



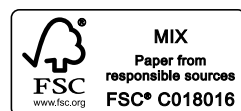
North American Association
for Environmental Education

2000 P Street NW, Suite 540, Washington, DC 20036

naaee.org

NAAEE is the professional organization for environmental
educators in North America and beyond.

Education We Need for the World We Want



5

Guidelines for Excellence Early Childhood Environmental Education Programs

For educators, parents, home schoolers, administrators,
policy makers, and the public



North American Association
for Environmental Education



Guidelines for Excellence **Early Childhood Environmental Education Programs**

For educators, parents, home schoolers, administrators,
policy makers, and the public



naaee

North American Association
for Environmental Education

Early Childhood Environmental Education Programs: Guidelines for Excellence is part of a continuing series of documents published by the North American Association for Environmental Education (NAAEE) as part of the National Project for Excellence in Environmental Education. The project is committed to synthesizing the best thinking about environmental education through an extensive process of review and discussion. Hundreds of individuals and organizations representing all aspects of early childhood education and environmental education reviewed working outlines and drafts. Reviewers include classroom teachers, daycare and early childhood education center staff members, educational administrators, environmental scientists, curriculum developers, and natural resource agency and education department staff members.

This project was funded by the Office of Environmental Education at the U.S. Environmental Protection Agency (EPA) through the Environmental Education and Training Partnership (EETAP) and EECapacity.

The contents of this document do not necessarily reflect the views and policies of the U.S. EPA, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Additional funding and support for this project has been received from Northern Illinois University, the University of Oregon, and the National Environmental Education and Training Foundation.

Additional copies of this book can be obtained by contacting

NAAEE
2000 P Street NW, Suite 540, Washington, DC 20036
202-419-0412 (phone), 202-419-0415 (fax)

naaee.org

NAAEE is the professional organization for environmental educators in North America and beyond.

ISBN 978-1-884008-23-8

Copyright © 2010, 2016 by the North American Association for Environmental Education (NAAEE). Commercial reproduction of any material in this publication is strictly prohibited without written permission from the publisher, NAAEE. Educators may photocopy as many as 100 copies of these materials for noncommercial educational purposes.

Printed on FSC paper with environmentally friendly inks

Cover photo: Shutterstock

Title page photo: Sheila Williams Ridge



EARLY CHILDHOOD ENVIRONMENTAL EDUCATION PROGRAMS: GUIDELINES FOR EXCELLENCE

MEMBERS OF THE GUIDELINES WRITING TEAM

- Bora Simmons, Director, National Project for Excellence in Environmental Education, Institute for a Sustainable Environment, University of Oregon, Eugene, Oregon
- Edward McCrea, President, Environmental Education and Conservation Global, Pennsylvania
- Matt Gay, Connecting People with Nature Coordinator, Division of Education Outreach, for the United States Fish and Wildlife Service's National Conservation Training Center, Shepherdstown, West Virginia
- Lisa Herrmann, Education Coordinator, Riparian Institute, Gilbert, Arizona
- Linda Hutchinson, Early Childhood Coach, Rock Hill School District, Rock Hill, South Carolina; Part-time Faculty Member, Center for Child and Family Studies, University of South Carolina, Columbia, South Carolina
- Mary Beth Pistillo, Training Coordinator, Nebraska Department of Education's Early Childhood Training Center, Omaha, Nebraska
- Linda H. Plevyak, Associate Professor, College of Education, University of Cincinnati, Cincinnati, Ohio
- Mary Rivkin, Associate Professor and Co-coordinator, Early Childhood Teacher Education Program, College of Education, University of Maryland, Baltimore County, Baltimore, Maryland
- Sheila Williams Ridge, Lead Teacher and Naturalist, Dodge Nature Center Preschool, West St. Paul, Minnesota
- Al Stenstrup, Director of Education Programs, Project Learning Tree, American Forest Foundation, Washington, D.C.
- Julia Torquati, Associate Professor, Department of Child, Youth, and Family Studies, University of Nebraska at Lincoln, Lincoln, Nebraska
- Brenda G. Weiser, Associate Professor, School of Education, University of Houston, Clear Lake, Houston, Texas
- Susie Wirth, Nature Explore Outreach Director, Arbor Day Foundation and Dimensions Educational Research Foundation, Nebraska City, Nebraska

Table of Contents

INTRODUCTION	2
KEY CHARACTERISTIC 1: PROGRAM PHILOSOPHY, PURPOSE, AND DEVELOPMENT	10
Guideline 1.1—Focus on nature and the environment.....	11
Guideline 1.2—Focus on education of young children.....	11
Guideline 1.3—Culturally appropriate goals, objectives, and practices.....	14
Guideline 1.4—Environmental literacy: board, staff, and providers.....	14
Guideline 1.5—Health and safety.....	15
Guideline 1.6—Ongoing evaluation and assessment.....	15
Guideline 1.7—Partnerships.....	16
Guideline 1.8—Interpersonal and intergenerational relationships.....	17
KEY CHARACTERISTIC 2: DEVELOPMENTALLY APPROPRIATE PRACTICES	18
Guideline 2.1—Based on research and theory.....	19
Guideline 2.2—Authentic experiences.....	20
Guideline 2.3—Child-directed and inquiry-based	21
Guideline 2.4—The whole child	21
KEY CHARACTERISTIC 3: PLAY AND EXPLORATION.....	24
Guideline 3.1—Use of the natural world and natural materials.....	26
Guideline 3.2—Play and the role of adults	28
KEY CHARACTERISTIC 4: CURRICULUM FRAMEWORK FOR ENVIRONMENTAL LEARNING.....	30
Guideline 4.1—Social and emotional growth	31
Guideline 4.2—Curiosity and questioning	32
Guideline 4.3—Development of environmental understandings.....	35
Guideline 4.4—Skills for understanding the environment	37
Guideline 4.5—A personal sense of responsibility and caring	39
Guideline 4.6—Physical health and development.....	41

KEY CHARACTERISTIC 5: PLACES AND SPACES	44
Guideline 5.1—Spaces and places to enhance development	45
Guideline 5.2—Natural components	47
Guideline 5.3—Comfortable for both children and adults	48
Guideline 5.4—Maintenance and usability	49
Guideline 5.5—Health, safety, and risk.....	49
Guideline 5.6—Environmental sustainability	50
KEY CHARACTERISTIC 6: EDUCATOR PREPARATION	52
Guideline 6.1—Foundations of early childhood environmental education	53
Guideline 6.2—Professional responsibilities of the educator	53
Guideline 6.3—Environmental literacy	54
Guideline 6.4—Planning and implementing environmental education	54
Guideline 6.5—Fostering learning	56
Guideline 6.6—Assessment and evaluation.....	56
APPENDIXES	
APPENDIX A: ACRONYMS USED IN THE GUIDELINES	60
APPENDIX B: CITATIONS—WORKS CITED IN THE GUIDELINES	61
APPENDIX C: REFERENCES—ADDITIONAL WORKS OF INTEREST	64
APPENDIX D: OVERVIEW OF SELECTED THEORISTS IMPORTANT TO EARLY CHILDHOOD EDUCATION.....	67
APPENDIX E: HEAD START—A CHECKLIST FOR EARLY CHILDHOOD CURRICULUM.....	69
APPENDIX F: CHILD DEVELOPMENT AND THE ROLE EDUCATORS PLAY	70

Introduction

Young children are active and inquisitive. Everything is worth exploration with all of their senses. Their minds and bodies are growing at a phenomenal pace, developing neural connections they will use for the rest of their lives. Learning is everything; experience is everything. Whether it is the taste of a carrot freshly picked from the garden, the sight of sunlight on a dewdrop, or the sound of music made with some rocks found in the yard, young children are making discoveries and creating connections. They are beginning to understand their individuality and the individuality of others. They are beginning to build relationships between themselves and others and between themselves and the world around them. Providing opportunities for the growth and development of the whole child, opportunities to develop a sense of wonder about nature, and earnest engagement in discovery about the real world are the foundation for learning in early childhood. It is vital for early childhood environmental education programs to build this foundation.

WHAT IS ENVIRONMENTAL EDUCATION IN EARLY CHILDHOOD?

Environmental education in early childhood is a holistic concept that encompasses knowledge of the natural world as well as emotions, dispositions, and skills. According to Ruth Wilson (1994), environmental education in early childhood includes the development of a sense of wonder; appreciation for the beauty and mystery of the natural world; opportunities to experience the joy of closeness to nature; and respect for other creatures. It also includes the development of problem-solving skills



SHEILA WILLIAMS RIDGE

and the development of interest and appreciation in the world around us. These goals acknowledge that learning is more than a cognitive process and that emotions play a particularly important role (See Harlan and Rivkin, 2008). Therefore, early childhood educators should provide opportunities for children to experience peace, joy, and fascination with nature because these emotions undergird their developing knowledge, skills, and dispositions (Gardner, 1999).

Early Childhood Environmental Education Programs: Guidelines for Excellence contains a set of recommendations for developing and administering high-quality environmental education programs for

KINDERGARTEN

The founder of early childhood education, Friedrich Froebel, began the first kindergarten—literally “children’s garden”—in the nineteenth century. These kindergartens had individual gardens for each child, enclosed by a communal garden. Children used their gardens as they wished, for play and experimenting, gaining firsthand experience. They helped with the communal garden, and often explored the surrounding fields and woods. Froebel believed that children should grow in harmony with nature. Other pioneers of early childhood education shared Froebel’s emphasis on the connection between young children and nature.

young children from birth to age eight, with a focus on ages three to six. These guidelines provide a tool that can be used to ensure a firm foundation for new programs or to trigger improvements in existing ones. The overall goal of these guidelines is to chart an appropriate and positive process whereby educators can start young children on their journey toward becoming environmentally responsive youth and adults. This overall goal is shared with the other guidelines produced by the North American Association for Environmental Education's Project for Excellence in Environmental Education.

HOW EARLY CHILDHOOD ENVIRONMENTAL EDUCATION DIFFERS FROM ENVIRONMENTAL EDUCATION FOR OLDER STUDENTS AND ADULTS

The goal of environmental education, according to the Belgrade Charter (UNESCO, 1976, p. 2), is "to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones." The ultimate goal of environmental education is the development of an environmentally literate citizenry. Environmentally literate individuals understand environmental issues and how human decisions affect environmental quality. In addition, they use this knowledge to make informed, well-reasoned choices that also take social and political considerations into account. As important as knowledge about environmental issues and their human aspects are, they must be complemented by

a positive and caring attitude toward the environment. Research has shown that most attitudes are formed very early in life, and this is why it is so important for environmental education to begin in early childhood.

Environmental education programs for formal K–12 classrooms tend to include a somewhat structured approach to knowledge acquisition, data collection, information analysis, and application of various action skills. The approach to environmental education for early childhood learners is less about organization of graduated achievements and more about free discovery on each child's own terms. Personal perceptions, attitudes, and connections with nature are the key goals at this stage, and facilitating positive experiences varies from child to child. These guidelines emphasize the development of individual feelings, beliefs, and inner unity with nature that are so critical in the early years.

Particularly for very young children, environmental education should incorporate exploring woodlands, getting wet feet, climbing rocks, building with sticks, running on grass, turning over rocks, following insects, stomping in puddles, and so forth. Children are developing a relationship with the natural world. They are learning how to gently hold a worm, examine it, and then return it to its habitat. They are learning to appreciate all kinds of weather. They are learning how to explore and use tools of exploration such as magnifying glasses and popsicle sticks. Children are watching plants and animals change through their life cycles, and

THE VERY EARLY YEARS

Infants are born with well-developed senses, and have a wide range of reflexive abilities for beginning the important tasks of forming relationships and developing trust, having their basic physical needs met and exploring the world around them. With nurturing and responsive caregiving, appropriate environmental stimulation, optimal health, and adequate nutrition, babies will grow from being totally dependent to becoming active participants in exploring and shaping their world.

Infants and toddlers are eager and curious learners, gaining knowledge and understanding of themselves and the world around them from every experience of daily living. Dramatic changes occur in every area of development, and growth in one area influences growth in all other areas (Nebraska Department of Education Early Childhood Training Center, 2005).

learning respect for the natural world and living things. Children who respect the environment feel an emotional attachment to the natural world, and deeply understand the link between themselves and nature, will become environmentally literate citizens. The task of environmental education for young children is to forge the bond between children and nature.

Early childhood environmental education focuses on developmentally appropriate conservation

concepts and avoids an explicitly problem-oriented approach. Young children do not have the coping skills to face the tragedies of environmental crises and problems. When faced with the loss of endangered species and environmental degradation, young children may respond with sadness, fear, and helplessness, which can lead to a defensive apathy. In early childhood, it is important to concentrate on building a foundation that will allow for positive examination of issues and appropriate action later in life.

HOW TO USE THESE GUIDELINES

Early Childhood Environmental Education Programs: Guidelines for Excellence identifies six key characteristics of high-quality early childhood environmental education programs. For each of these characteristics, guidelines are then listed that early childhood programs should follow. Finally, each guideline is accompanied by several indicators listed under the heading “What to look for.” These indicators suggest ways of gauging whether the program being reviewed or developed addresses the guidelines. Indicators are simply clusters of attributes you might look for to help you determine whether the characteristic is embodied in the program you are reviewing or developing.

Early Childhood Environmental Education Programs: Guidelines for Excellence is designed to assist and help the educators, administrator, or program developers concerned about the quality of early childhood environmental education programs. The guidelines provide direction yet offer flexibility in shaping content, technique, and other aspects of program delivery. These guidelines can be used to offer a way of judging the relative merit of different programs, provide standards and benchmarks for new programs, and supply a set of ideas about what a well-rounded early childhood environmental education program might be like.

It is not reasonable to expect that every early childhood environmental education program will follow



ARBOR DAY FOUNDATION

all of the guidelines. For example, a program might not have a structured evaluation or assessment plan in place. This shortcoming does not necessarily mean that the program is fatally flawed. In cases such as this one, Early Childhood Environmental Education Programs: Guidelines for Excellence can illuminate areas for improvement.

