



Arizona
Department of Education



C. DIANE BISHOP
Superintendent

November 22, 1993

The Honorable John Greene
President, Arizona State Senate
1700 West Washington
Phoenix, Arizona 85007

Dear Senator Greene:

Pursuant to Laws 1990, Chapter 226, Section 12 as amended by Laws 1991, Chapter 232, Section 4, attached you will find a report on the status of the implementation of the 1990 Environmental Education Act. Significant support from the Arizona Game & Fish Heritage Fund assisted the ADE in 1992 with resources that allowed us to hire an environmental education specialist to focus on developing the requirements outlined in the law. Collaboration with educators, other government agencies, community organizations and industry has also assisted in the implementation of environmental education in Arizona's public school system.

As you are aware, additional resources from the sale of the state's environmental license plate support our efforts to carry out the mandates of the Environmental Education Act. These much needed dollars will continue to be the primary source of funding today and in the future to allow us to fulfill the intent of the law to assist schools in the integration of environmental education throughout the curriculum.

The 1994 legislative session will provide us with an opportunity to reaffirm the visions and commitments of the Environmental Education Act. The state Board of Education is requesting reconsideration of last year's legislation to eliminate the environmental license plate in 1995. As our only source of revenue to support our environmental education efforts, we will be unable to complete the job that was asked of us without this funding source.

Senator Greene
November 22, 1993
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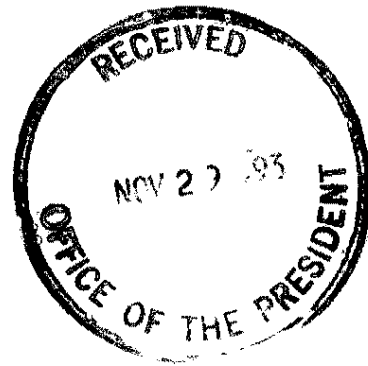
In less than one year's time, Arizona's citizens have purchased more than 10,000 environmental plates, an expression of support for helping schools teach about the importance of the environment. As others have requested and received an exemption to the standardized, single license plate effort of the last legislative session, I feel it is vital that Arizona's environmental plate is also afforded the opportunity to continue to be sold in order to support this important educational agenda the state committed to through the Environmental Education Act. I hope you will support legislation granting us this exemption.

Please do not hesitate to contact my office if I can be of assistance in answering questions or providing further information concerning the attached report.

Sincerely,

A handwritten signature in black ink that reads "C. Diane Bishop". The signature is written in a cursive, flowing style.

C. Diane Bishop
State Superintendent of Public Instruction



Legislative Report
on the
Implementation of Environmental Education

Prepared by
Kristina Allen, EdD
Environmental Education Specialist
November 15, 1993

Arizona Department of Education
C. Diane Bishop
Superintendent of Public Instruction

In 1990, Governor Rose Mofford signed into law HB 2675 known as the Environmental Education (EE) Act. That Act identified public schools, universities, community colleges and state agencies as key institutions responsible for designing programs to help pupils develop an understanding of the importance of the environment. It was the intent of the Legislature that EE programs with curricula would be designed to increase awareness of the environment and to promote knowledge of environmental concepts, develop positive attitudes and values toward the environment. A mechanism for achieving this goal is to integrate environmental education throughout the educational system and public education programs so that the awareness by students and the general public is thorough, continuous and meaningful. The EE Act established the following mandates for the Arizona Department of Education (ADE):

- establish an information resource system
- implementation of EE
- assessment of EE
- teacher training programs

Information Resource System

The information resource system was established in June of 1992 with the hiring of the EE Specialist. Since her hiring she has been actively engaged in carrying out the EE Act. The first major component of the information resource system was the development of the *EE Guidelines* for school districts to follow in the development of their EE programs.

In 1992 Superintendent Bishop appointed a task force to work with the ADE to develop the *EE Guidelines* (Appendix A). The guidelines were developed for school districts to follow in developing their environmental education programs. The *EE Guidelines* illustrate how

environmental education can be integrated across the curriculum. The EE goals and concepts were derived from the Literacy Framework on EE found in the *Comprehensive Plan for Environmental Education* developed by the Governor's Task Force on EE (Appendix B) and were integrated with ten state Essential Skills curriculum documents adopted by the State Board of Education. The *EE Guidelines* were approved in May of 1993 by the State Board of Education. Since that date the ADE has been actively involved in the implementation of the *EE Guidelines*. A copy of the *EE Guidelines* has been mailed to all school superintendents and university and community college deans of education. Over 150 *EE Guidelines* were distributed in June, 1993 at the first annual Educator's Academy for EE. In addition to the Academy, the ADE EE specialist has worked with individual school districts by presenting information on the guidelines and suggestions for integrating EE into the curriculum during teacher inservice days. Several presentations on the *EE Guidelines* have occurred at state and national conferences. At the recent North America Association for EE conference, Arizona was highlighted as a progressive EE state with a comprehensive set of guidelines to assist school districts in developing EE programs. The ADE has developed a comprehensive statewide dissemination plan for the *EE Guidelines* over the next year.

The second component of the information resource system is to establish EE Resource Centers statewide. Over the past year interested groups who represent higher education, private agencies, educators and the public in general have met with the ADE to collaborate on the role resource centers will play in supporting the EE Act. A query letter was recently sent to potential resource center sites. By January of 1994, six EE Resource Centers will be identified and by the spring of 1994, will be equipped with a core set of EE resources available to educators.

In addition to the *EE Guidelines* and EE Resource Centers, the ADE has developed an EE networking program which will be integrated into the Department of Education's comprehensive telecommunication and education information resource system which is networked statewide through the community college information system. The EE networking program has been designed to facilitate statewide communication, a listing of EE materials and current Arizona research data. The ADE has continually collaborated with the Interagency Committee for Environmental Education and the Arizona Advisory Council for Environmental Education to support the implementation of the EE Act. Both of these legislatively mandated committees bring government and private sector insight in support of fulfilling mandates prescribed in the EE Act.

School District Implementation of EE

The ADE has co-sponsored two major EE events to assist school districts with the implementation of EE: 1- EE Resource Fair and 2- the Educator's Academy on EE. Both events provided inservice on the *EE Guidelines*, workshops on EE topics and issues, examples of integrating EE into the curriculum and an opportunity to preview EE resources and materials. Over 800 educators from around the state attended the EE Resource Fair held at Deer Valley High School in Phoenix and a second fair is scheduled for March of 1993. The Educator's Academy provided 75 participants with a week long experience that progressed from awareness to knowledge to action. A second EE Academy will be held for 100 participants in June of 1994.

Several school districts around the state, e.g. Sunnyside, Tanque Verde, Deer Valley and Flagstaff, have implemented EE into their curriculum. The new *EE Guidelines* will assist them in extending their EE program throughout the curriculum and special events will provide inservice opportunities for the teachers.

Most districts are currently in the development phase of their EE programs. Districts, such as Pendergast, have recently aligned their curriculums with the state Science Essential Skills document and are seeking guidance and resources to integrate EE concepts across all subject areas.

