3. Pass out the Data Sheet with the statistics for each neighborhood. Explain to the students what each statistic means. Students will then determine which statistics go with which neighborhood, #1 or #2, based on the images and notes you provided them. See Data Sheet at the end of the lesson for examples of statistics for the Bayview Hunters Point (Neighborhood #1) and Noe Valley (Neighborhood #2) districts in San Francisco, CA. (Standard IV)

4. Have students share with the class how they determined which statistics went with which neighborhood.
   - How did you come up with your conclusions?
   - Based on the pictures and notes I took, what do you think were some of the causes of pollution in each neighborhood?
   - What are some of the major differences between each neighborhood? Do you think the poverty level of Bayview Hunters Point community can be linked to the types of pollution found there? Why or why not?  

Part E. Debrief/Assessment for Modifications

1. In there journals, have them answer the following questions: Do you think the Bayview Hunters Point residents have been treated fairly according to the definition of EJ? Why or why not? What changes do you think need to be made in the community so that the effects
of pollution are decreased? Have students discuss their conclusions.  \[\text{Standards II, IV}\]

2. Discuss with students ways in which they can make changes in their own neighborhoods, and how they can help other communities as well. Write suggestions on the board. Try to keep the suggestions realistic so that they can be things students and/or their families can actually do. Have students write letters to the mayor sharing their concerns for the residents of the neighborhood, and sharing their suggestions to making the community healthier.  \[\text{Standards II, III, IV}\]

3. After assessment, continue on with Part B-Cat with and Attitude, from the original PLT lesson.

**Extensions**

1. Provide students with a list of some of the major contaminants found in the Bayview Hunters Point. Have groups of students choose and research one of the pollutants. How would you make sure the people in the neighborhood knew about the problem? Allow them sufficient time to develop a poster, brochure, slide show, website, flyer, or other form of media, to inform the community about the pollutant, its health effects, and ways people can avoid or decrease their exposure to the pollutant. They must think about the demographics of the population they are trying to inform. Have each group present their informational media to the class and explain how and where they would present or distribute it.  \[\text{Standards I, II, III, IV, V}\]

2. Have students write a 2-4 page essay on the Bayview Hunters Point neighborhood, or have them choose another community affected by environmental injustice. In their essay, they should include the history of the area, 1-2 of the major contaminants in the area, and their health effects. They should research community, city, state, or federal organizations that are working with these communities, and give examples of tactics they use to help the affected community.  \[\text{Standards II, IV}\]

3. Take students on a “Toxic Tour” of the polluted neighborhood lead by a local environmental justice group. The Literacy for Environmental Justice does these tours of the Bayview Hunters Point area for middle school children. Their website is:  \[\text{http://www.lejyouth.org/prog_hhp.php4}\].  \[\text{Standard III}\]
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Data Sheet

Neighborhood #1 (2000 U.S. Census Bureau Demographics)

Races/Ethnicity
Black or African American: 48%
Asian: 24.4%
Hispanic or Latino*: 16.4%
White: 9.6%
Other: 13.9%
(*Includes Hispanics or Latinos of any race; total percentages will not add up)

Average Household Income
$37,146

Families Below the Poverty Level
21.6% (1,538 families)

- This district contains some of the highest levels of environmental contaminants and air pollutants in the San Francisco. (http://userwww.sfsu.edu/~raquelrp/art1.htm)
- This neighborhood has one of the highest concentrations of industries in San Francisco, including a power plant, which released large amounts of pollution into the air for 77 years before it was shut down in 2006, and a treatment plant that treats 80% of San Francisco's sewage (Katz, 2006).
- This neighborhood has a high asthma rate compared to the rest of the country, as well as relatively higher rate of hospitalization due to asthma-related health problems compared to other neighborhoods in San Francisco (Katz, 2006).

Sources


DATA SHEET

Neighborhood #2 (2000 Census Bureau Demographics)

Races/Ethnicity
- White: 69.3%
- Asian: 16.4%
- Hispanic or Latino*: 11.7%
- Black or African American: 4.8%
- Other: 4.5%
(*Includes Hispanics or Latinos of any race; total percentages will not add up)

Average Household Income
$76,044

Families Below the Poverty Level
3.3% (188 families)

Source:

REFERENCES