The guidelines are just that, a set of guidelines. They are not intended to cover every possible detail of what constitutes a high-quality program. However, Early Childhood Environmental Education Programs: Guidelines for Excellence provides a foundation on which to build programs that reflect exemplary practice. As a tool to inform judgment, these guidelines may contribute to more effective environmental education for young children.

HOW THE GUIDELINES WERE DEVELOPED

This document was developed by a writing team comprising environmental education and early childhood education professionals from a variety of backgrounds and organizational affiliations. The team made every effort to ensure that the Early Childhood Environmental Education Programs: Guidelines for Excellence reflected a widely shared understanding of best practice. This team has taken on the challenge of turning ideas about quality into usable guidelines. In addition, drafts of these guidelines were circulated widely to practitioners and scholars in the field (e.g., teachers, nonformal educators, child psychologists, educational administrators, and curriculum developers), and their comments were incorporated into successive revisions of the document.

HOW DO THESE GUIDELINES LINK TO OTHER GUIDELINES IN THIS SERIES?

Early Childhood Environmental Education Programs: Guidelines for Excellence is one of a continuing series of documents being developed as part of the North American Association for Environmental Education's National Project for Excellence in Environmental Education. Taken together, the comprehensive set of guidelines constitutes a set of tools that can provide a firm grounding for practitioners in the theory and practice of environmental education and can help to elevate their work to the highest level of quality.

SAMPLE FORMAT FOR THE GUIDELINES

Key Characteristic

1.1) Guideline

What to look for:

- Indicator
- Indicator

1.2) Guideline

What to look for:

- Indicator
- Indicator



SHEILA WILLIAMS RIDGE

Each resource in the series has been developed to respond to specific needs identified by the environmental education community. As with this publication, every resource in the series has been developed with an intensive research-based and peer-reviewed process. Particularly relevant documents are detailed below, and the entire series is described inside the back cover of this publication.

Early Childhood Environmental Education Programs: Guidelines for Excellence is designed to integrate synergistically with other publications in the series:

Excellence in Environmental Education: Guidelines for Learning (K–12) (North American Association for Environmental Education, 2010) details the understandings and skills needed for students' environmental literacy.

Guidelines for the Preparation and Professional Development of Environmental Educators (North American Association for Environmental Education, 2010) specifies the competencies that instructors need in order to use educational materials and

other resources to be successful in their efforts to help the learner achieve the goal of environmental literacy.

Environmental Education Materials: Guidelines for Excellence (North American Association for Environmental Education, 2009) provides criteria for the selection and development of high-quality environmental education instruction materials.

WHY ENVIRONMENTAL EDUCATION?

For many, environmental education is rooted in the belief that humans can live compatibly with nature and act equitably toward each other. Another fundamental belief is that people can make informed decisions that consider not only the well-being of the earth, but future generations. Environmental education aims for an effective, environmentally literate citizenry that seeks to participate with creativity and responsibility in our world and with each other in the twenty-first century.

Environmental education often begins close to home, encouraging learners to understand and forge

connections with their immediate surroundings. The environmental awareness, knowledge, and skills needed for this localized learning provide a foundation for moving out into larger systems, broader issues, and a more sophisticated comprehension of causes, connections, and consequences.

Whether working with adults or children, effective environmental education is learner-centered and provides participants with opportunities to construct their own understanding through hands-on investigations. Engaged in direct experiences, learners are challenged to use higher-order thinking skills as active, responsive problem solvers. Environmental education provides real-world contexts and issues from which concepts and skills can be learned.

THE ROOTS OF ENVIRONMENTAL EDUCATION

The Belgrade Charter (UNESCO, 1976) was adopted by a United Nations conference in 1976 and provides a widely accepted goal statement for environmental education. A few years later, the world's first intergovernmental conference

ESSENTIAL UNDERPINNINGS OF EARLY CHILDHOOD ENVIRONMENTAL EDUCATION

The essential underpinnings of environmental education were first identified in Guidelines for Learning (K–12) (North American Association for Environmental Education, 2010). These basic overarching themes are relevant to early childhood, but in slightly different ways:

Systems: Children live in and learn about systems: families, communities of people, animals, and plants.

Interdependence: People are connected to each other and to nature. What we eat, drink, breathe, and wear is drawn from nature, and we have an impact on nature as well.

The importance of where one lives: It is important for children to know the sights, sounds, and smells of their own habitat. Nature is a part of our local environment, whether it is a backyard, vacant lot, park, or nature center.

Integration and Infusion: Environmental education does not have to be a separate activity or “subject,” and is best integrated with experiences in a variety of curricular areas (literacy, creative arts, mathematics, science, health, daily routines).

Roots in the real world: Direct experience with authentic materials is a hallmark of early childhood education; sorting leaves and seeds, digging for worms, and identifying local birds, insects, and plants are all activities that may help children become grounded in the natural world.

Lifelong learning: Inspiring curiosity about the world, creative thinking and problem solving, and collaborative learning can build a strong foundation for lifelong learning.

on environmental education adopted the Tbilisi Declaration (UNESCO, 1978). This declaration built on the Belgrade Charter and established three broad objectives for environmental education. These objectives, which follow, provide the foundation for much of what has been done in the field since 1978:

- To foster clear awareness of and concern about economic, social, political, and ecological interdependence in urban and rural areas;
- To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment;
- To create new patterns of behavior of individuals, groups, and society as a whole toward the environment.

As the field has evolved, these objectives have been researched, critiqued, revisited, and expanded. They still stand as a strong foundation for an internationally shared view of the core concepts and skills that environmentally literate citizens need to develop a sustainable, equitable, and positive society. Since 1978, bodies such as the Brundtland Commission (United Nations, 1987), the United Nations Conference on Environment and Development in Rio (UNCED, 1992), the International Conference on Environment and Society in Thessaloniki (UNESCO, 1997), and the 2002 World Summit on Sustainable Development in Johannesburg (United Nations, 2002) have influenced the work of many environmental educators. By highlighting the importance of viewing the environment within the context of human influences, this perspective has expanded the emphasis of environmental education by focusing more attention on social equity, economics, culture, and political structure.

CALL TO ACTION: RECONNECTING THE WORLD'S CHILDREN TO NATURE

Presented at the Working Forum on Nature Education: New Tools for Connecting the World's Children with Nature, an international event held at Arbor Day Farm, Nebraska City, Nebraska, USA, July 2008

Children grow healthier, wiser, and more content when they are more fully connected throughout their childhood to the natural environment in as many educational and recreational settings as possible. These benefits are long-term and significant and contribute to their future well-being and the contributions they will make to the world as adults.

This document calls for a commitment to action in recognition that children and youth of the world benefit in many ways and across multiple domains of learning and development when they become more connected to the natural world around them.

The Call to Action beckons families, educators, and community leaders worldwide to take action, to strengthen children's connection to nature—making developmentally appropriate nature education a sustaining and enriching, fully integrated part of the daily lives and education of the world's children.

The Call to Action was initiated by the Nebraska Department of Education in partnership with the World Forum—Nature Action Collaborative for Children State Leadership Team, the Nebraska Nature Action Collaborative for Children, and the National Association of Early Childhood Specialists in State Departments of Education.

Summary of Early Childhood Environmental Education Programs: Guidelines for Excellence

KEY CHARACTERISTIC 1: PROGRAM PHILOSOPHY, PURPOSE, AND DEVELOPMENT

- Guideline 1.1—Focus on nature and the environment
- Guideline 1.2—Focus on education of young children
- Guideline 1.3—Culturally appropriate goals, objectives, and practices
- Guideline 1.4—Environmental literacy: board, staff, and providers
- Guideline 1.5—Health and safety
- Guideline 1.6—Ongoing evaluation and assessment
- Guideline 1.7—Partnerships
- Guideline 1.8—Interpersonal and intergenerational relationships

KEY CHARACTERISTIC 2: DEVELOPMENTALLY APPROPRIATE PRACTICES

- Guideline 2.1—Based on research and theory
- Guideline 2.2—Authentic experiences
- Guideline 2.3—Child-directed and inquiry-based
- Guideline 2.4—The whole child

KEY CHARACTERISTIC 3: PLAY AND EXPLORATION

- Guideline 3.1—Use of the natural world and natural materials
- Guideline 3.2—Play and the role of adults

KEY CHARACTERISTIC 4: CURRICULUM FRAMEWORK FOR ENVIRONMENTAL LEARNING

- Guideline 4.1—Social and emotional growth
- Guideline 4.2—Curiosity and questioning
- Guideline 4.3—Development of environmental understandings
- Guideline 4.4—Skills for understanding the environment
- Guideline 4.5—A personal sense of responsibility and caring
- Guideline 4.6—Physical health and development

KEY CHARACTERISTIC 5: PLACES AND SPACES

Guideline 5.1—Spaces and places to enhance development

Guideline 5.2—Natural components

Guideline 5.3—Comfortable for both children and adults

Guideline 5.4—Maintenance and usability

Guideline 5.5—Health, safety, and risk

Guideline 5.6—Environmental sustainability

KEY CHARACTERISTIC 6: EDUCATOR PREPARATION

Guideline 6.1—Foundations of early childhood environmental education

Guideline 6.2—Professional responsibilities of the educator

Guideline 6.3—Environmental literacy

Guideline 6.4—Planning and implementing environmental education

Guideline 6.5—Fostering learning

Guideline 6.6—Assessment and evaluation



KEY CHARACTERISTIC 1: PROGRAM PHILOSOPHY, PURPOSE, AND DEVELOPMENT

GUIDELINE 1.1—FOCUS ON NATURE AND THE ENVIRONMENT

GUIDELINE 1.2—FOCUS ON EDUCATION OF YOUNG CHILDREN

GUIDELINE 1.3—CULTURALLY APPROPRIATE GOALS, OBJECTIVES, AND PRACTICES

GUIDELINE 1.4—ENVIRONMENTAL LITERACY: BOARD, STAFF, AND PROVIDERS

GUIDELINE 1.5—HEALTH AND SAFETY

GUIDELINE 1.6—ONGOING EVALUATION AND ASSESSMENT

GUIDELINE 1.7—PARTNERSHIPS

GUIDELINE 1.8—INTERPERSONAL AND INTERGENERATIONAL RELATIONSHIPS

Key Characteristic 1: Program Philosophy, Purpose, and Development

Early childhood environmental education programs articulate an overarching philosophy that guides all program activities. Goals and objectives state how the program meets the needs of young children and their community.

GUIDELINE 1.1—FOCUS ON NATURE AND THE ENVIRONMENT

The program's philosophy, goals, and objectives related to nature and the environment are established and clearly articulated. A coherent environmental philosophy and set of practices are articulated for all aspects of the program, including staff development, teaching, curriculum, evaluation, site design, indoor and outdoor classroom design, maintenance, and materials.

What to look for:

- The development of the program's environmental philosophy includes the staff, the families and their children, and the program's environmental philosophy is shared with all program stakeholders and interested community members.
- Beliefs and practices related to issues such as the intrinsic value of nature are articulated in the program's environmental philosophy. In doing so, the program philosophy addresses issues such as
 - appropriate specimen collection (e.g., flowers, leaves, insects, pinecones, nuts, rocks)



- adults as role models for the care of plants and animals in the environment
- the development of respect and a sense of stewardship
- modeling environmental responsibility in facility design, maintenance, materials, and waste management

GUIDELINE 1.2—FOCUS ON EDUCATION OF YOUNG CHILDREN

Program philosophy, goals, and objectives related to the education of young children are clearly articulated.

What to look for:

- Developmentally appropriate practices as articulated by such nationally recognized groups as the National Association for the Education of Young Children (NAEYC) are used as the basis of the program's philosophy, goals, and objectives.

LEAVE IT ALONE OR BRING IT HOME?

"At our school, we tell children that the natural materials are here so everyone that visits can enjoy them, and they need to stay there to continue to grow. We let children pick invasive or abundant species of flowers, like dandelions or garlic mustard, where they can 'do good' while picking a few beautiful flowers. We also grow flowers, fruits, and vegetables that are planted with the purpose of harvesting."

—Minnesota teacher

- Current theories about children’s learning, including children with special needs, are reflected in programs and instruction.
- The program’s learning opportunities take into account the realities of the child’s life.
- Learning is place-based and applicable to all children in all settings.
- The child’s learning (individually and in a group) is supported by programs and instruction.
- The abilities of each child are supported by the environment and activities employed.
- Goals, objectives, and practices are correlated to local, state, and national standards when appropriate (e.g., Head Start Path to Positive Outcomes [see Appendix E], NAEYC Standards [National Association for the Education of Young Children, 2006]).



ARBOR DAY FOUNDATION

SOME ETHICAL CONSIDERATIONS OF PICKING AND COLLECTING

In the end, each program needs to make the choice between two good things: picking flowers for classrooms or study, or letting flowers live out their natural life cycle. When there are animals, plants, or natural materials, young children are interested in touching, picking, and collecting them. They often want to “give this one to my mom” or “add this to my collection.” Whether children are exploring a beach or a conservatory, adults can model behavior that demonstrates to children that some things are okay to add to a collection, and some things need to stay where they are found. For example, one center has set aside a collection area where picking is allowed and a preserved area where research is conducted and no picking is allowed. Programs should establish guidelines for collecting that take into consideration the goal of providing children with the richest authentic experiences of nature while modeling respect for living things.

Programs can set guidelines for collecting such as

- ◆ asking permission
- ◆ collecting only what one needs
- ◆ handling plants and animals gently and with respect
- ◆ restoring natural materials to where you found them when you leave

When there is a small animal or insect for which you can provide an adequate habitat, there are plenty in the environment, and the animal can be returned to its natural habitat in a reasonable amount of time, it may be beneficial for the children to bring this animal into the classroom for further observation. When there are only a few in the natural environment, educators can find a way to document the experience for children to enjoy through photographs, drawings, journals, and so forth. Consider alternatives to collection. For example, give each child a spray bottle to bring on a walk so they can give the plants a drink or allow them to photograph flowers they see instead of picking them. These are ways to interact but leave plants intact.