Assessment

The ADE will collect baseline data this year on student learning of EE concepts and will continue collecting data on a periodic basis.

Teacher Training Programs

A list of EE teacher skills has been developed through the collaborative efforts of the ADE, the Arizona Board of Regents and representatives from four universities. The skills are to be integrated into current teacher training programs or through new course offerings and have been provided to each College of Education through the university representative that served on the committee. Northern Arizona University offers an EE course for undergraduate students. Arizona State University integrated EE into a summer course offered to certificated teachers during the summer of 1993.

During the 1993-94 school year, the ADE's EE efforts will be focused on continued dissemination and implementation of the EE Guidelines and fully establishing the EE Information Resource System. In addition to these efforts, the ADE will begin the assessment of EE programs in our public schools and continue to build a networking system with school districts, state and federal agencies, business/industry and community organizations.

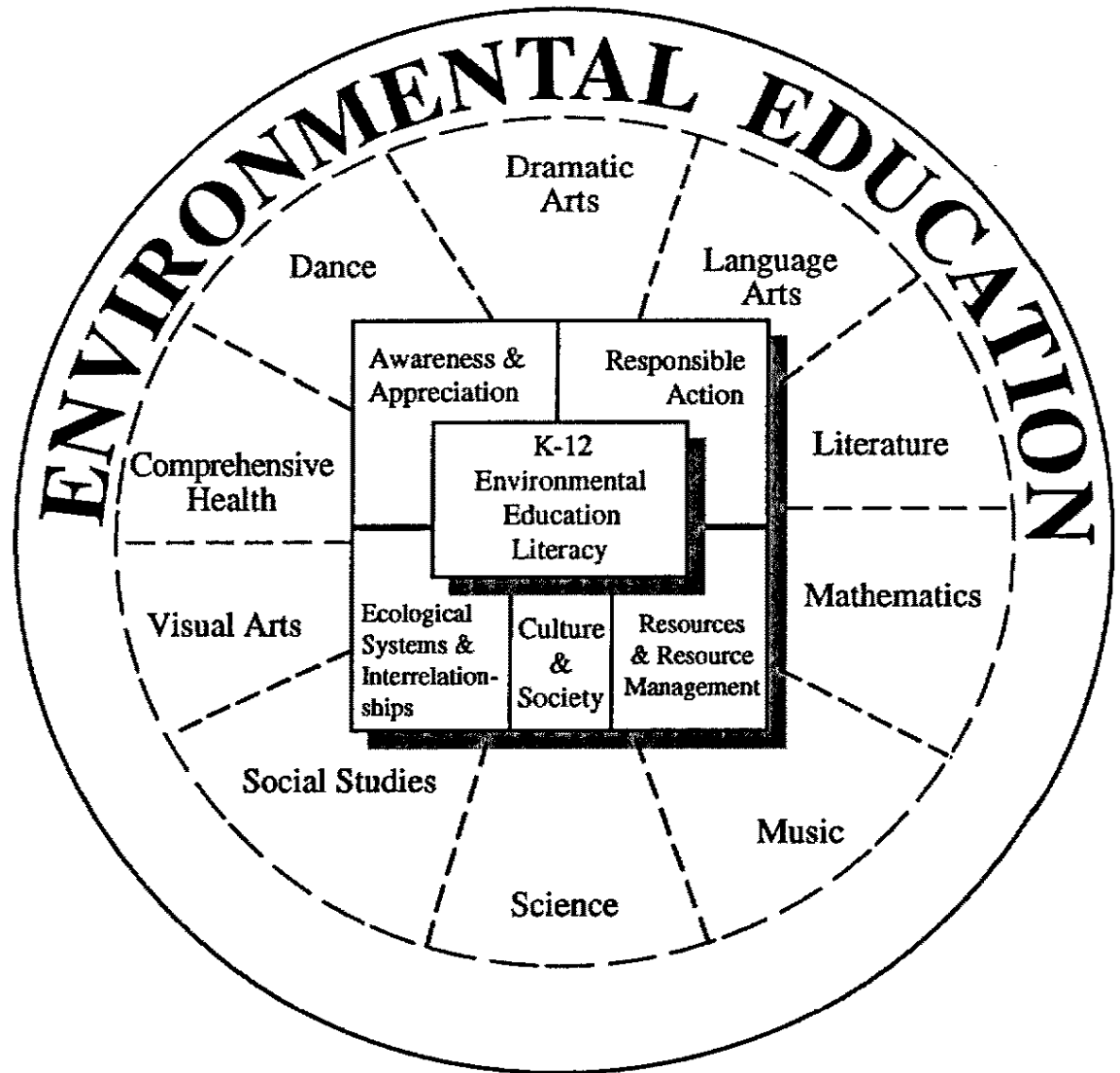
Appendix A

Environmental Education Guidelines

(Introduction)

THE ARIZONA ENVIRONMENTAL EDUCATION GUIDELINES

Arizona Department of Education
C. Diane Bishop
Superintendent of Public Instruction



Environmental Education Guidelines

Introduction

Foundation Statement

An original tenet of the public education system was to provide a quality educational experience for our state's youth. Over time, a system has been created that strives to develop an understanding of our complex world, a commitment to the search for truth and knowledge and a life-long pursuit of learning. Its goal is to help the next generation develop those understandings, skills, and knowledge base essential and valuable for them to fully participate in society as responsible citizens.

An important issue facing each society is the balance between human needs and wants and environmental sustainability. We have experienced dramatic changes in the world's ecological systems over the past 50 years. Increases in human population, pollution, resource allocation and technological dependence have caused both positive and negative impacts. Arizona's citizens must be prepared to make decisions about environmental and economic concerns that affect each individual's life style. Because these decisions require an expanded level of knowledge and understanding, our students must be prepared to meet these challenges through the basic educational process. The integration of environmental education into the school curriculum is an important component of this need.

Legislative Intent

In 1990, the Arizona Legislature established a clear mandate for environmental education. In Arizona's Environmental Education Act (HB 2675), the Legislature stated:

It is the intent of the Legislature that the public schools, community colleges, state universities and state agencies provide a continuing awareness of the essential mission to preserve the earth's capacity to sustain a quality of life in the most healthful, enjoyable and productive environment possible. It is the further intent of the Legislature that the public schools, community colleges, state universities and state agencies integrate environ-

mental education throughout the educational system and public education programs so that awareness of students and the general public is thorough, continuous and meaningful.

What is Environmental Education?

Literature contains many definitions for environmental education. The Governor's Task Force on Environmental Education presented the following definition in the Comprehensive Plan for Environmental Education (January 1992):

"Environmental education is that component of education that may include one or more of the following:

- aesthetic appreciation of the natural world;
- basic scientific knowledge of how the natural world works;
- appreciation of the value of environmental quality;
- understanding of how humans affect their environment and how the environment affects humans, past and present;
- experience in how personal choices and actions affect the natural environment; and
- experience in methods of local-through-global community responsibility, in order to deal effectively with contemporary environmental issues."

Environmental education should not be perceived as a new discipline to be taught independently, such as science, mathematics or language arts. It can and should be integrated across the whole curriculum. Environmental themes add richness and relevance to any area of study. They require a holistic and interdisciplinary perspective.

Beyond the basic environmental concepts and principles, which are generally based on accepted scientific fact, environmental education programs must develop ways of thinking versus what to think. Because of their value-sensitive nature, environmental education programs must be presented from a position of



neutrality. Programs should be action oriented and involve students in contemporary issues and decision-making in order to foster positive attitudes and conduct toward the environment.

Who Uses This Document?

The Environmental Education Guidelines document was created as a bridge. It outlines how environmental education can be integrated into all curriculum areas through Arizona's current Essential Skills. It also illustrates how specific Essential Skills can be taught through an environmental theme. This document represents an attempt to develop a truly integrated approach to a given focus of study.

The Environmental Education Guidelines document was developed primarily for the curriculum specialist at the school district level. It was designed as a starting place for integrating environmental education into the curriculum. Ideally this document also indicates the richness that environmental education can infuse into a district's total curriculum.

Even though the district curriculum specialist was the primary audience, this document was built with the classroom teacher clearly in mind. Educators already teaching environmental education have a personal commitment to the environment, children and the future. The Environmental Education Guidelines provide additional support and credibility to these individual teachers. Hopefully they can use this document to further strengthen and integrate their current efforts with their district curriculum and the Arizona Essential Skills. This will ease the way for others and enrich Arizona's strong environmental education network.

Administrators with an existing environmental education program can utilize this document to strengthen and align their existing environmental education program with the Arizona Essential Skills. For others, it provides a starting point for developing an environmental education program tailored to their school or district needs. The document's structure makes it easy to identify important environmental concepts by grade level and to integrate these with other disciplines. This document can also help establish the philosophical direction of an environmental education program while continuing to complement the Essential Skills process.

Agency and organization education program managers will also find the guidelines useful. It will guide them when producing materials for use by formal educators. The goals and concepts also provide a springboard for developing programs to be used with the general public or school groups. Thus, the Environ-

mental Education Guidelines can prove to be a useful tool to educators interested in teaching environmental education in non-formal situations.

The Environmental Education Guidelines only illustrate how environmental education concepts can be integrated throughout the curriculum. It would be impractical to prepare a comprehensive document containing all the possible integrations of environmental education concepts with the Essential Skills. Thus, it was the intent of the Environmental Education Program Guidelines Committee that the guidelines be a flexible, starter document and provide the user of the document an opportunity to create additional examples of integrations with the various essential areas that better fit their students and community needs. It is a living document that will continue to evolve to fit the needs of district curriculum specialists, teachers, administrators, and non-formal educators who use this document to integrate environmental education into their existing programs.

Explanation of the Environmental Education Guidelines Format

The Environmental Education Program Guidelines Committee first developed a set of goals and concepts for environmental education. In developing these, the committee utilized the "Literacy Framework for Environmental Education" from the Comprehensive Plan for Environmental Education. From the "Framework," they identified five primary areas and created goals and concepts for each. The five primary areas are Awareness and Appreciation, Ecological Systems and Interrelationships, Culture and Society, Resources and Resource Management, and Responsible Action. It is important to understand that the primary areas follow a progression from awareness to understanding to action. In the Environmental Education Guidelines the five primary areas always follow this progression.

The environmental education goals and concepts were then integrated with the following 10 state essential skill documents: Comprehensive Health, Dance, Dramatic Arts, Language Arts, Literature, Mathematics, Music, Science, Social Studies and Visual Arts. Under each grade-level grouping, the Essential Skills appear in alphabetical order as they are integrated with the five primary areas. The Environmental Education Guidelines document is initially divided by grade cluster: K-3, 4-8, and 9-12. Each grade cluster section contains integrations of the 10 Essential Skills with the environmental education goals and concepts progressing from Awareness and Appreciation to Responsible Action. Each page of the



Environmental Education Guidelines (see example below) indicate the grade cluster, the Essential Skill being cross referenced, the primary area and the applicable environmental education goal. Below this, the page is divided into four columns: first column -EE Concepts; second and third columns-Essential Skill information; and fourth column -EE Example. The second and third columns contain information taken directly from the Essential Skill documents. The fourth column provides the user of the guidelines with environmental education examples. These provide a class activity illustrating how environmental concepts can be integrated with an Essential Skill. They are only meant to stimulate further thought on the process of integrating environmental concepts across the curriculum. They were not meant to be standards. Not every environmental education goal or concept is integrated across all aspects of a particular Essential Skill document or grade cluster. It was the volition of the Environmental Education Committee only to illustrate the integrations of the environmental education goals and concepts with the Essential Skills.

<p style="text-align: center;">① K-3 Environmental Education Goals and Concepts Cross Reference - LANGUAGE ARTS Essential Skills</p>			
③ AWARENESS & APPRECIATION			
④ GOAL: Students will develop an awareness and appreciation for the dynamic and complex relationship between humans and the environment.			
EE Concepts	Language Arts General Skills	Language Arts Product/Outcomes	EE Examples
⑤ Respect for land, water, air and all living things is important to the maintenance of a healthy environment.	Reading ⑥	16. Reads and demonstrates comprehension of a form of communication.	Select, read and discuss a newspaper article related to an environmental concern with a family member ⑧
	Speaking	5. Speaks in planned situations by reporting and generalizing about events and incidents	Share environmental articles about in presentations to them.
	Writing	17. Writes a communication	Create a class letter or individual letters in response to environmental articles expressing concern or support.
An environment is the complex of physical, chemical, biological and cultural factors affecting an individual's physical or community.	Speaking	7. Speaks in planned situations by telling a personal experience or fictional story	After taking a literary walk and identifying events heard, students will tell their personal experiences.
Continuous change is a natural condition of environment and living things	Writing	16. Writes a report based on personal observation	Observe the metamorphosis of a tadpole to a frog and write a report based on their observations.
Humans are unique among species in that their actions can cause without positive and negative change in the global environment.	Reading	14. Reads and demonstrates comprehension of a story	Read and discuss <i>Farewell to Manzanito</i> , a story that illustrates habitat destruction.

geb-002 (rev. 6/1/95) (3129)



- 1- Grade Cluster
- 2- Essential Skill Document
- 3- Primary Area
- 4- Environmental Education Goal
- 5- Environmental Education Concept
- 6- Essential Skill Area, Component or Goal
- 7- Essential Skill Outcome, Concept or Objective
- 8- Environmental Education Example

Summary

The Environmental Education Guidelines document is just one component of a long-term educational goal. That goal is to develop the most environmentally literate and responsible citizenry possible in our state: citizenry that will approach environmental issues with positive attitudes, understanding and a commitment to resolving the issues or remediating the problem. This goal can best be achieved by integrating environmental education across the curriculum. It must be made a part of the fundamental fabric of our K-12 education system. Environmental education is an excellent vehicle to illustrate many of the techniques and strategies touted in educational reform. It is complementary to cooperative learning, constructivism, conceptual vs. factually based study and relevancy in the curriculum. Environmental education should not be viewed as an additional burden for schools but as an opportunity. Through relevant and interesting concepts, topics and issues, environmental education can be used to enrich and enhance any curriculum. Students can experience first hand that, while many environmental issues are complex, they can be addressed in positive ways and make practical use of the essential learning skills stressed at other times in their classes. The Environmental Education Guidelines document was produced to help guide this process of integration of environmental education into existing curriculums. It cannot, however, replace the necessary commitment of districts, administration, teachers and parents to accomplishing the integration. This document will only be as strong as the commitment of those who use it. Also, the document must be viewed as flexible and relevant. Over time it should be routinely reviewed and modified, where necessary, to meet current curriculum needs and strengthen the relationship with the state-mandated Essential Skills.