ACCESS FOR ALL

All children, regardless of cultural background or physical, cognitive, emotional, or developmental challenges, benefit from time spent exploring their environment. Providing high-quality early childhood programs, and allowing children to follow their curiosities about their world and what nature has to offer, can bring incredible richness to their lives.

THE ROLE OF CULTURE IN EARLY CHILDHOOD ENVIRONMENTAL EDUCATION

Young children are embedded in their family culture. The child's cultural background includes the beliefs and practices related to daily life and child rearing (e.g., eating, sleeping, clothing, guidance and discipline, routines, relationships with others) as well as the family's home language and religious, ethnic, political, and geographic characteristics.

Respect a child's culture when planning a program. The goals and objectives of environmental education are shared by most cultures of the world, although some issues can raise controversy. Since many early environmental education activities involve living things and learning through concrete, firsthand experiences, it is important to recognize differences in families regarding attitudes toward their child's handling certain insects or creatures and their reverence toward some animals or plants in nature. Corn or maize is revered in traditional Mexican culture. Similarly, in certain cultural groups—especially in West Africa—using foods such as rice, beans, or other vegetables in art projects is viewed as wasteful. Using alternative materials to food is advisable. Some religions fear snakes and others use snakes in worship. Educators in a classroom with a pet snake should be aware of the child's family's relationship to snakes.

One nature-based preschool allows food for play only if it ends up as food for the school animals or outdoor wildlife. Dried corn in the sensory table feeds the chickens, for instance. Potatoes are not used for prints because they cannot be eaten afterwards. Such respect for food is part of this school's cultural value and reflects the values of the families they serve.

Educators need to inform all families of the proposed activities and valuable outcomes of their child's environmental education programming and encourage their participation. Family members can share stories of their own experiences cultivating plants and taking care of animals. Their participation is valuable during outdoor activities and with small groups indoors. Giving parents suggestions for things to do with their children at home and in their communities enables the whole family to become better observers of nature phenomena.

Suggested Resources

- ◆ Almeras, B. G., Heath, D., Cooper, S. and Wynne, P. J. (2001). *Access Nature*. Reston, Virginia: National Wildlife Federation.
- ◆ Chalufour, I. and Worth, K. (2003). *Discovering nature with young children*. Saint Paul, Minnesota: Redleaf Press.
- ◆ Greenman, J. (2007). *Caring Spaces, Learning Places: Children's Environments that Work*. Redmond, WA: Exchange Press.
- ◆ Klein, M. D., Cook, R. E., and Richardson-Gibbs, A. M. (2001). *Strategies for including children with special needs in early childhood settings*. Albany, New York: Delmar Thomson Learning.

GUIDELINE 1.3—CULTURALLY APPROPRIATE GOALS, OBJECTIVES, AND PRACTICES

The program's philosophy, goals, and objectives reflect the need for the early childhood environmental education program to incorporate, mirror, and accommodate the cultural traditions of the audiences served.

What to look for:

- The cultural traditions, perspectives, needs, and interests of the children served have been identified and the extent to which the program matches these traditions has been examined.
- Steps have been taken to develop a staff that has a good understanding of and sympathy with the cultural traditions of the children served.
- Individuals from the cultural traditions of the children served have assisted with the development, writing, and pilot testing of programs and materials.
- An advisory group is in place to provide direction, recommendations, and review of materials. The committee includes representatives from the different cultural traditions being served and works with the aid of a culturally competent facilitator, if appropriate.
- Programs and materials are pilot tested with members of the children being served and revised as needed to ensure that the cultural perspectives and traditions of the audiences are authentically included.
- Collaboration and feedback between the program administrators and representatives of the different cultural groups served is continuous.

GUIDELINE 1.4—ENVIRONMENTAL LITERACY: BOARD, STAFF, AND PROVIDERS

The program's philosophy, goals, and objectives promote the environmental literacy of board, staff, and providers.

What to look for:

- The components of environmental literacy are familiar to staff and providers.



SHELLA WILLIAMS RIDGE

- Staff and providers promote the appreciation and value of outdoor experiences with all stakeholders, including the children served.
- Professional development focusing on environmental education and child development is provided for all staff.
- Current knowledge of basic environmental understandings is maintained by staff and providers
 - They understand locally relevant environmental issues and ethical concerns
 - They are aware of their own approaches to nature, including their conceptual understandings, attitudes, beliefs, and dispositions toward nature
 - They understand and apply child development principles, particularly as they relate to nature and the environment
 - They model appropriate behaviors such as recycling, turning lights off, respect for living things, and so forth

- They are trained to facilitate positive outdoor experiences
- They are trained to handle safety issues as families and other community members are invited to participate actively in sharing their knowledge and expertise with children, staff members, and providers

GUIDELINE 1.5—HEALTH AND SAFETY

The program’s philosophy, goals, and objectives are designed to ensure the health and safety of the children served.

What to look for:

- Risk and safety are balanced; levels of acceptable risk are established in a risk management plan that is used both on-site and when traveling.
- Established health and safety regulations and standards are met (e.g., Americans with Disabilities Act, National Association for the Education of Young Children).

- Precautions are established relating to nature experiences such as plants, animals, water features, hiking, weather exposure, and so forth.
- All staff members are prepared to implement emergency plans (e.g., CPR and first-aid skills, awareness of steps to be taken in emergencies when outdoors or hiking).
- Continuous communication between parents and providers regarding the health and safety of the child is provided.
- Health and safety needs are addressed in facility management and maintenance (e.g., playground, indoor spaces, other outdoor areas).
- Criminal background checks have been conducted on staff members and volunteers.

GUIDELINE 1.6—ONGOING EVALUATION AND ASSESSMENT

The early childhood environmental education program has an evaluation and assessment plan that is instrumental to teaching and learning, program, and facility improvement.

NATURE-ORIENTED ACTIVITIES FAMILIES CAN DO TOGETHER

Growing plants. If you have a sunny windowsill or a small patch of ground in the yard, you and your children can grow plants together. Don’t want to buy seeds? Use seeds from your kitchen, such as avocado, orange, apple, grapefruit, peach, or pear. Try to sprout them on your windowsill—maybe they won’t all grow, but how great to experiment. Try planting sprouted potatoes or get an organic sweet potato to root in water. Look for seeds in the fall that have gathered on the ground—acorns, black walnuts, pecans—and see if they will sprout.

Night sky. Go outside with your children and look up. What do you see—the moon? Stars? Satellites? Make up stories about the patterns you see in the stars (for more ideas: www.globeatnight.org).

Field trips. Take a fanny pack with magnifiers, nature guides, paper, and markers. Follow your curiosities. You don’t have to go any farther than around the block or down to a nearby park.

Suggested Resources

- Green Hearts Institute for Nature in Early Childhood’s A Parents’ Guide for Nature Play (Finch, 2009)—www.greenheartsinc.org/Parents__Guide.html.
- National Wildlife Federation Be Out There Campaign—www.nwf.org/Get-Outside/Be-Out-There.aspx.
- Ward, J. (2008). *I Love Dirt: 52 Activities to Help You and Your Kids Discover the Wonders of Nature*. Boston, Massachusetts: Trumpeter Books.
- Nature Explore Families’ Club (Arbor Day Foundation and Dimensions Educational Research Foundation, Nebraska www.arborday.org/explore/families).



SHELLA WILLIAMS RIDGE

What to look for:

- Overall program goals are reviewed and revised on a regular basis with participation by parents, caregivers, and community and staff members.
- Learning objectives for programs are reviewed and revised on a regular basis.
- Site facilities are reviewed and appropriate maintenance performed.
- Program objectives are clearly identified and evaluation methodology matches those objectives.
- Environmental learning outcomes are linked to applicable benchmarks and standards so that assessment tools can be utilized to determine gains made by individual students.

GUIDELINE 1.7—PARTNERSHIPS

Active communication is maintained with a variety of interested individuals and organizations to support networking, resource sharing, enhanced program development, and expanded audience outreach. Partnership activities strengthen their respective organizations.

What to look for:

- Caregivers are involved in the education process:
 - Parents and primary caregivers
 - Home and school enrichment programs
 - Parent organizations
 - Other family members
- Relationships with other national, state, and local organizations, businesses, and agencies are encouraged:
 - Youth organizations (Scouts, Future Farmers of America, 4-H)
 - Faith-based organizations
 - State and federal conservation agencies (Cooperative Extension, state fish and game agencies, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, National Park Service, U.S. Forest Service)
 - Conservation organizations (Keep America Beautiful affiliates, local Alliance for Community Trees, Audubon chapters)



- Environmental education organizations (Project Learning Tree, Project WILD, Project WET, Nature Mapping, Global Learning and Observations to Benefit the Environment [GLOBE], Leopold Education Project)
- Community and senior citizen centers
- Local businesses and organizations that support the same ideals
- Relationships with the wider education community are encouraged and developed:
 - Facilitators in programs that serve children such as zoos, nature and discovery museums, public libraries, and so forth
 - Early childhood teacher educators at two- and four-year colleges
 - University laboratory faculty members
 - Educators with local, state, and federal agencies and foundations (community education

or environmental foundations, Environmental Protection Agency, U.S. Department of Agriculture, U.S. Department of the Interior, Head Start Health, Human Services Child Resource and Referral)

- Public and private school professionals
- Staff members from professional teaching and curriculum development organizations (Association for Childhood Education International, National Association for the Education of Young Children, National Association of Elementary School Principals)

GUIDELINE 1.8—INTERPERSONAL AND INTERGENERATIONAL RELATIONSHIPS

Positive relationships among children and between children and adults are essential for developing a sense of personal responsibility, building a sense of being a community member, and promoting a feeling of personal worth.

What to look for:

- Adult interactions with children are responsive, warm, and respectful.
- Children are encouraged to respect the feelings of others.
- Children are encouraged to take responsibility for their actions.
- Cooperation among children and with adults is stressed.

FAMILY NATURE CLUBS

Happy Trails Family Nature Club is an informal, no-cost nature club that began in the Minneapolis-Saint Paul, Minnesota area. It was started by Jodi Hiland, a local parent who is committed to offering her own children as much time outdoors as possible. The club's vision is to help families spend more time communing with nature by arranging year-round, regularly scheduled nature outings that benefit everyone.

The club is open to anyone with a sense of adventure, and families are never obligated to participate more than they wish. The only requirements are that children must always be accompanied by adults in their family, and that the adults are responsible for their own children.

Around the country there are family nature clubs being established. To facilitate a new club in your area, please visit www.arboday.org/explore or www.childrenandnature.org/movement. Both organizations provide free materials to get families started in local nature adventures.



KEY CHARACTERISTIC 2: DEVELOPMENTALLY APPROPRIATE PRACTICES

GUIDELINE 2.1—BASED ON RESEARCH AND THEORY

GUIDELINE 2.2—AUTHENTIC EXPERIENCES

GUIDELINE 2.3—CHILD-DIRECTED AND INQUIRY-BASED

GUIDELINE 2.4—THE WHOLE CHILD

Key Characteristic 2: Developmentally Appropriate Practices

Early childhood environmental education is designed and implemented using established developmentally appropriate practice.

“...developmentally appropriate practice is matching the learning environment, the physical set up and materials, schedule, curriculum, teaching methods to the developmental levels of children” (Oltman, 2002, p. 2).

Because the natural and built environments offer such a large variety of sensory experiences for young children, the framework for these practices allows the educator to support the learning style of each individual child through their senses in all areas of development—social-emotional, cognitive, and physical. When children are able to explore their environment, interact with it, and communicate about it at their own developmental level, the educator can support and extend this learning by engaging in inquiry with the children. The educator supports the children’s learning through making connections to previous experiences, posing questions that help the children to reflect, and allowing the time that children need to explore their sense of wonder and awe.

“There is no magic formula for developmentally appropriate practice. Educators make decisions day by day, minute by minute, based on knowledge of how children develop and learn, the individual children and families in question, and the environmental, social, and cultural context” (Oltman, 2002, p. 2).

GUIDELINE 2.1—BASED ON RESEARCH AND THEORY
Early childhood environmental educators understand and apply appropriate research and learning theory.



ARBOR DAY FOUNDATION

What to look for:

- Early childhood educators are knowledgeable about educational theories and theorists that support developmentally appropriate practice, including the works of theorists such as Dewey, Piaget, Vygotsky, Montessori, Erikson, Gardner, Steiner, and the Reggio Emilia founders. See Appendix D.
- Learning approaches allow children to gauge their own learning through actual experience—projects, exploration, and interaction with their environment.
- Early childhood environmental educators are knowledgeable about theories of how children learn and what they need in their environment to support their learning.
- Learning activities are designed to accommodate all children.
- Children are provided with structured and unstructured opportunities for social interaction with other children and with adults.



ARBOR DAY FOUNDATION

Infants and toddlers experience the world with all their senses, and the outdoors is a source of ever-changing sensory experiences. Well-designed outdoor spaces offer young toddlers, who are compelled to move, bountiful motor stimulation. Adults and caregivers should support this learning by giving children the words to help explain what they are experiencing.

- Positive experiences in and with nature are provided as a foundation for healthy development and a concern about the environment.

GUIDELINE 2.2—AUTHENTIC EXPERIENCES

The developmentally appropriate program responds to children’s needs to explore, discover, and discuss their experiences in the environment.