ENVIRONMENTAL EDUCATION PROGRAM GUIDELINES

FOR K-12

GOALS and CONCEPTS

In developing these goals and concepts, the committee utilized the "Literacy Framework for Environmental Education" from the Governor's Task Force's *Comprehensive Plan for Environmental Education*. The committee worked from the "Framework" to identify and develop five primary areas with goals and concepts for each. It is important to understand that the primary areas follow a progression from awareness to action. As you review the guidelines document, each of the five primary areas always follows this progression in its matching to the Essential Skills.

I. AWARENESS and APPRECIATION

Goal A: Students will develop an awareness and appreciation for the dynamic and complex relationship between humans and the environment.

Concepts:

An environment is the complex of physical, chemical, biological and cultural factors affecting an individual population or community.

Every living thing is a product of its environment and integral parts of them, constantly interacting with them, affecting them and being affected by them.

Continuous change is a normal condition of environments and living things.

Humans are a part of nature, not separate from it.

The survival of the human species depends on the environment and human interactions with it.

Humans are unique among species in that their actions can cause extreme positive or negative change in the global environment.

Human understanding of how this unique planet functions as a dynamic living system is incomplete.

The appreciation of nature is an impetus for many forms of creative expression.

The natural world has intrinsic worth.

Our natural and human-made environments are the basis of our physical, mental, emotional and economic health.

Respect for land, water, air and all living things is important to the maintenance of a healthy environment.

II. ECOLOGICAL SYSTEMS and INTERRELATIONSHIPS

Goal A: Students will develop an understanding that all living and nonliving elements of an ecosystem are interdependent.

Concepts:

Plants and animals in an ecological system live in a dynamic web of interdependence.

Living things interact in many ways, including predation, competition and symbiotic relationship.

Each species occupies a niche, playing a special ecological role in its community.

Any organism or other component of an ecosystem can be fully understood only by studying it in relation to other components in the context of the system.



Physical factors such as energy, climate, geology, the water cycle and the sun impact ecological systems.

Food chains and energy transfer are vital processes within an ecosystem.

Toxic substances can move through food chains and tend to accumulate at higher concentrations in the upper trophic levels of ecosystems.

Goal B: Students will develop an understanding that habitat, carrying capacity and limiting factors influence plant and animal populations, including humans.

Concepts:

All plants and animals, including humans, require habitat for their existence.

The essentials of habitat, the basic needs of all living things, are food, water, shelter and space in a usable arrangement.

Any given area has a carrying capacity or a limit to the number of individuals it can support for each species occurring there.

A population tends to increase in size until limited by one or more factors such as food, space, water or shelter.

Cyclical changes in population size, within limits, are normal phenomena for many species.

Goal C: Students will develop an understanding of change as a fundamental characteristic of ecosystems.

Concepts:

An environment is continually shaped by human and nonhuman forces, which alter conditions which can lead to changes in the type of organisms that can live there.

Ecosystems have varying capacities for change and recovery.

Natural events and human activities affect the role and direction of succession.

Plant and animal species have evolved specific adaptations to their environments, including adaptations that are physical, biochemical and behavioral.

Extinction may occur when populations are unable to adapt to environmental change.

Goal D: Students will develop an understanding that our planet is naturally diverse in species and habitats but that this diversity may be threatened by human activities.

Concepts:

Numerous variations in the Earth's environment such as climate, geology and topography, have given rise to a great diversity of species and habitats.

Biodiversity is decreasing because human activities have accelerated the rate at which species become endangered and extinct.

Most plant and animal species that are threatened or endangered today became so due to habitat loss or change caused by human activity.

Goal E: Students will develop an understanding that humans are a natural component of many ecosystems.

Concepts:

Humans are a natural component of many ecosystems.

Human activities can alter plant and animal distribution, diversity and abundance, as well as the distribution and existence of entire ecosystems.

Human influences on life-forms and ecosystems may be direct or indirect, and resulting changes may range from short-term to irreversible.



III. CULTURE and SOCIETY

Goal A: Students will understand that the environment has helped shape historical and cultural attitudes, values and the ethics of decision making of all peoples, past and present. In turn, these belief systems have caused an impact upon the environment.

Concepts:

Nations are interrelated through their technological, economic and environmental activities and through mutual reliance on natural resources and environmental quality.

Environmental problems and concerns often transcend political boundaries and cultural differences.

Conflict and political instability within and between nations often result from uneven distribution and control of resources.

Prehistoric, historic and modern cultures are diverse partly because they evolved as adaptations to diverse natural environments.

Cultural artifacts contribute to understanding historic and prehistoric people and their environments and offer evidence of past environmental conditions.

A healthy environment contributes to the economic well-being of ancient and modern, and developed and undeveloped, societies; conversely, environmental degradation causes the deterioration of natural life support systems and of societies dependent on those systems.

Societies have developed many environmental belief systems based on tradition, folklore, economics, arts, language and science that shape their attitudes and use of their environments.

Human-made environments reflect and influence values, attitudes and life-styles.

Technology buffers humans' contact with the natural environment, thereby reducing our understanding of the processes that make it work.

When technological advances exceed human comprehension of their effect on the environment, unanticipated environmental problems may develop.

Today's media coverage greatly influences societal attitudes toward the environment.

How the environment is affected by specific actions is a scientific question, but the choice of what action to take is a question of individual and societal values.

The values and ethics of individuals and societies are important factors in determining human behavior and societal impact on the environment.

Western culture is primarily influenced by the Judeo-Christian ethic of viewing the environment primarily as a source of natural resources to be used for human benefit.

Ethical decisions involve consideration of costs and benefits to self and others.

IV. RESOURCES and RESOURCE MANAGEMENT

Goal A: Students will understand what natural resources are, how natural resources affect humans and how humans affect natural resources. Students will further understand that these effects can range from positive to negative.

Concepts:

Nonrenewable natural resources are not replenished through natural cycles or are replenished extremely slowly on a geological time frame, and, thus, are strictly limited in quantity.

Renewable natural resources are replenished through natural cycles, but are still finite.

The original source of all material goods is natural resources.



Resource extraction and use cannot occur without some degree of environmental change.

Increasing human population and increasing per capita consumption are causing a steady increase in the global demand for energy and other resources.

Citizens of the United States use more natural resources per capita than the people of any other nation.

Changes in cultural patterns and the social and economic values of a society affect personal life-styles and, thus, the use and conservation of natural resources.

Goal B: Students will understand what natural resources management is, how and why humans manage natural resources and how this management affects humans. Students will further understand that management decisions are based on human-defined goals, values and needs.