What to look for:

- Opportunities for exploring, respecting, and experimenting in nature are provided.
- Time for outdoor opportunities is provided throughout the day.
- Children are provided frequent opportunities throughout the year to experience the changes to the natural environment.
- The needs of diverse learners, including cultural and varying ability, are met when providing nature-related and play experiences.
- Opportunities are given for children to form and express their own environmental attitudes.
- Opportunities are provided for children to experience the different elements of the outdoors—textures, sounds, tastes, smells, and sights—on a regular basis.
- Tools and materials that the child can use to view the environment in different ways are provided. Examples include a magnifying glass, clear containers for viewing insects close up, or a viewfinder.
- The learning environment includes materials that can be used indoors or outdoors to allow children to express themselves about their experiences—paper, clipboards, crayons, pens, or puppets.
- Opportunities to climb, balance, crawl, jump, and lift using natural materials are provided.
- Opportunities to grow food plants or flowers, care for them, and watch them grow are provided and nurtured.

SPECIAL NEEDS

Federal and state legislation mandates that children with special needs be taught in the “least restrictive environment,” which for preschoolers would be with typically developing peers. The term “natural environments” in the legislation refers to settings that young children typically experience such as home, neighborhood, or preschool. “Natural areas” discussed in these guidelines refer to green outdoor areas. An awareness of a child’s special needs (strengths and challenges) can enable teachers and nonformal educators to adapt easily the settings, activities, and materials to include all children in early childhood environmental education programs.

GUIDELINE 2.3—CHILD-DIRECTED AND INQUIRY-BASED

The developmentally appropriate program is child-directed and inquiry-based.

What to look for:

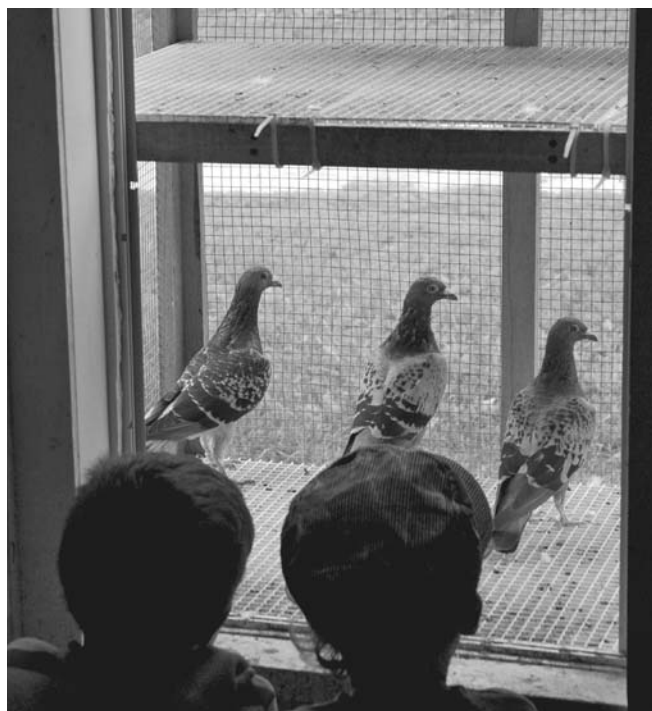
- Opportunities and time for children to follow their own interests are provided.
- Open-ended activities, choice, and hands-on learning focusing on process are provided.
- Taking materials outdoors or bringing natural materials inside to extend learning is integral to the program.
- Materials and activities provide children with an opportunity to begin to build inquiry skills. They may vary from child-directed to provider-directed, depending on the activity and the knowledge and experience of the provider and the children. For instance, the child may provide the question but have no context for developing a way to answer his or her own question.

GUIDELINE 2.4—THE WHOLE CHILD

The developmentally appropriate program is planned with the whole child in mind.

What to look for:

- Educators establish a schedule and curriculum with preplanned activities that structure nature into all curricular areas, as well as meals and nap time, while maintaining flexibility to take advantage of teachable moments or the unplanned



SHEILA WILLIAMS RIDGE

BRINGING THE OUTDOORS INSIDE

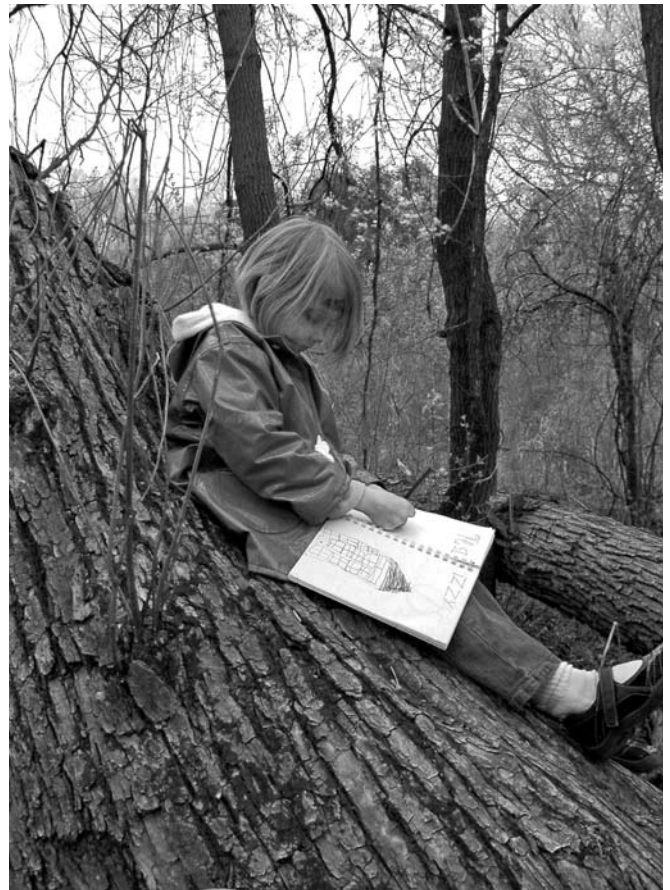
In many Waldorf classrooms, nature tables are used to bring nature inside. They also help students celebrate seasonal rhythms. A colored cloth is used to cover the tables and to suggest the different seasonal pastels for spring. Seasonal treasures such as leaves, nuts, flowers, and twigs are added to the table. Seasonal figures are also added for the children to play with. The figures can be handmade animals, mythical figures such as King Winter, or most any handcrafted item linked to the season. The children can play with items on the table and they can add things to the table. As the seasons change, the colors and objects on the table change.

CHILD-DIRECTED INQUIRY

Stephanie, Emma, and Amy discovered some caterpillars in the garden. They took turns holding them gently and then put them in a small jar. “What do they eat?” they asked a teacher. “We have a book in the classroom that will tell us. I’ll go get it,” she responded. When the teacher returned, the children had given the caterpillars a big drink—so big that they were floating and not moving. Alarmed, the children thought the caterpillars had died. The teacher helped them pour off the water and the caterpillars began to move again. The teacher explained that caterpillars only need little drinks because they are very little. Together they looked in a field guide and found that caterpillars are vegetarians—a word the children immediately understood because one of their classmates was a vegetarian. The children gathered bits of leaves to put in the jar. The teacher in this example was responsive to children’s interests and questions, and assisted them in finding information they wanted. The teacher helped them solve their floating caterpillar problem, using it as a teachable moment.

CURIOSITY

Children often show that they are curious about many things. When adults observe carefully, they may see how to support their curiosity. Yanjie was attacking a snow bank with a scoop. The icy snow refused to be scooped so Yanjie headed for the woodchips which scooped well. She had other ideas—sand, then gravel. She returned to the snow—still no luck, then woodchips, sand, and gravel again. The teacher simply watched without interfering and mentally noted Yanjie’s curiosity, imagination, and persistence. If Yanjie had given up on scooping, the teacher might have described, “I see you were trying to scoop that crusty hard snow!” Yanjie might have answered in a way to give the teacher a clue for further conversation, such as “I want to make ice cream,” or she might have moved to some other project. Either way, the teacher followed Yanjie’s lead.



SHEILA WILLIAMS RIDGE

direction that children’s curiosity will take you as you follow their lead.

- Educators plan and provide activities that are focused on specific outcomes from a variety of developmental domains.
- Educators provide a variety of activities to address the different learning styles, cultural backgrounds, and individual capabilities of young children.
- Educators are well prepared with developmentally appropriate guidance methods that include modeling of desired behaviors, setting limits, displaying appropriate expression and labeling of feelings, and teaching children how to be thoughtful and reflective.
- Educators encourage curiosity about and joy in nature.

ASSESSING EXPERIENCES IN NATURE

Assessment of young children should be designed and implemented in a way that is appropriate for this age group. Young children communicate their knowledge in their own way and time. With infants and toddlers, their communication is primarily nonverbal, as they do not possess the vocabulary to express themselves yet. However, preschoolers can express their learning through drawing, building, writing, and sharing verbally with another child or adult. Documentation of learning can be managed by using a variety of different methods, such as teacher anecdotal notes, photographs, art projects, recordings, and journals. All of these materials should be placed in children's portfolios to show progress and growth over time.

ASSESSMENT EXAMPLE

Excerpted from *Environmental Experiences for Early Childhood* (Project Learning Tree, 2010): Activity 4: WE ALL NEED TREES, p. 40.

Assessing the experiences

As you observe the children during the day, note the following:

- ◆ New vocabulary that the children are using in their conversations with you and one another. Are the children using new adjectives or combining words in new ways to describe smells or tastes?
- ◆ Questions that the children are asking. Do the questions show that the children are thinking about the sources of smells and tastes? Are they asking permission before tasting new things?
- ◆ Indications that the children's experiences have helped them form new ideas or refine old ideas. Are they willing, interested, or excited about smelling and tasting unfamiliar tree parts? Do they seek out new outdoor smells?



KEY CHARACTERISTIC 3: PLAY AND EXPLORATION

GUIDELINE 3.1—USE OF THE NATURAL WORLD AND NATURAL MATERIALS

GUIDELINE 3.2—PLAY AND THE ROLE OF ADULTS

Key Characteristic 3: Play and Exploration

Early childhood environmental education programs ensure opportunities for nature-based play and exploration, both indoors and outdoors.

Play and exploration are natural, spontaneous acts in which all children engage. They are integral to the child's well-being, a fundamental way of learning, intrinsically motivating, and satisfying to the child. Play and exploration promote physical development, are soothing and reduce stress, and help to restore attention. While enjoyable in and of themselves, play and exploration also have tremendous potential for promoting creativity, helping children construct an understanding of their world, and facilitating learning in many different areas. Play and exploration in the outdoors and with natural materials indoors can help provide an important path to the development of understanding, compassion, and stewardship.



SHEILA WILLIAMS RIDGE

IMPORTANCE OF PLAY AND EXPLORATION

Play is the premier activity of the early childhood years. Children everywhere play frequently and spontaneously. Scholars, educators, and parents have focused on children's play since the inception of early childhood education, understanding play as a potential means to learning. Adults have provided toys, playground structures, games, costumes, and other materials to children, extending and supporting their creativity. Children, like all of us, find the purest, most enjoyable play in activities freely chosen, but will learn from and enjoy activities designed and chosen by their teachers, families, and even older children. Play can be thought of as occurring on a continuum from the child's choice to the adult's choice. Environmental education with its goals and objectives supplies such activities all along the continuum.

Environmental education for young children is particularly powerful because it involves children in the natural world that, according to Edward O. Wilson's "biophilia hypothesis," we all are born to love. Over the millennia, the natural world provided children with their first, and often only, toys. Still today, the play objects and places of the natural world compel many children. The interest and curiosity that young children typically show in plants, animals, water, clouds, rocks, and other natural phenomena are the basis for environmental educators' work. Children in various parts of the world will have different phenomena to notice and learn about—salamanders in the moist woodlands, lizards in the hot deserts—but everywhere the environmental educator can offer paths to pleasure, knowledge, understanding, compassion, and stewardship.

GUIDELINE 3.1—USE OF THE NATURAL WORLD AND NATURAL MATERIALS

The natural world provides unlimited potential for play and exploration activities that will benefit the child's development.

What to look for:

- Play and exploration activities are built on appropriate theory and research.
- Opportunities for gross and fine motor development are provided.
- Appropriate rough and tumble play such as rolling down hillsides or tag in a natural setting

Exploration outdoors can be messy and dirty. It is important to have “exploring clothes” for the children. This honors many of the families who cannot wash or replace their child's clothes easily.

are included in the program to help children establish norms of appropriate social action and support cardiovascular health and counteract trends toward obesity in childhood.

- The need for safety and appropriate risk are balanced.
- Open-ended experiences are designed into the program through a variety of activities, including art, music, creative dramatics, and movement.
- Opportunities for creative play are provided.
- Opportunities are provided for children to choose the types of play in which to engage.
- Use of natural materials in indoor settings is encouraged to complement outdoor play and exploration.
- Recycled materials for play and exploration are provided.
- Time and guidance are provided to promote

BENEFITS OF OUTDOOR PLAY

In *Playing Outdoors: Spaces and Places, Risks and Challenges* (2007, pp. 37–38), British researcher Helen Tovey writes, “Overall there is compelling evidence for the value of outdoor play in young children's lives and learning. It offers young children

- ◆ space and freedom to try things out
- ◆ an environment that can be acted on, changed, and transformed
- ◆ a dynamic, ever-changing environment that invites exploration, curiosity, and wonder
- ◆ whole-body, multisensory experience
- ◆ scope to combine materials in ways that are challenging and problematic
- ◆ opportunity to make connections in their learning
- ◆ a rich context for curiosity, wonder, mystery, and ‘what if’ thinking
- ◆ space to navigate and negotiate the social world of people, friendships, to experience disagreement and resolve conflicts with peers
- ◆ opportunity for giddy, gleeful, dizzy play
- ◆ potential for mastery, a willingness to take risks, and the skills to be safe
- ◆ a wide range of movement opportunities that are central to learning
- ◆ experience of the natural world and understanding of their own place in it
- ◆ opportunities for learning in all areas of the curriculum

appreciation and sharing of feelings about the order and beauty of nature.

- Independent play and social play are encouraged.
- Supplies, materials, language, ideas, and emotional support are provided that encourage discovery, and time is allowed for investigation.
- Children wear appropriate shoes, hats, other clothing, and sun protection.
- Group projects and activities are promoted to nurture curiosity, problem-solving skills, and discovery among children.