Concepts:

Effective management of natural resources involves the application of scientific knowledge and technical skills to provide for the sustained use of these natural resources while protecting the quality of the environment.

Management practices can range from no activity to extensive intervention in ecological processes.

The development and enforcement of management policies and environmental laws are affected by economic factors, societal needs, ethics, politics, science and technology, and public and private interests.

Conservation of natural resources (wise use and protection from waste depletion or pollution) is the most basic form of stewardship and the most immediate means of maintaining availability of resources.

Specific local, state and federal agencies are charged with management of natural resources and protection of environmental quality.

Private industry, organizations and individuals can influence resource management and environmental protection.

Because no nation is entirely self-sufficient in natural resources, the use and management of resources need to be considered in a context of global human need.

Philosophies, objectives and practices of various types of resource management are sometimes incompatible with each other, and, therefore, compromises and trade-offs may be necessary.

Management issues and environmental problems may arise when resource use is motivated by short-term goals and not tempered by evaluation of long-term consequences.

V. RESPONSIBLE ACTION

Goal A: Students will understand that a healthy environment is dependent upon responsible human action.

Concepts:

Developing an ethic of accountability toward the environment is essential for the continued health of the planet.

Both action and inaction of individuals and groups affect the outcomes of environmental issues.

Responsible decision making involves research, consideration of values, creative evaluation of alternatives, a global orientation and a long-term perspective.

Good citizenship involves understanding environmental issues, participating in public processes and taking responsibility for personal life-style choices.



K-3
Environmental Education Goals and Concepts
Cross Reference - SCIENCE Essential Skills

CULTURE & SOCIETY

GOAL A: Students will understand that the environment has helped shape historical and cultural attitudes, values and the ethics of decision making of all peoples, past and present. In turn, these belief systems have caused an impact upon the environment.

EE Concepts	Science Goals	Science Student Outcomes	EE Examples
<p>Nations are interrelated through their technological, economic and environmental activities and through mutual reliance on natural resources and environmental quality.</p>	<p>Goal 7: To increase understanding of the limits, possibilities and interrelationships among science, technology, society and the environment</p>	<p>Recognizes that science and technology can affect the environment.</p>	<p>Relate automobile and industrial emissions to air quality throughout the world. Describe the steps taken by industries, such as mining, that are beginning to restore previously damaged land. Collect newspaper stories or pictures about efforts made by the United States and Mexico to stop air and water pollution.</p>
<p>Societies have developed many environmental belief systems based on tradition, folklore, economics, arts, language and science that shape their attitudes and use of their environments.</p>	<p>Goal 4: To understand the historical contributions in science and the context in which they were made</p>	<p>Recognizes that scientific contributions have been made by people of different genders, racial and ethnic groups and from different countries.</p>	<p>Examine technological developments of non-Western and native American civilizations, e.g., Hohokam and canals, Aztecs and calendar, Tohono O'odham and dryland crops. List ways that the natural world is part of Arizona native folklore and customs.</p>
<p>How the environment is affected by specific actions is a scientific question, but the choice of what action to take is a question of individual and societal values.</p>	<p>Goal 6: To use experiences with science and technology in personal decision-making</p>	<p>Applies knowledge of science to make personal decisions.</p>	<p>Design an invention which reduces water use in the home, classroom or community. Set up a recycling system at home.</p>



Appendix B

Literacy Framework

(Comprehensive Plan for Environmental Education)

Framework for Environmental Literacy

State of Arizona
Environmental Education Task Force
1991

Statement of Purpose

The purpose of the Framework for Environmental Literacy is to advance the development of an environmentally literate and conscientious citizenry. This document is intended to serve educators who work with children and adults in formal and non-formal contexts, through public agencies and private organizations as well as schools and universities. The Framework provides an outline of the background needed to understand complex environmental issues; place those issues in the realistic social, economic and ecological context; and work toward solving or preventing environmental problems. To understand the content of the Framework is to understand what humans must know in order to live compatibly with the environment.

Use of the Framework

Most users are likely to incorporate only a subset of these concepts in their own environmental education programs. Users are encouraged to select subsections of the document, or items from throughout, that provide a meaningful theme for their program or an extension of it. Through such application of the Framework, it becomes possible for diverse programs across Arizona to complement and reinforce each other. Over time, children and adults will be exposed to key concepts through a variety of activities and settings, and will thus achieve an integrated understanding of our environment and our relationship to it.

The Framework as a whole outlines a strategic sequence from awareness to understanding to action. A slight amount of overlap between sections has been allowed in order to provide cohesiveness and completeness within each section. The content is arranged to provide a natural progress of ideas and all items should be considered equally important regardless of their place in the sequence.

This Framework for Environmental Literacy is broad and is intended to be that way. Each item is a foundational concept and starting point for further inquiry.¹

Overview

The environment sustains all life, including human life. The environment is a dynamic, constantly changing complex of interacting forces which influence every facet of human existence and well-being. Throughout history, humans have expressed awareness and appreciation of nature in the arts and religion. Today, science reveals that humans are an interdependent part of the natural world. The effects of the environment on human life are dynamic, as are the effects of humans on the environment.

An ecosystem encompasses all of the interacting biotic and abiotic components of a given area. An ecosystem, by its very nature, tends to be in constant flux, as change in one ecosystem component affects other components. A biotic community includes many interdependent species, each with its own survival needs and role in its ecosystem. Natural systems have intrinsic worth.

Humans are a part of many ecosystems, and ecosystems are the context for all human activity. Beyond Earth's ecosystems, no suitable human habitat is known to exist. Scientific evidence indicates that it is to human advantage to work in concert with natural systems rather than attempt to ignore them.

All peoples, past and present, have been influenced by their natural surroundings. Environmental factors may influence many aspects of a society, including its art, religion and economy. Conversely, attitudes toward nature are influenced by many factors and vary both within and between cultures. Communities throughout Arizona are interrelated, as are diverse nations across the globe, through mutual dependence on resources and environment.

Natural resources by definition are beneficial to humanity; natural resources sustain human life. The global human population, which is increasing at an exponential rate, is totally dependent on a continual supply of natural resources. The global resource base is finite and therefore conservation of natural resources is critical. A given resource may have many values or uses. Effective resource management decisions and environmental policies are predicated on a sound scientific understanding of ecosystems and a long term perspective on society as a whole.

Human "quality of life," however it may be defined, is linked to environmental quality. Human decisions and actions can impact environmental quality and quality of life both positively and negatively. Change in societies and environments is the norm, and individual and collective choice play an important role in determining the direction of change. In any group or any nation, a spirit of humanity and good citizenship involve educating oneself about environmental concerns and working toward positive partnerships and responsible action.

Awareness and Appreciation

ENVIRONMENT AWARENESS

- All living things depend on the Earth and Sun as the source of the basic requirements of life and thus their very existence.
- An environment is the complex of physical, chemical and biological factors affecting an individual, population or community.
- All living things are a product of their environment and an integral part of it, constantly interacting with it, affecting it and being affected by it.
- The natural environment normally functions according to complex patterns of relationships between living and nonliving things.
- Interacting environmental systems on Earth include geological, hydrological, atmospheric and biological systems.
- Continuous change is a normal condition of environments and living things.

HUMANS AND ENVIRONMENT

- Humans are a part of nature, not separate from it.
- The same factors influencing other living things also influence humans.
- Environments affect all aspects of human life, including the physical, biological, social and cultural.
- The survival of the human species depends on our environment and our interactions with it.
- Humans are unique among all species in their increasing ability to intentionally and unintentionally cause extreme positive or negative change in the global environment.
- As human population and environmental problems increase, it is of increasing concern that humans recognize their responsibility to future generations.

AESTHETIC APPRECIATION AND EXPRESSION

- The life-styles, art and religion of a people may be indicators of their perception of and relationship with their environment.
- Appreciation of nature is an impetus for many forms of creative expression, including music, art, crafts, photography, drama, dance and literature.
- In some cultures, human interplay with the natural world is a major influence on the customs of that society and the daily life of its individual members.
- In some cultures, the relationship between humans and nature is central to the human religious experience and finds expression through spiritual teachings and writings, myths, acts, symbols and ceremonies.
- The natural world has intrinsic worth.
- Individuals and cultures vary in the degree to which they value nature for its own sake and for its ability to serve human needs.

PERSONAL WELL-BEING

- Our natural and built environments are the basis for our physical and personal well being.
- Opportunities to engage in active or passive outdoor recreation can contribute to human physical, mental and emotional health.
- Opportunities to experience solitude in nature, and to experience diverse facets of nature, can contribute to human physical, mental and emotional health.
- A sense of place, or a sense of feeling at home and connected with a specific environment, contributes to personal well-being and appreciation of other environments.
- Humans may find peace and satisfaction through study and observation of nature, and simply through awareness of its existence.
- Respect for the land and all living things can encourage people to help maintain a healthy environment, providing benefits for themselves and others.

Ecological Systems and Interrelationships

ENERGY AND OTHER PHYSICAL FACTORS

- A constant influx of energy is required for organisms and ecosystems to sustain themselves.²
- The sun is the ultimate source of energy upon which virtually all life forms depend.
- Energy can be neither created nor destroyed, only transformed from one form to another.
- Every time energy is transformed, it becomes less available to do useful work.
- Photosynthetic activities of green plants capture energy from the sun and make the sun's energy accessible to other living things.
- Biological processes occurring within and between organisms involve the conversion, utilization, storage and transfer of energy and nutrients.
- The absorption and distribution of solar energy drives many physical processes, including global atmospheric circulation, the hydrologic cycle, ocean currents, and local climate and weather patterns.
- Many diverse physical factors, including solar radiation, water, climate, geology, topography and soils, interact to influence the growth, reproduction and distribution of plants and animals.
- Such physical factors as solar radiation, water, climate, geology, topography and soils exert major influences on human land use patterns.
- All earth systems operate according to the laws of physics and chemistry.
- The biosphere is the thin sphere near the surface of the Earth that includes all life and the land, water and atmosphere to which life on Earth is confined.

- The biosphere may be examined as a whole or at the level of the ecosystem, community, population or individual organism.
- An ecosystem is a complex but recognizable, relatively homogeneous system.
- An ecosystem includes a particular set of ecological communities and their physical environment, regarded as a unit.
- An ecosystem as a whole has "system" characteristics that derive from interactions of the system's components and that cannot be understood by studying only its parts.
- Because the occurrence of storms, fire, flood and other human or nonhuman disturbance is not uncommon, most ecosystems exist in a state of flux.
- Ecosystems are dynamic, interactive systems in which change relating to one physical or biological component results in changes to other components.
- Biomes are major ecosystem types that cover broad geographic areas and are defined in terms of characteristic climate, soils, vegetation and wildlife.
- Organisms influence the characteristics of ecosystems and are, over time, themselves strongly influenced by their ecosystem.
- Any organism or other component of an ecosystem can be fully understood only by studying it in relation to other components, in the context of the system.

SPECIES, POPULATIONS AND COMMUNITIES

- A biotic community is any set of interacting plant and animal populations within a given ecosystem.
- A population is a group of individuals of one species, interbreeding and living in a given area.
- Each species occupies a niche, playing a special ecological role in its community.
- Cyclical changes in population size, within limits, are a normal phenomenon for many species.
- Changing the size of any population changes the impact of that population on its ecosystem, affecting other populations directly and indirectly.
- A population tends to increase in size until limited by one or more factors.³
- A limiting factor is any environmental factor that limits a population or species in numbers or geographic range.

INTERRELATIONSHIPS

- All elements of an ecological system are interrelated.
- Ecology is the study of relationships between organisms and the complex of physical and biological factors affecting them or influenced by them.
- Living things interact in many ways, directly and indirectly, through predation, parasitism, competition, symbiosis, mutualism and food webs.
- Interactions between species influence the growth, reproduction and distribution of species and the structure of communities and ecosystems.
- Ecological events at the ecosystem, community and population levels are made up of the combined interactions of individual organisms.
- Plant and animal communities influence each other in many ways.

FOOD CHAINS

- A food chain is a system through which energy flows, from the sun to plants and subsequently to herbivores; carnivores or omnivores; higher-level carnivores; and decomposers.
- In contrast to energy, which passes through ecosystems, the physical materials or nutrients necessary to living things are cycled and recycled through food chains and soil, water and air.

- In a given food chain, all organisms the same number of steps from the base of the chain are considered one trophic level.
- No energy conversion is 100 percent efficient, so every transfer of (food) energy from one trophic level to another involves the loss of energy from the food chain.
- Because of the inefficiency of energy transfer, each trophic level generally contains fewer individuals and only about 10 percent as much energy as the level below.
- Toxic substances can move through food chains and accumulate in the higher trophic levels at far greater concentrations than in the surrounding environment.
- Many food chains combine to form a food web.

HABITAT AND CARRYING CAPACITY

- All plants and animals, including humans, require habitat for their existence.
- The essentials of habitat, the basic needs of all animals, are food, water, shelter, and space or territory, in a suitable arrangement.
- Habitat adequate in quantity and quality to support a viable breeding population is essential to the continuance of any species.
- Most plant and animal species that are threatened or endangered today became so due to habitat loss or change caused by human activity.
- Many plant and animal populations are capable of reproducing in numbers greater than their habitat can support.
- Any given area has a carrying capacity, or a limit to the number of individuals it can support, for each species occurring there.
- Carrying capacity varies in accordance with geological, hydrological, climatic, biological and/or behavioral factors along with human activities and varies from season to season and year to year.
- Overpopulation occurs when a population exceeds the limit that its habitat can support over time without stressing the organisms or its resource base.