ARBOR DAY FOUNDATION

OUTDOOR PLAY FOR INFANTS AND TODDLERS

Outdoor play provides learning opportunities for infants and toddlers that they cannot get elsewhere. Outdoor spaces enable children to learn new skills and explore the natural world. Children love to be outside, but child-care centers need appropriate areas in which infants and toddlers can play outdoors safely and frequently.

Because injuries can take place in outdoor play areas, safety is a major consideration. Three basic safety rules are as follows:

- ◆ Provide soft, level surfaces with good drainage. Grass is best for toddling and crawling; wood, mulch, or rubber mats work well under “fall zones.”
- ◆ Eliminate possibilities for entrapment.
- ◆ Provide watchful maintenance for items dangerous for babies to put in their mouths. Remove items that are a choking hazard.
- ◆ Other considerations:
 - ◇ Licensing laws may require infants and toddlers to have outdoor play areas separate from those for older children; however, when possible design these spaces so all children can see one another.
 - ◇ Equipment should be developmentally appropriate for infants, toddlers, and infants and toddlers with disabilities.
 - ◇ Ensure that adults—staff members and parents—understand that babies are active learners who can endure the bumps and spills of childhood.
 - ◇ Make sure that a drinking fountain is available. A nonskid surface should be placed below the fountain.
 - ◇ Provide appropriate shade for adults and children (e.g., trees, awnings, umbrellas, lean-tos, pop-up tents, gazebos).
 - ◇ For mobile toddlers, provide outdoor features that include slightly uneven grassy areas, tunnels, movable parts, very low platforms, half-buried tires, ladders, commercial climbers.
 - ◇ Provide visual and auditory stimulation for infants outdoors by including framing structures, mirrors, wind chimes, and gongs.
 - ◇ For the adults, consider providing benches, gliders, hammocks, quilts, and pillows, and a portable changing area.



GUIDELINE 3.2—PLAY AND THE ROLE OF ADULTS

Adults, including formal and nonformal educators, parents, and caregivers, provide the context and supervision that maximize the learning and development possibilities from play and exploration.

What to look for:

- Time is allowed for investigation, exploration, creativity, and discovery.
- Materials, language, ideas, and emotional support for possible investigation are provided.

COMMON BARRIERS PREVENTING OUTDOOR EXPLORATION

- ◆ Some neighborhoods and school playgrounds lack natural spaces.
- ◆ Transportation to natural areas may be costly or difficult to arrange.
- ◆ Parents and administrators may fear for the health and safety of children relating to nature directly or because of the dangers in neighborhoods.
- ◆ Some medications can cause severe allergic reactions to sun, insect bites, etc.
- ◆ Children with physical disabilities may not be able to explore independently. It is important to have moveable soft areas such as a variety of outdoor blankets, mats, and wedges. Wheelchairs with large tires can roll on uneven and soft surfaces such as sand or moist ground.
- ◆ Children with sensory integration disorders can become overwhelmed by natural elements such as bright sunlight, wind ruffling hair and clothing, aromas, and skin contact with varying textures. Slow-paced, repetitive exposure in the least intrusive fashion can strengthen the child's coping abilities.
- ◆ The perception that parents do not want their children to get dirty.

TAKING PRODUCTIVE AND SAFE WALKS

Often educators are concerned about keeping children together outdoors in order to keep them safe, away from streets, and to prevent them from getting lost. These are all valid concerns, and as you take children to familiar outdoor places more frequently and set boundaries for them, they will respect those boundaries and have a safe experience.

- ◆ A first consideration is to choose an outdoor place that offers interesting opportunities for exploration. A child whose attention is engaged is less likely to wander. Know that if you go to a wide-open space, children will want to run—and that's a good thing! You may want to begin your outdoor time by having children run and move like animals from a specific point (a tree) to another point (a light post) or around the perimeter of the boundary.
- ◆ After children have had ample time to move, gather them together and remind them of their boundaries: "Remember that we need to stay between the pine trees and the sidewalk." When taking walks use a "buddy system" and if possible, have an adult in front and in back of the group of children.

- Feelings and knowledge about the order and beauty of nature are shared and appreciated.
- The physical context of the children’s play is improved in an obvious and visible way by adding plants, interesting events, structures, and so forth.
- The child’s imaginative responses to or interpretations of the natural world—for instance, “the moon is following me”—is recognized and acknowledged, and the poetry, cognitive linking, and neuron-formation that such responses represent are understood.
- The child’s safety or well-being is a prime consideration at all times; speedy intervention to ensure safety when children are at risk and alternatives for safe play are provided.
- The standards of developmentally appropriate practice are actively considered and employed.
- Adults integrate cultural contexts and significance in the learning environment.
- Adults provide culturally relevant materials and artifacts in promoting learning through play, and the items used model appropriate respect for these resources.



SHEILA WILLIAMS RIDGE

THE ADULT’S ROLE IN FOSTERING OUTDOOR PLAY

Good environmental education should be ubiquitous. For example, a parent and toddler are walking on a sidewalk, and the child notices a little cluster of pebbles at the base of a driveway. The parent waits and lets the child explore, supplying a few new words perhaps. The child runs up an inviting path—someone’s front walk, to be sure—and the parent again stops and welcomes the child back with “what did you find?” Context is important in early environmental education. Educational materials are everywhere to stimulate and enrich curiosity. The adult role is that of a facilitator, one who nurtures the sense of wonder in children.

WHAT’S THE RISK OF NO RISK?

“Keeping children safe is paramount to the work we do every minute when we are with children. We must always stop or prevent situations that threaten children’s well-being. But when we do intervene on behalf of children’s safety, we can do it with the understanding that life has many challenges and risks, and children deserve experiences and tools to learn to negotiate on their own. The saying ‘With few risks there are few rewards’ is very true. Learning involves risk. Relationships involve risk. Feeling competent and confident in the world requires meeting a challenge and working to overcome it.

When children are involved in a situation we think is too risky or dangerous, rather than just stopping them we can offer alternatives that keep them safe while preserving opportunities for them to develop to their fullest potential. This work requires that we pay attention to the children’s perspectives, use our power thoughtfully, and act responsibly. We can ensure that children have a childhood where they feel exhilaration, while still being protected and supported by adults and their friends. We can support them in learning that determination pays off, and they can become competent decision-makers, able to assess risks, contribute to the well-being of others, and reap the rewards of their efforts.”

—Deb Curtis (“What’s the Risk of No Risk?” Exchange Magazine, March/April 2010, p. 56)



KEY CHARACTERISTIC 4: CURRICULUM FRAMEWORK FOR ENVIRONMENTAL LEARNING

GUIDELINE 4.1—SOCIAL AND EMOTIONAL GROWTH

GUIDELINE 4.2—CURIOSITY AND QUESTIONING

GUIDELINE 4.3—DEVELOPMENT OF ENVIRONMENTAL UNDERSTANDINGS

GUIDELINE 4.4—SKILLS FOR UNDERSTANDING THE ENVIRONMENT

GUIDELINE 4.5—A PERSONAL SENSE OF RESPONSIBILITY AND CARING

GUIDELINE 4.6—PHYSICAL HEALTH AND DEVELOPMENT

Key Characteristic 4: Curriculum Framework for Environmental Learning

Young children are provided opportunities to explore their environment and develop knowledge and skills. Through the use of an environmental learning curriculum framework, educators intentionally foster growth and development across social-emotional, cognitive, physical, and language domains. This learning will lead, as the child matures into adulthood, to environmental literacy.



SHEILA WILLIAMS RIDGE

GUIDELINES 4.1—SOCIAL AND EMOTIONAL GROWTH

Young children build their knowledge of self and other people around them through active participation and experience. Early-learner programs provide opportunities for young children to participate in a variety of social interactions, including play and exploration in the outdoors that allow them to grow as contributing members of their community.

NOTES

The curriculum framework should be designed and implemented to be consistent with developmentally appropriate practices. Please refer to Key Characteristic 2 for more information.

Many of the ideas for the curriculum framework were adapted from the following documents:

Nebraska Early Learning Guidelines: Connecting Children to Nature (Nebraska Department of Education Early Childhood Training Center, 2008). Retrieved from www.education.ne.gov/oec/pubs/ELG/nature_education.pdf.

Excellence in Environmental Education: Guidelines for Learning (K–12) (Washington, D.C.: North American Association for Environmental Education, 2010).

The Head Start Path to Positive Outcomes (Washington, D.C.: U.S. Department of Health and Human Services Administration for Children and Families—Head Start Program, 2003).

NONFORMAL ENVIRONMENTAL EDUCATION PROGRAMS FOR EARLY CHILDHOOD

Environmental education programming is often designed and implemented by government agencies and non-profit organizations such as nature centers, zoos, wildlife rehabilitation programs, and conservation organizations. Many of these groups have active programs that focus on youth through relationships with K–12 schools. Working with older children is fundamentally different from working with young learners; using a simplified version of the K–12 programs should be avoided.

By becoming familiar with this curriculum framework and developmentally appropriate practice, nonformal educators can recognize the unique characteristics of the early childhood learner. This age group brings a fresh, uninhibited zest for interacting with the natural world, and envious energy and passion for play and exploration. Successful educators bring themselves to the young child's world, meet the Earth on their terms, see nature through their eyes, and enjoy the journey!



What to look for:

- Opportunities and experiences are provided for the child to learn about self-concept and control so that children may
 - have confidence and pride in their abilities; express feelings, needs, and opinions appropriately about others and the environment
 - increasingly demonstrate the ability to follow rules and routines and use materials responsibly
 - develop growing understanding of how their actions affect others and the environment
 - begin to accept the consequences of their actions

- become more comfortable with unfamiliar surroundings and experiences
- A sense of community is promoted so that children may
 - express understanding and respect for differences among people regarding ethnicity, gender, age, abilities, and family structures
 - respect the rights and feelings of others
 - engage in activities that promote a sense of contribution such as planting seeds in a vegetable garden, recycling paper, or turning off lights when leaving a room
 - develop a sense of connectedness through the exploration of natural materials, tactile exploration, caring for plants or animals, and so forth
 - develop cooperation skills in playing and exploring nature with others
 - demonstrate a developing sense of respect for nature, the environment, and its components
 - express an increasing appreciation and affinity for nature
 - increasingly play cooperatively and work collaboratively with others

GUIDELINE 4.2—CURIOSITY AND QUESTIONING
 Young children learn about their environment in a mixture of ways. Much of this learning takes place through direct experiences, exploration, and discovery. Early learning programs provide children with opportunities to develop curiosity, ask their own questions, and begin to develop reasoning and problem-solving skills.

SOCIAL-EMOTIONAL DEVELOPMENT

Social-emotional development refers to social competencies such as empathy, communication, and cooperation as well as intrapersonal processes such as emotion recognition, coping with emotions, and regulating emotion and behavior to match the demands of the context. These developmental domains are often discussed together because they are so intertwined; for example, it is necessary to perceive accurately another's emotional state in order to feel empathy and behave in a socially positive manner. In addition, developing positive emotional dispositions provide a foundation for good mental health.

What to look for:

- Initiative and curiosity are encouraged, so that children may
 - explore a range of natural materials using their senses
 - choose to participate in an increasing array of environmental explorations
- approach environmental explorations with increased flexibility, imagination, and inventiveness
- experience surprise and delight through their environmental explorations
- develop a curiosity about cause and effect, life cycle, and reasoning

EXPLORING VARIETY IN THE ENVIRONMENT

Excerpted from *Environmental Experiences for Early Childhood* (Project Learning Tree, 2010, p. 20):

Activity 1: Shape of Things

Featured experience—shape walk

Materials. Labeled shapes cut from paper (with younger children, use circles, squares, and triangles; with older children, add hearts, ovals, and stars); hole punch; yarn or pipe cleaners.

Before the activity, make “shape necklaces” by cutting out shapes from construction paper. Print the name of the shape on each cutout and punch a hole in each.

Hold up each shape in turn and ask the children to identify it.

Ask: “Do you see anything in our classroom that is this shape?”

Give each child one of each shape, and show how to string the shapes on yarn (or pipe cleaners) to make necklaces or bracelets. You could also consider starting with just one shape and adding more shapes over time.

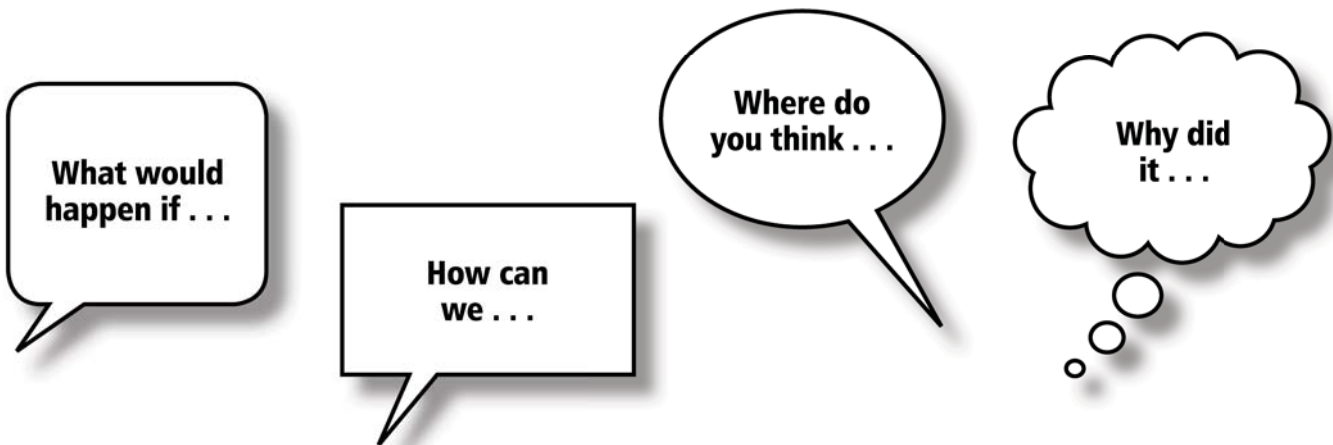
Take a short walk outside to look for shapes. When you see an object that looks like one of the children’s shapes, hold up the appropriate cutout and say, “I spy something shaped like a ____.” Encourage the children to look for that particular shape in nature. Repeat with the other shapes. Encourage the children to look for shapes on their own and say, “I spy something shaped like a ____.” With very young children, add colors to the descriptions (e.g., I spy something that is yellow and is shaped like a ____”).

When you return to the classroom, hold up each cutout shape in turn. Ask: “What did you see outside shaped like a ____? Which shapes did you see the most? Which shapes are your favorites?”

USING THE SENSES

A kindergarten teacher wanted to emphasize the environment by having the children use their senses to better understand their surroundings. She wanted to focus on how there were different textures such as tree bark, flower petals, and rocks in nature. The teacher also felt it was important to have the students closely observe color, shapes, repetition, movement, and balance within the environment. The students began their outdoor walk by focusing on touch and sight to explore their surroundings. The children touched tree bark, stones, leaves, flowers, soil, and twigs, observing how they were similar or different in color, texture, and shape. One of the children saw a spider’s web and wanted to touch it. The teacher explained that touching it would break the web, as it was very delicate. The class closely observed the intricate nature of the web but left it untouched. Back in the classroom, the children reviewed the trip, studied the photographs taken along the way, and made plans for their next walk.

- Questioning by the child is encouraged and supported, so that children may
 - ask questions about environmental components and phenomena
 - probe for answers to questions through active investigation and use of reference or picture books
 - discuss or document through drawing or writing what is learned through environmental investigations and explorations
 - Opportunities for children to practice reasoning and problem-solving are provided so they may
 - use natural materials to remember patterns
- and to classify, compare, and contrast shape, size, and color
 - demonstrate increasing ability to predict possible outcomes as a result of environmental explorations
 - seek more than one solution to a question, task, or problem related to nature and the environment around them
 - try alternative methods to solve a problem but request help from a resource, an adult, or a child when necessary
 - use observations in making predictions and formulating theories about the environment



ELEMENTARY GLOBE

The Teacher's Implementation Guide (Hatheway, B, Gallagher, S. and Henderson, S., University Corporation for Atmospheric Research, 2006) designed to accompany the Elementary Globe program, includes a list of skills that young students need to help them understand the scientific process. Teachers are encouraged to use the terms in the skills checklist with their students and to point out how the students are using the same processes that scientists use. The checklist format helps the teacher see how the students are using different inquiry skills as they participate in activities. By referring to the checklist and discussing investigative skills that the children are using, teachers will help the students become better prepared to understand and use such observational and inquiry skills in their everyday life.

The skills noted in the check list are observing, questioning, sequencing, patterning, counting, measuring, comparing, classifying, defining, communicating, hypothesizing, predicting, inferring, recording, and reporting. Not all of these skills will be included in activities for early childhood education, but many will.

GUIDELINE 4.3—DEVELOPMENT OF ENVIRONMENTAL UNDERSTANDINGS

As children explore their environment, they begin to develop understandings of how the world works. Early learning programs provide children with opportunities to develop knowledge related to environmental and social systems, including the place where they live.

What to look for:

- Opportunities to observe and understand earth systems are provided so children may
 - observe and discuss changes in the environment, including weather and seasonal changes
 - investigate properties of rocks, soil, and water
 - express through talk, movement, and art their observations of the sun, moon, stars, and clouds
 - learn and understand the importance of natural resources and that the environment provides for the needs of people
 - notice and describe local environmental changes such as erosion and water flow
- Opportunities are provided to observe and understand the living environment so children may
 - understand that animals need many of the same things from the environment that we do
 - explore the nature of life through interactions with a variety of plants, animals, and fungi
 - recognize the differences between living and nonliving things
 - notice changes in living things over time
 - understand that plants and animals have life cycles
 - notice and ask questions about similarities and differences and categories of plants and animals, as well as appearances, behaviors, and habitats
 - notice and ask questions about growth and change in plants and animals, such as changes in the garden, life cycle of classroom animals, or a caterpillar changing into a butterfly
- Interactions with individuals, groups, and culture are provided so children may
 - appreciate similarities and differences of personal characteristics among people
 - appreciate one's own culture and others' cultures
 - be aware of his or her role as a member of a group, such as the family or the class
 - contribute to discussions about things that everyone needs (food, water, shelter, and clothing) and show awareness that people work to provide the things others need

ENCOURAGING INVESTIGATION

Young children are developing the skills necessary to investigate both their built and natural environments. Educators support the development of curiosity and questioning skills by integrating supportive experiences into the curriculum. Children's individual learning styles, cultural backgrounds, and comfort with sharing information are considered as well by educators as they design learning opportunities. Educators use the young child's investigations to provide bridges to other areas of the curriculum such as mathematics, science, social studies, art, and literacy.

For example, a child noticed something in the environment and wanted to share that observation with peers. The educator supported further investigation by encouraging the child to draw a picture. The educator helped the child develop vocabulary related to the investigation, and helped her share the information with peers.



LISA HERRMANN

HOW AN ANTHILL WORKS

An excerpt from the activity “Ants on Parade” in the Growing Up Wild program (Council for Environmental Education, 2010).

Warm up. Begin by asking children if they’ve ever seen an ant before. How did they know it was an ant? What did it look like? What did it do? Where was it? Draw an ant based on the children’s descriptions and record other information they provide.

Tell children they will be scientists and study ants.

Procedure. Show children your collection of food items. Which foods would ants most like to eat? Why do you think so? What we think will happen is our hypothesis. Let’s test our hypothesis. Place students’ choices of food items in each section of a paper plate or plates.

Take the children outdoors for an “ant hunt.” Look for an anthill or free-roaming ants on the sidewalk, under rocks, etc.

When you find ants or an anthill, place the plates of food nearby. Allow time for ants to locate the food. This is our test. As children wait, encourage them to observe ants and their behavior (and/or allow free play). What do ant bodies look like? How does the ants’ behavior change when they discover the food? Count the ants as they arrive at the different foods. To record results, make tally marks next to each food name on a sheet of paper. This is our data.

Encourage children to share ideas and observations about ants. Discuss what foods the ants ate. Graph the results. Was our hypothesis correct? Based on the graph, which food do ants most like to eat? This is our conclusion. (Sometimes tests don’t give clear results. Real scientists test their hypothesis multiple times, and, if results aren’t clear, refine testing procedures.)

Read a story that realistically portrays the natural history of ants. How do your outdoor observations support the information found in the books?

- participate in group decision-making related to spending time in nature, care of classroom animals and plants, and use of natural resources in the classroom
- predict how events today or in the recent past will affect the near future, such as connecting a hard rain to the appearance of puddles
- An emphasis on developing the child's sense of place is included so that children may
 - use blocks, clay, natural materials, or other items to recreate aspects of the environment
 - create a simple map or illustration of the home, classroom, school, or neighborhood
- become aware of characteristics of the place where they live and of other places
- notice how objects are spatially related to one another (e.g., far or near)
- identify location and direction
- consult the atlas, with the assistance of an adult, to learn the location of their city or neighborhood
- develop a beginning understanding of maps as representations of actual places
- learn how things, people, and places change over time

GUIDELINE 4.4—SKILLS FOR UNDERSTANDING THE ENVIRONMENT

Young children increasingly develop their ability to investigate, analyze, and respond to environmental changes, situations, and concerns. Early learning programs provide opportunities for children to experience a variety of environmental conditions and encourage them to investigate topics of their own choosing. These investigations may, when appropriate, lead to the development of action strategies.

PLANTING DANCE AND A THREE SISTERS GARDEN

Movement and music are powerful tools in working with young children. Educators can support rich learning and understanding of natural environments and cultures by weaving in traditional music and dance.

For example, a group of young children wanted to grow some vegetables in a dirt area along a fence. The educator supported their interest by offering the opportunity for the children to plant a three sisters garden that is traditional among many Native American peoples. The children participated in the corn-planting dance that weaves basic planting principles, cultural respect for wildlife, and elements of interdependence. Because of the movement and music opportunity, children were continuing to repeat the dance and celebrate the garden through harvest.

A three sisters garden consists of corn, beans, and squash. These plants, when grown together, support and nourish each other and provide a much more efficient way of cultivating these crops than if they were planted separately. Corn, planted a few weeks ahead of the beans and squash, becomes the support on which the bean vines grow. The low-growing squash's wide leaves prevent weeds from growing around the plants and help retain soil moisture. The beans fix nitrogen in the soil, benefiting all three plants.

For more information on three sisters gardens:

The Three Sisters Cookbook, a project of the Oneida Indian Nation health department: www.oneidaindiannation.com/home/content/81144837.html.

Creating a Three Sisters Garden: Discovering A Native Trio from the National Gardening Association's Growing Ideas Classroom Projects: www.kidsgardening.com/growingideas/PROJECTS/MARCH02/mar02-pg1.htm

Caduto, M., and Bruchac, J. *Native American Gardening: Stories, Projects, and Recipes for Families* (Golden, Colorado: Fulcrum Publishing, 1996).

What to look for:

- Opportunities for children to observe, investigate, and analyze are provided so that they may
 - use their senses to observe their environment and notice changes
 - discuss differences and make comparisons
 - understand the sequence of events
 - link new ideas to past experiences
 - ask questions about an environmental situation or concern
 - locate resources, with adult assistance, which will help them learn more about the topic of their environmental investigation
- Opportunities are provided that help children develop abilities to collect, describe, and record information, so children may
 - make decisions, with adult support, about how to collect information for their investigation
 - collect a variety of information using tools such as tweezers, jars, cameras, paper, and drawings
 - demonstrate an increased ability to collect information and record differences over time
 - make predictions and draw conclusions based on information collected from their environmental investigations

SENSE OF PLACE

What does “home” mean to you? Children need to have a sense of belonging in their world. This sense of belonging is first rooted within attachment relationships and family, but extends to a sense of place in the world when children develop an intimate connection with the natural and built environment. When children come to love a place, they want to learn about it and protect it. This love can extend, as children grow, to finding a sense of place within our Earth home.

“Home” takes many different forms for children in the U.S.: urban, rural, suburban, desert, forest, prairie, mountains, wetlands, watershed, or seaside. Educators in different regions can support children’s developing sense of place by bringing their bioregion into the classroom or program and by providing as much contact as possible with local nature outside the classroom, in the schoolyard, and beyond.

This is much easier in some places than others. Programs with natural, outdoor play spaces or access to nearby natural areas will find this to be fairly easy, while programs with limited nearby natural spaces may have some difficulty providing sufficient experiences with nature. A child care teacher in downtown Seattle has worked out “a pedagogy for ecology” with her children, in which they repeatedly visit the same neighborhood place, noting changes, being sensitive to problems, and learning the history. Children come to love the place because they know it well (Pelo, 2009).

Programs in neighborhoods that are not safe, however, will need to be very creative in finding ways to bring nature to children and children to nature. Natural materials can be brought into the classroom—leaves and seeds to sort and classify, a worm bin to compost food waste and study life cycles, or container gardens can provide direct experiences with nature for children. Children’s literature (e.g., *The Great Kapok Tree*, *Bringing the Rain to Kapiti Plain*, *Wangari’s Trees of Peace*) provides another opportunity for children to learn about and experience nature.

The Reggio Emilia project “The City in the Rain” is a good example of how preschool children in an urban setting studied how the city and people changed when it rained (Edwards, Gandini, and Foreman, 1998). It is also helpful to think about how people are part of nature and how we are interdependent with our environments: We all breathe air, drink water, eat food, and experience sunlight and shadows. Educators can capitalize on these universal human experiences to support children as they build connections and find their sense of place in the world.

- communicate the results of their environmental investigation, with adult support, and share the information with peers
- Structure and opportunity are provided to help



LISA HERRMANN

children work with flexibility, creativity and openness, so that children may

- express thoughts in a variety of ways—movement, linguistic, graphics, and so forth
- show increasing confidence and comfort in using vocabulary, sharing representations, and accepting new ideas and feedback from others about their environmental investigations
- discuss different perspectives with peers and adults
- acknowledge differences of opinion
- make a plan of action to address the environmental situation or concern, as appropriate for their developmental level

GUIDELINE 4.5—A PERSONAL SENSE OF RESPONSIBILITY AND CARING

As young children develop empathy and increased self-reliance, they demonstrate a sense of personal responsibility toward others and their environment. Early learning programs model environmentally responsible actions and provide opportunities for children to make decisions about their own activities.

ELEMENTARY GLOBE

Elementary Globe is a series of five storybooks designed to help K–4 teachers integrate Earth science into their curriculum. Each book focuses on a different Earth science topic as the main characters—Simon, Anita, and Dennis—explore the natural world. The five books are *All About Earth: Our World on Stage*, *Do You Know That Clouds Have Names?* *The Scoop on Soils*, *Discoveries at Willow Creek*, and *The Mystery of the Missing Hummingbirds*. Each book includes three learning activities and supports the teacher by providing scientific background information and a glossary. A teacher implementation guide that provides suggestions for use at different grade levels is also available.

OBSERVATIONS AND EXPERIENCES

After it rains, take the children outside to experience the environment. Have the children talk about what it smells like, feels like, and looks like. Ask them to make a hypothesis about where the rain has gone, and listen to their responses. Ask them to look for droplets on a leaf or a blade of grass and to notice when some surfaces have none. As the children continue with their inquiry, provide them with cups of water and an eyedropper so they can re-create raindrops falling on the different surfaces, and explore what naturally happens in nature when it rains. Watch as they develop their sense of wonder.



Connect outdoor experiences with emerging literacy through books, songs, finger plays, language experience stories, and bookmaking with photos taken of children interacting outdoors.