ADAPTATION AND CHANGE

- Change is a fundamental characteristic of the physical environment and all populations, species, communities and ecosystems.
- An environment is shaped continually by human and nonhuman forces which can alter various conditions and thus alter the types of living things able to exist there.
- Ecosystems show varying degrees of resiliency to human or nonhuman disturbance, giving them varying capacities and rates of recovery.
- Some ecosystems are extremely resilient and can absorb or adapt to many changes.
- Although stressed ecosystems may continue to exist, there are limits to the changes they can absorb.
- Because each individual organism is a unique product of the combined influences of its heredity and environment, variations between individuals are apparent in all populations.
- Genetic variations that increase the ability of an individual to survive and reproduce will increase in frequency in the population, a process termed natural selection.
- All populations exhibit specific adaptations to their biotic and abiotic environment, including physical, biochemical and behavioral adaptations.
- Extinction is a natural process occurring when populations are unable to survive natural catastrophes or adapt to environmental change.

BIODIVERSITY

- Biodiversity refers to the variety of life and includes genetic diversity, species diversity, diversity of communities and diversity of ecosystems.

- Biodiversity is currently decreasing at all levels for many reasons.
- Genetic diversity contributes to the ability of a population to adapt and survive environmental change.
- Temporal and spatial variation in the physical environment, along with interactions among organisms themselves, have given rise to a great diversity of species and habitats.
- Species and habitat diversity may be a part of the foundation for stable ecological systems.
- Human influences can alter plant and animal distribution, diversity and abundance and the distribution and existence of entire ecosystems.
- Human activities have accelerated the rate at which species become endangered and extinct.

HUMANS AS AN ECOSYSTEM COMPONENT

- Humans are a natural component of many ecosystems.
- All human activity takes place in the context of the planet's ecosystems.
- Natural processes structure the existence of human populations and communities as well as plant and animal populations and communities.
- No suitable human habitat is known to exist beyond the Earth's ecosystems.
- Humans affect the environment more than virtually any other organism and have the potential to influence all of the Earth's population, communities and ecosystems.
- Human influences on life forms and ecosystems may be direct or indirect, and changes may be short term or irreversible.
- Human influences on the environment tend to be cumulative.
- Although humans are capable of significantly altering natural environments, the planet as a whole will survive any human manipulations.
- Total human impact on the environment is a function of the number of people and the impact per person.
- The effects of human activity on ecosystems increase in proportion to human desire for and acquisition of material goods.

EMERGING UNDERSTANDINGS

- Many problems, issues, and trends involving the environment in other parts of the world are similar to those in this country. 4
- Stable ecological systems contribute, on a long-term basis, to the stability of socioeconomic systems.
- Advances in the environmental sciences indicate that human existence depends not on an ability to alter natural systems but an ability to exist in concert with them.
- Environmental policies contribute to the conservation of species and ecosystems, but may not compensate for loss of habitat or damage to physical or biological ecosystem components like soil, air, water or species.
- Pollution alters biophysical systems and thus affects socioeconomic systems.
- Externalities, or indirect costs paid by society as a whole, include real economic costs such as problems in human health or agricultural productivity that are caused by environmental pollution and degradation.
- In the long term, incorporating externalities in the price for a consumer product or the capital outlay for a large-scale project is advantageous to individuals and society.
- Advances in science and technology can contribute to solving environmental problems.
- When technological advances exceed human comprehension of their effect on the environment, unanticipated environmental problems may develop.
- Humankind's understanding of how this unique planet functions as a dynamic, living system is incomplete but expanding.

Culture and Society

INTERRELATIONSHIPS BETWEEN HUMAN SOCIETIES

- Nations are interrelated through their technological, economic and environmental activities.
- Through mutual reliance on natural resources and environmental quality, diverse societies are increasingly interdependent.
- Environmental problems and concerns often transcend political boundaries and cultural differences.
- Conflict and political instability within and between nations often stem from disproportionate distribution and control of resources,
- Cultural sites and artifacts contribute to understanding historic and prehistoric people and their environments.
- Lessons for modern societies are evident in studying environmental problems of past societies.

SOCIETY AND THE ENVIRONMENT

- Prehistoric, historic and modern human cultures are diverse partly because they evolved as adaptations to diverse natural environments with different plants, animals, climates and resources,
- The histories of all human societies reflect the interaction of individuals and groups with their environment.
- A healthy environment contributes to the economy of ancient and modern, developed and undeveloped societies.
- Environmental degradation causes the deterioration of natural life-support systems and therefore of societies dependent on those systems.
- Inspiration from and fear of natural phenomena have influenced societies in prehistoric, historic and modern times.
- Interactions between environmental factors and the characteristics of an individual influence the occurrence of many diseases.
- Environmental factors influencing health may be biological, physical or chemical, immediate or cumulative; and of human or other origin.

CULTURE AND ENVIRONMENTAL ATTITUDES

- Humans have developed many belief systems to explain their environments, and these beliefs shape their interactions with their environment.
- The environmental attitudes of a society are affected by custom and tradition, folklore and myth, economic considerations, religion, language, literature, art, science and technology.
- The design and maintenance of built environments reflect and influence the values, attitudes and lifestyles of human inhabitants.
- Modern technology society minimizes personal contact with natural environments, affecting attitudes and actions toward nature.
- Societal attitudes toward the environment are influenced by the coverage and perspective of modern communications media.
- Cultural and other differences may cause conflicts concerning the environment.

VALUES AND ETHICS

- Aesthetic, spiritual, intrinsic and other values that humans attribute to other species and the Earth vary from person to person and culture to culture.
- Western culture is strongly influenced by the Judeo-Christian ethic viewing the environment primarily as a source of natural resources to be wisely stewarded for human benefit.

- Values and ethics are key factors determining human behavior.
- The values and ethics are key factors determining human behavior.
- The values and ethics of individuals and societies are an important factor in determining the type and extent of individual and societal impacts on the world.
- How the environment is affected by specific actions is a scientific questions, but the choice of what action to take is a questions of ethics and of cultural, religious and personal values.
- Variation exists among different cultures in what constitutes accepted or ethical behavior toward the land, living things and natural resources.
- Ethical decisions involve consideration of direct and indirect costs and benefits to self and others, in the present and future.
- The continuance of life on Earth as we know it may depend on the exercise of an ethic of accountability for human impacts on the environment.

Resources, Resource Management and Environmental Issues

THE NATURE OF NATURAL RESOURCES

- Nonrenewable natural resources are not replenished through natural cycles or are replenished extremely slowly, on a geological time frame, and are thus strictly limited in quantity.
- Renewable natural resources are replenished through natural cycles, but are still finite.
- Plants and animals capable of reproducing more than is necessary to maintain their populations can be considered renewable resources.
- The renewable and nonrenewable resource base can be extended, within limits, by research, development, economic factors, and improved conservation and management practices.
- Natural resources and the areas in which they occur often have both consumptive and nonconsumptive use.
- Some resources, such as soils and watersheds, have material or consumptive values useful to human society but difficult to quantify in economic terms.
- Every living species is a unique, irreplaceable genetic resource with potential scientific, technical, medical or other practical value.

RESOURCES AND HUMAN SOCIETY

- Natural resources sustain human life.
- Natural resources are defined as such through their usefulness to society and relationship to human technologies, beliefs, wants and needs.
- The original source of all material goods is natural resources, or raw materials and energy obtained from the environment.
- Natural resources form the basis for every economy.
- Long-term economic prosperity depends on the availability and responsible use of resources.
- The history and even the demise of many civilizations has been determined by their use or misuse of environment and resources.
- The availability of natural resources influences the daily lives of individuals and the political strength and international influence of nations.
- Different levels of satisfaction of human needs and desires cause conflicts within and between societies as population and consumption levels rise and the resource base remains limited.

PATTERNS OF RESOURCE USE

- Most natural ecosystems and primitive human societies depend primarily on readily available renewable resources, with a balance between consumption and renewal of energy and materials.

- Modern technological societies currently depend heavily on external resources, including renewable and nonrenewable sources of energy and raw materials.
- Human population growth is occurring at an exponential rate.
- Increasing population and increasing per capita consumption are causing a steady increase in the global demand for energy and other resources.
- The amount of resources available per person is a function of population size as well as resource base.
- Changes in the cultural patterns, social and economic values, and mores of a society affect personal life-style and thus the use and conservation of natural resources.
- Citizens of the United States use more energy and other resources per person than the people of any other nation.

CONSERVATION OF NATURAL RESOURCES

- Conservation of natural resources—wise use and protection from waste or depletion—is the most basic form of stewardship and the most immediate means of maintaining availability of resources.
- Conservation includes balancing the level of extraction and use of raw and processed materials as well as reusing and recycling processed materials.
- Stewardship or conservation of resources involves keeping total resource use at a sustainable level, not simply substituting one resource for another.
- Effective conservation practices depend on clearly defined management objectives, an understanding of natural processes and the application of knowledge from many disciplines.
- Conservation policies and environmental regulations must be economically feasible.
- Ideally, the goal of conservation policies and environmental laws is to ensure that resource extraction and use occur in a context of long-range planning and consideration of society as a whole.

MANAGEMENT OF RESOURCES

- Management of resources and environments involves the application of scientific knowledge and technical skills to conserve or enhance the resource base and environmental quality.
- Effective resource management responds to new scientific knowledge, technological advances, government policies, changing human needs and values, and special conditions.
- Management practices can range from no activity to extensive intervention in ecological processes.
- It is possible to manage renewable resources so that they provide consistent and continuous supplies.
- All resource and environmental management practices are limited in scope and effectiveness.
- Philosophies, objectives and practices of various types of resource management are sometimes incompatible with each other, and therefore compromises and trade-offs may be necessary.
- Specific local, state and federal agencies are charged with management of natural resources and protection of environmental quality.
- Private industry, organizations and individuals contribute to resource management and environmental protection.

A CONTEXT FOR MANAGEMENT

- Resource extraction and use cannot occur without some degree of environmental change.
- Natural resources are interdependent and the use or misuse of one will affect others.⁵
- Long-range planning is integral to effective resource management, since future generations are likely to depend on the same natural resources we depend on today.
- New technologies and discovery of new resources may enhance the future resource base.
- Because no nation is entirely self-sufficient in natural resources, the use, management and conservation of resources needs to be considered in a context of global human need.

- Resource use for economic purposes needs to be balanced by consideration of ecological, educational, aesthetic and intrinsic value.
- Societies develop programs and policies related to resources and the environment through a variety of social mechanisms.
- Variation exists between cultures in the extent to which individuals or other entities are granted legal ownership or control of resources and the environment.
- The development and enforcement of management policies and environmental laws are affected by economic factors, societal needs and ethics, government attitudes, public and private interests, science and technology, and the relative influence of concerned parties.

CHALLENGES IN RESOURCE MANAGEMENT

- Because any given area or resource has many values and potential uses, it is a challenge to manage for as many values and uses as possible on a sustainable basis.
- Environmental policy decisions may become “issues” because some values are difficult to quantify, and contrasting uses or values must be considered.
- Conflict may occur between private land use rights and the stewardship of resources or maintenance of environmental quality for the public good.
- Management issues and environmental problems may arise when resource use is motivated by short-term goals and not tempered by evaluation of long-term consequences.
- Management decisions often encompass consideration of economic and environmental trade-offs, although the apparent conflict between economy and environment may dissolve when long-term rather than short-term economics are considered.
- Although political or legal processes are often utilized in resolving resource management questions and environmental issues, consensus is the ideal to aim for.

Responsible Action

QUALITY OF LIFE

- “Quality of life” or personal health and happiness is not necessarily dependent on “standard of living” or consumption of goods and services.
- Human quality of life is influenced by environmental quality.
- The standard of living and quality of life available to future generations are both affected by current personal and societal activities in relation to the environment.
- Cooperation among individuals, interest groups, organizations, businesses, communities and governments is essential to maintaining or enhancing environmental quality and the quality of life.

INDIVIDUAL AND GROUP CHOICE

- Many individual and community decisions, including choices related to recreation, transportation, vocation, housing, food, clothing and use of time and energy, affect the environment directly and indirectly.
- Modest changes in consumer preferences and other simple, daily, personal choices can significantly alter the use of natural resources and the impact of home and family on the environment.
- Product design and manufacturing practice can influence pollution as well as resource conservation.
- Community design and regional planning can influence pollution, resource conservation and preservation of natural areas.

- Change in personal and cultural behavior patterns is normal, and the direction and impact of change depends on conscious and unconscious choice at the individual and collective levels.
- Positive role models encourage positive choices and participation by others in environmental concerns.

RESPONSIBLE ACTION

- Both action and inaction affect the outcome of environmental issues.⁶
- Human decisions and actions, at the individual as well as group level, impact natural systems.
- Responsible, ethical environmental actions are a concern of all levels of society, including the individual, family, school or business, group or organization, community, state and nation.
- Responsible decision-making involves research into facts, careful consideration of values and objectives, creative evaluation of alternatives, a global orientation and long-term perspective.
- In determining responsible environmental actions, it is helpful to distinguish vital needs (essentials) from desires (nonessentials).
- The responsible citizen is concerned on a global as well as local level.

CITIZENSHIP

- Democratic societies define good citizenship to include understanding issues and participating in public processes.
- Participation in the democratic process may include voting, lobbying, serving on citizens advisory groups, participating in public hearings, communicating directly with elected or appointed officials and seeking public office.
- Interaction with the private sector may include consumer choice, media attention, ethical investing, demonstrating, communicating directly with industry leaders, taking legal action and working as an employee or consultant.
- Citizen involvement may include participating in mediation or consensus-building programs and forging creative new partnerships.
- Hands-on, direct action projects, such as clean-up days, contribute to environmental quality.
- Citizens can become involved in environmental concerns as individuals or through compatible interest groups at the local, state, national or international level.
- Individuals and organizations, acting independently of major social, economic or political institutions, play a role in educating the public and monitoring public and private activity in relation to the environment.

¹ In addition to information from technical references and input from expert reviewers, several environmental education frameworks were utilized during development of the framework for Environmental Literacy.

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- 2 This item was taken directly from Essential Learnings in Environmental Education.
- 3 This item was taken directly from Project WILD.
- 4 This item was taken directly from Project WILD.
- 5 This Item was taken directly from the Project Learning Tree Activity Guide.
- 6 This item was taken directly from the Framework for Washington Environmental Education.