- investigate and understand their personal place in the natural world
 - engage in meaningful conversations reflective of experiences with nature and the environment
 - communicate feelings about their place and the local environment
 - recognize when they have impact on others and the environment
 - indicate a desire to learn about nature
 - display an understanding of the causes of various natural phenomena
- Opportunities to participate in social interaction and to learn appropriate social roles are provided so that children may
 - share experiences with nature through communication and celebration with others
 - show understanding of how individuals work together to achieve group goals
 - show beginning understanding of how human activities may change the environment

What to look for:

- Opportunities are provided for extensive positive interactions with nature, so that children may
 - express openness for experiences in the outdoors
 - initiate investigations of natural phenomena
 - display respect for nature
 - demonstrate pride in care of and for living things

ENCOURAGING OBSERVATION

Young children require ample exposure, over time, to observe their environment and identify changes. Children will begin to discuss their observations with educators and peers, and with adult support, develop the vocabulary to express their thoughts. They may ask questions that will help them frame further investigation of an environmental situation. Educators will support children in the discussion of natural processes and help children build a foundation of “normal” or “typical.”

For example, on the playground, a child observes that one of the trees is still without leaves even though it is summer. The child asks questions about the health of the tree. With the support of the educator, the child may make further observations, discuss what is normal and how this is different, research types of trees or the role of the tree in the environment even if it is no longer living. The child may also make a plan to replace, remove, or celebrate the tree with his or her peers.

- talk about how people can protect or harm the environment
- make individual choices about participation in efforts to protect the environment, such as not littering, picking up trash, saving paper to be recycled
- participate in group decision-making about classroom environmental actions, such as use of water, turning off lights when not in use, recycling
- show a beginning understanding of what people need to do to work and live together in groups
- recognize that others have an impact on nature



ARBOR DAY FOUNDATION

GUIDELINE 4.6—PHYSICAL HEALTH AND DEVELOPMENT

Young children connect to the world through their bodies, developing motor skills and healthy habits. Early learning programs provide young children with a wide variety of physically challenging experiences, including opportunities to run, jump, and climb in the natural environment. Early learning programs also provide young children with opportunities to explore ways they can improve their own health.

What to look for:

- Children are provided with a variety of opportunities to develop fine motor skills such as
 - using tools and toys to explore their natural environment (e.g., magnifying glass, hand trowel, sifter, nets, and tweezers)
 - artistically expressing experiences in nature (e.g., tree and leaf rubbings, weaving through tree limbs, easel painting) to develop hand-eye coordination

EXAMPLES OF GREEN CLASSROOM ACTIVITIES

- ◆ Worm bins for composting classroom food scraps
- ◆ Outside areas for composting natural materials (leaves, garden materials, etc.)
- ◆ Reusable dishes and cloth napkins
- ◆ Recycle bins in the classroom—easily labeled bins with words and pictures provide literacy experiences while recycling
- ◆ Paint directly on easels
- ◆ Provide recycled materials for art projects
- ◆ Turn off lights when exiting a room to conserve energy
- ◆ Turn off faucets when not in use to conserve water
- ◆ Examples of sustainable living materials such as cloth bags and empty healthy food boxes in the dramatic play area

BUILDING A WORM BED (DODGE NATURE CENTER PRESCHOOL, 2005)

A worm bin container provides air, drainage, and space for worms and compost materials. Start with an appropriate container; add red wiggler worms, shredded newspaper or used copy paper, some soil, moisture, and food. Food should include fruit and vegetable scraps. (Meat, dairy, and bread will not work well.) The worm bin will not smell bad and will provide compost for plants and worms for feeding pets, birds, or just exploration.

- increasing spatial awareness through appropriate activities
- exploring textures and manipulating materials in the natural setting
- building two- and three-dimensional structures in the outdoor environment
- engaging in sensory exploration of the environment, especially through interactions with water, soil, and plant materials
- Children are provided with a variety of opportunities to develop gross motor skills such as
 - expressing the sounds of nature through movement and dance (e.g., wind, rain, falling leaves, animals)
 - using garden tools to improve strength and coordination
 - engaging in games and outdoor play activities that enhance physical wellness, balance, and coordination
 - manipulating and combining a variety of natural and human-manufactured materials to enhance play



INTEGRATING ENVIRONMENTAL EDUCATION WITH MATH AND MUSIC

For primary-aged children, simple arithmetic can be used when counting the number of flowers on a plant, or estimating the number of trees in a wooded area, or the amount of fruit being produced by a grove of apple trees. Gathering data by measuring, counting, or performing simple experiments will help children gain skills in statistical analysis. These exercises can be kept simple: for instance, children can count the number of different birds that come to a birdfeeder. This data may be used to construct a bar graph or pictogram that highlights bird types and number of birds at the feeder.

Using the sounds of nature, such as crashing waves on the shore, the tapping of a woodpecker, the songs of birds, or the wind rustling tree leaves, will help children see music as something broader than the music created by humans with musical instruments. Have the children use natural objects such as rocks, sticks, sand, or seed-pods to create different musical sounds. They can combine the sounds to create a concert. Different orchestral instruments mimic sounds in nature, e.g., flute = bird, harp = flowing water, maracas = water hitting rocks, and so forth. The children can experiment to see which instruments mimic sounds in nature or they can create new instruments that relate to the ocean, birds singing, or backyard sounds.

- The environment is used to promote children’s health and fitness, so they may
 - understand that all animals, including humans, need air, water, space, and food to live
 - become aware that nutritious foods give us energy and help people to grow
 - identify healthy and nonhealthy foods and be willing to try new, healthy foods
 - participate in vegetable gardening
 - show increasing balance and strength in activities such as walking, running, and climbing on uneven surfaces such as hills, trails, depressions, and tree trunks
 - become aware that our bodies need adequate rest and sleep to reenergize and grow healthy
 - choose challenging new physical activities in the natural environment
- be able to follow basic health and safety rules, especially when playing and exploring outdoors



ENHANCING MOTOR SKILL DEVELOPMENT

Motor skills are defined as a continuous series of purposeful movements. Fine motor skills such as grasping and hand-eye coordination involve small muscles, and gross motor skills such as skipping, balancing, walking, throwing, and catching involve large muscles. Physical development is a key domain for early childhood and is crucial to learning, as physical movement facilitates visual-spatial awareness and encoding of information.

MOVEMENT AND MOTOR SKILLS

Excerpted from *Environmental Experiences for Early Childhood* (Project Learning Tree, 2010, p. 22):

Activity 1: Dance with Leaves

Materials: Leaves from neighborhood trees (laminated for durability) or the leaf shape examples found at www.plt.org; track 1 on Project Learning Tree’s *Environmental Experiences for Early Childhood* CD.

Hold up a leaf shape. Ask: “How could you use your body to make this shape? Can you make this shape with your whole body? With your fingers? While you are sitting? While you are standing?” Repeat this process with the other leaf shapes.

Ask the children to scatter the leaves around the play area and to stand among them. Tell the children they will be listening and moving to music. Play track 1 on the CD. When the music starts, encourage the children to use the rhythm of the music as their movement guide, or invite the children to move around the area like an animal (for example, scurry like a chipmunk, fly like a robin, or walk like an ant). When the music stops at the end of each segment, pause the CD. Each child should find a leaf shape to stand on and create the shape with his or her body. Repeat the process for each music segment on track 1.



KEY CHARACTERISTIC 5: PLACES AND SPACES

GUIDELINE 5.1—SPACES AND PLACES TO ENHANCE DEVELOPMENT

GUIDELINE 5.2—NATURAL COMPONENTS

GUIDELINE 5.3—COMFORTABLE FOR BOTH CHILDREN AND ADULTS

GUIDELINE 5.4—MAINTENANCE AND USABILITY

GUIDELINE 5.5—HEALTH, SAFETY, AND RISK

GUIDELINE 5.6—ENVIRONMENTAL SUSTAINABILITY

Key Characteristic 5: Places and Spaces

Early childhood environmental education programs provide places and spaces, both indoors and out, that are safe, enticing, comfortable, and enhance learning and development across all learning domains.

“Beauty and surprise should be the basis of every child’s environment—every direction a child looks at should be filled with materials and structures that inspire curiosity and delight”

—Rusty Keeler’s *Natural Playscapes: Creating Outdoor Play Environments for the Soul* (Exchange Press, 2008, p. 51)

GUIDELINE 5.1—SPACES AND PLACES TO ENHANCE DEVELOPMENT

Indoor and outdoor places and spaces provide opportunities for development across social, emotional, physical, and cognitive development domains.



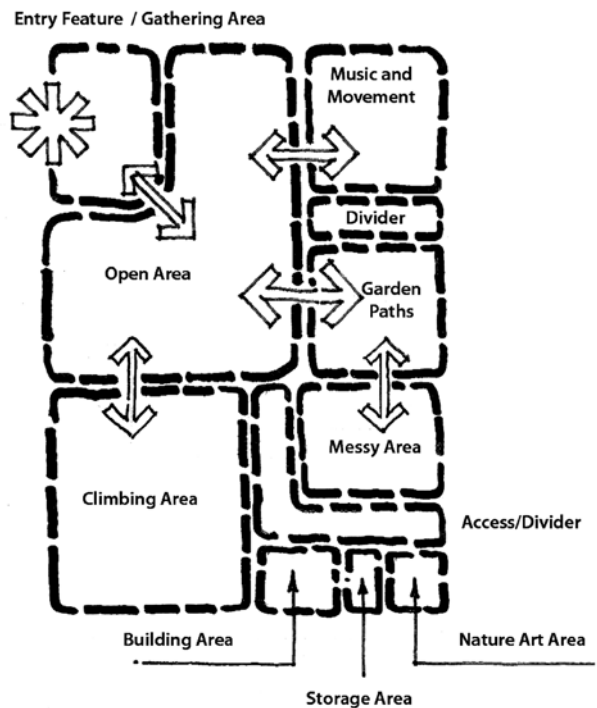
SHELLA WILLIAMS RIDGE

What to look for:

- Natural components on which to climb, balance, crawl through, jump on and off, lift, and move in other special ways are available.
- Developmentally appropriate tools to observe, manipulate, collect, and construct are provided.

OUTDOOR ROOMS

Children need order, especially children who are visual-spatial thinkers and children who have sensory integration challenges. Dividing outdoor space into separate “rooms” can provide quiet and loud areas, busy and slow areas, or crowded or roomy areas. By providing clearly defined activity areas, children are given the opportunity to make choices and plans on their own. These separate activity areas decrease conflicts among children and increase a child’s ability to focus on learning activities. For example, one way to increase the participation of children who might be unsure of the outdoors is to allow them to bring toys outside with them that can be included in play activities. This diagram shows just one example of an outdoor space that has been divided into areas. Plans should be customized to fit the unique features of each space.



The diagram is from the *Learning with Nature Idea Book* by Arbor Day Foundation and Dimensions Educational Research Foundation.

LIVE ANIMALS IN THE CLASSROOM

One of the best ways to introduce children to environmental education is through animals. Young children have a natural affinity for animals and can be taught very early to be gentle with them and understand their needs. Purposeful activities that involve the children as naturalists and caretakers can instill values of the humane treatment of animals.



SHEILA WILLIAMS RIDGE

Appropriate activities indoors include having an aquarium (for fish, frogs, or snails), watching birds at a window feeder, caring for an ant farm, and keeping certain animals as pets. Consider local regulations, facility or habitat available, cost of care, handling opportunities, cultural norms, and safety when choosing a pet. Use more than cages to create real habitats and homes for your classroom pets, and avoid releasing nonnative species into the wild. Be aware of and follow state and federal laws and regulations related to keeping, collecting, and releasing animals.

Health considerations for live animals:

- ◆ When live animals are present, the basic principles for optimal health of the animals and the children should always be adhered to diligently.
- ◆ Children and adults should wash hands after any interaction with a pet and between interactions with pets of different species.
- ◆ Pets should be observed by an adult when a child is interacting with them directly.

Caution: Public schools, child-care programs, and the Head Start program are all bound by specific regulations concerning live animals in early childhood classrooms. These have become more restrictive in recent years due to concerns about disease, allergens, and injury.

For more information on the responsible use of live animals in the classroom, please refer to the National Science Teachers Association's position statement: www.nsta.org/about/positions/animals.aspx.

- A variety of sensory experiences—textures, sounds, tastes, smells, and sights are included in the child’s environment.
- Objects to encourage language skills, math skills, and artistic and creative expression are readily available.
- Tools to create products from nature—e.g., applesauce maker, spiles to collect sap, and child-appropriate construction tools (such as saws, hammers, and nails) are provided under careful supervision.
- Variations in seasonal and daily weather are carefully considered to ensure the child’s comfort and safety.
- The physical environment is varied and includes a spectrum of possibilities—ample shade, sunny spaces, windbreaks, open areas, small hiding places or refuges, gathering areas, areas for building, and areas for art and music and movement.
- Physical spaces used and their associated programs encourage a respect for nature and living things.
- “Sharing spaces” are included where children meet to get tools, supplies, look at bulletin boards, and so forth.
- Space is divided into clearly delineated areas for different kinds of activities, making sure that one activity does not interfere with another.

- Space is not visually overwhelming or over stimulating. Enough space is provided for contemplation and quiet personal time.

GUIDELINE 5.2—NATURAL COMPONENTS

The integration of natural components throughout places and spaces is essential if learning opportunities and development are to be maximized.

What to look for:

- In outdoor areas, use of asphalt is reduced; gardens, woods, natural pathways, and other natural elements are incorporated.
- Natural materials are used to create the environment and objects for play both indoors and outdoors.
- Abundant “loose parts” (sticks, leaves, seeds, logs, stones), earth materials (soil, sand, and rocks), and “rough ground” (uneven, rocky, challenging areas) are included in the outdoor environment.
- Safe and supervised water features are provided.
- The outdoor areas are landscaped so as to be inviting to appropriate wildlife, including birds and bugs.
- Plants are incorporated into the indoor environment.

SUGGESTIONS OF POSSIBLE NATURAL COMPONENTS THAT CAN BE USED INDOORS

The following list demonstrates just a few of the natural resources that can be used in early childhood environmental education programs:

- | | | |
|-------------------------------------|--------------------------|-------------------------|
| ◆ Live plants (no poisonous plants) | ◆ Shells | ◆ Wood chunks or slices |
| ◆ Stones | ◆ Stumps | ◆ Herbs |
| ◆ Pinecones | ◆ Flowers | ◆ Seeds |
| ◆ Sand | ◆ Sticks (twigs, bamboo) | ◆ Water |
| ◆ Rocks and minerals | | |

These natural components can be used to create habitat; for sound- and music-making; for arts and crafts; in gross motor skill development (balancing, mimicking, maneuvering); wall and room décor and area dividers; and cooking components. They can also be used in manipulatives for math skills (grouping, sorting, ordering, classifying, counting), sensory experiences, construction and building, and scientific enquiry.

- Native plants are used in outdoor areas to help children know what their biological heritage is, to reduce maintenance, and to support native fauna such as butterflies and birds.
- Outdoor and indoor areas incorporate a wide variety of natural features and materials to promote interest and encourage interaction. Materials indoors are changed frequently and seasonal changes in the natural world are featured.

GUIDELINE 5.3—COMFORTABLE FOR BOTH CHILDREN AND ADULTS

Comfortable and inviting places and spaces are necessary for learning and development to occur.

Without a sense of comfort, it is very difficult for adults or children to benefit from an experience.

What to look for:

- Individual and group gathering areas are included.
- Sufficient seating for adults and children are provided.
- Places feel safe and are obviously accessible and inviting.
- Nooks and crannies are provided to encourage discovery and allow a sense of refuge.
- Shade and protection from wind and inclement weather are provided.

CELEBRATING SUCCESS FOR YOUR OUTDOOR AREA

The Nature Explore Classroom Certification Program (Arbor Day Foundation and Dimensions Educational Research Foundation) is a national initiative that recognizes schools and community organizations that have made a commitment to provide high-quality outdoor classrooms and comprehensive programming to help young children explore and learn about the natural environment. To meet the requirements for the program, an organization must complete the following on an annual basis:

- 1) Well-designed outdoor space. Provide evidence that the “Ten Guiding Principles” from the Learning with Nature Idea Book (Arbor Day Foundation and Dimensions Educational Research Foundation, 2008) were used in the design of the outdoor classroom.
- 2) Staff development. Provide evidence that staff members receive annual professional development related to nature education.
- 3) Family involvement. Provide evidence that activities or materials designed to increase family awareness and involvement in nature education for young children are provided on an ongoing basis.

More Resources

- ◆ Arbor Day Foundation. Learning with Nature Idea Book: Creating Nurturing Outdoor Spaces for Children (Nebraska City, Nebraska, 2008)
- ◆ Curtis, D., and Carter, M. Designs for Living and Learning: Transforming Early Childhood Environments (Saint Paul, Minnesota: Redleaf Press, 2003)
- ◆ Greenman, J. Caring Spaces, Learning Places: Children’s Environments That Work (Child Care Information Exchange, 2008)
- ◆ Moore, R.C, Goltsman, S.M., & Iacofano, D.S. (1992), Play for All Guidelines. Berkeley, CA; MIG Communications.
- ◆ Keeler, R. Natural Playscapes: Creating Outdoor Play Environments for the Soul (Exchange Press, 2008)
- ◆ Pranis, E., and Gifford, A. Schoolyard Mosaics: Designing Gardens and Habitats (South Burlington, Vermont: National Gardening Association, 2002)



- Whenever possible, natural features for warming, cooling, shelter, and lighting are provided.
- Places are aesthetically pleasing.
- The play space is fitted to the local culture and climate.
- Areas are designed to encourage a sense of adventure and exploration.
- Easy access and storage of natural materials are provided.

GUIDELINE 5.4—MAINTENANCE AND USABILITY
Places and spaces must be well maintained to provide a safe, exemplary environment for the program that complies with the Americans with Disabilities Act. Maintenance should model best practices

and should ensure that the children are protected from harmful situations that can be prevented through appropriate maintenance.

What to look for:

- Means to care for the natural environment (tools, water, composting, accessible storage) are provided.
- Materials used in the construction are chosen with sustainability in mind.
- Appropriate fencing, signage, and paths through outdoor spaces are incorporated.
- Appropriate items are within reach of children; inappropriate items are not.
- Facilities meet applicable regulatory standards.
- Opportunities for the children to care for their space are provided.

GUIDELINE 5.5—HEALTH, SAFETY, AND RISK
In order to ensure the safety and health of the children, adequate planning, inspection, and vigilance are essential.

What to look for:

- Risk assessment has been completed that considers environmental, biological, chemical, and structural hazards.
- Established Americans with Disabilities Act (ADA), health, and safety standards are followed and a risk management plan is in place.
- Emergency plans are established, shared, and understood.
- Parents understand the nature of the child's experiences and have realistic expectations of the outdoor activities.
- Staff is adequately trained; emergency and first aid supplies are available.
- Staff members each know their own disposition toward risk.
- Adults understand their responsibilities as supervisors, coaches, and role models.

GUIDELINE 5.6—ENVIRONMENTAL SUSTAINABILITY
Programs and facilities should model environmental sustainability and provide positive examples.

What to look for:

- Facility design and program implementation feature environmentally responsible practices such as energy and water conservation, solid waste management (e.g., recycling and composting), food production and preparation, and minimal use of disposable materials.
- Materials are chosen with sustainability in mind.
- Materials are chosen with the health of users in mind.
- Outdoor design contributes to indoor sustainability (e.g., access to solar heat).
- Pest management, when appropriate, uses nontoxic alternatives.
- Maintenance practices and supplies are used with sustainability and health in mind.



SHEILA WILLIAMS RIDGE

- Where appropriate, rainwater is collected and stored for use in gardens.

ADDRESSING SAFETY CONCERNS

It is beneficial to address fears parents may have about outdoor experiences openly, honestly, and with sensitivity. Explain that dirt, splinters, wet clothes, and scraped knees are all part of interacting with our natural world. Part of the innate thrill of meeting nature on its own terms is the sense of adventure that comes with jumping puddles, balancing on a log, and swinging from a tree branch. Communication of the growth, development, and pleasure derived from such experiences, along with identification of basic precautions being taken, will surely convince even the wariest parent that the benefits outweigh the concerns.

Some considerations:

- ◆ Evaluate height and slope of natural items and structures
- ◆ Test strength of potentially weight-bearing structures (tree limbs, rotted logs, slate outcrop)
- ◆ Encourage appropriate clothing, foot- and headwear (perhaps offering items from a classroom stash), including protective wear for sun and insects.
- ◆ Eliminate sharp drop-offs to water, cutting edges, and potential traps and choking hazards
- ◆ Restrict access to vehicular traffic
- ◆ Provide vigilant supervision without being overly intrusive
- ◆ Discuss simple precautions with kids regularly (such as leaving unknown animals alone and telling an adult)
- ◆ Build skills progressively, extending physical limitations over time
- ◆ Provide ongoing staff development in emergency preparedness

A PARENTS' GUIDE TO NATURE PLAY

Nature play is no more dangerous than many other things that kids often do, such as running down stairs, playing soccer, riding in a car, or riding a tricycle! And while outdoor play does have risks, it also brings real developmental benefits.

You should always consider safety, of course, but don't obsess over tiny dangers. Although the most common cause of children's accidental death is auto accidents, you still drive your kid places. Do not let equally manageable dangers keep your kids away from nature play. Ultimately, your children must learn to judge risks, gauge their limits, and practice responsibility. Isn't it better for them to learn these skills by climbing backyard trees at age eight than to wait until they are sixteen and behind the wheel of a car?

— Finch, K. *A Parent's Guide to Nature Play* (Omaha, Nebraska: Green Hearts Institute for Nature in Childhood, 2009)

MODELING BEHAVIOR

"Young children cannot grasp the concepts of limited natural resources or energy conservation; they can follow your example and learn behaviors that will reduce their environmental footprint and influence their decisions for years to come."

—American Forest Foundation, Project Learning Tree, 2010

Teachers and administrators can model environmentally friendly behavior and also make their intentions explicit to children. For example, a teacher may say to children, "I am going to use the other side of this paper because I don't want to waste it. Paper is made from trees, and if we use less paper, then fewer trees will be cut down and we won't have to buy as much paper." It is important to deliberately use words such as "waste," "too much," and "not enough" to help children think about how much glue, paper, paint, soap, water, and food they need.

Similarly, teachers can draw attention to their use of other resources: "I am going to turn off the light because we don't need it right now while the sun is shining in the windows. That way we don't use more electricity than we need." Older children can learn about how the electricity we use is generated from coal (depending on the region), and that if we use less electricity, less coal is burned and fewer trains have to haul the coal, resulting in less air pollution.

Vocabulary terms on green behavior: biodegradable, composting, organic, waste, reuse, recycle, conserve.

For more program ideas: Phil Boise. *Go Green Rating Scale for Early Childhood Settings Handbook* (Redleaf Press, 2007). Assessment checklist.



KEY CHARACTERISTIC 6: EDUCATOR PREPARATION

GUIDELINE 6.1—FOUNDATIONS OF EARLY CHILDHOOD ENVIRONMENTAL EDUCATION

GUIDELINE 6.2—PROFESSIONAL RESPONSIBILITIES OF THE EDUCATOR

GUIDELINE 6.3—ENVIRONMENTAL LITERACY

GUIDELINE 6.4—PLANNING AND IMPLEMENTING ENVIRONMENTAL EDUCATION

GUIDELINE 6.5—FOSTERING LEARNING

GUIDELINE 6.6—ASSESSMENT AND EVALUATION

Key Characteristic 6: Educator Preparation

Early childhood environmental educators are able to plan and implement high-quality, developmentally appropriate programs for young children.

GUIDELINE 6.1—FOUNDATIONS OF EARLY CHILDHOOD ENVIRONMENTAL EDUCATION
Early childhood environmental educators combine their understanding of child development and developmentally appropriate practice with a basic understanding of the goals, theory, practice, and history of the field of environmental education. This knowledge provides a solid foundation on which educators can build their own practice.

What to look for:

- The fact that environmental education and early childhood education share many goals is understood. Educators should



ARBOR DAY FOUNDATION

- recognize the broad view that environmental education takes, incorporating concepts such as systems, interdependence, and interactions among humans, other living organisms, the physical environment, and the built or designed environment
- understand that early childhood education and environmental education share an interdisciplinary perspective and integrate knowledge from across academic disciplines (e.g., common goals between environmental and peace education include the development of empathy, caring, and sense of belonging to a community)
- The facts that environmental education takes place in a variety of settings, and that sources of support, program requirements, and other factors vary from context to context are understood.

GUIDELINE 6.2—PROFESSIONAL RESPONSIBILITIES OF THE EDUCATOR

Environmental education is a profession that maintains high standards for instruction and professional conduct.

What to look for:

- Environmental education that is appropriate, constructive, and relevant for young children is provided. Educators should
 - identify ways in which environmental education can enhance the development of a young learner
 - behave responsibly, respectfully, and reasonably during instruction
 - respect the process of inquiry and the application of environmental investigations in instruction
- The need for educators to be active learners in their profession is understood. They should
 - identify and practice ways of continually updating information about the environment and early childhood pedagogy, current research, environmental education materials, and instructional methods



ARBOR DAY FOUNDATION

- reflect on and learn from personal practice as an early childhood environmental educator, both individually and with other professionals and colleagues
- seek opportunities to learn essential content and skills in real-world environmental settings or contexts, especially within the communities and ecosystems in which they live and teach

GUIDELINE 6.3—ENVIRONMENTAL LITERACY
Early childhood environmental educators possess the understandings, skills, and attitudes associated with environmental literacy and teaching.

What to look for:

- Mastery in questioning, analysis, and interpretation skills.
- Understanding of environmental processes and systems.
- Possession of skills for addressing environmental concerns.
- Possession of a high degree of personal and civic responsibility.

GUIDELINE 6.4—PLANNING AND IMPLEMENTING ENVIRONMENTAL EDUCATION

Educators provide interdisciplinary, investigative learning opportunities that are central to environmental education and developmentally appropriate for young children.

What to look for:

- A range of instructional methods to meet the needs of different learners are employed. Educators should
 - identify and use methods for presenting the environment or environmental concerns in appropriate and engaging ways for learners of different ages, backgrounds, levels of knowledge, and developmental abilities
 - select environmental education materials and strategies that are developmentally appropriate
 - recognize and acknowledge the validity of varying cultural perspectives present in a group of learners; tailor instructional approaches to respond to these perspectives and use them as an educational resource

SHARING

Help children to look more closely, listen more carefully, and understand the natural world in rich and varied ways by providing opportunities for children to marvel in the beauty of nature. This will work best if the educator appreciates the beauty of nature and shares with children the sparkling patterns of frost on the grass, the smell of rain, the cooing of pigeons, the smoothness or roughness of stones, or the intricacy of a grasshopper's body.

- use a variety of teaching methods and strategies appropriate for the environmental education content and context
- use culturally, linguistically, and developmentally appropriate teaching methods appropriate for the learner and goals of the program
- Effective instruction is planned. Educators should
 - plan age-appropriate environmental education instruction and programs that meet specific instructional goals
 - produce a plan for environmental education instruction that enhances coordination or integration across disciplines or helps meet specific goals of environmental education and contributes to the development of the child
- A range of environmental education materials and resources are used. Educators should
 - understand ways in which the community can be a resource for early childhood environmental education, identifying local businesses, service organizations, government agencies, nonprofit organizations, and other resources that may participate in and support instructional programs
 - identify and use sources of information about instructional materials and other resources including training offered by national, state, and local environmental education and early childhood programs and professional organizations
 - use a variety of tools for environmental observation, measurement, and monitoring (e.g., magnifying glasses, microscopes, trowels, tweezers) and instruct learners in their safe and proper use
 - understand the importance of a safe and conducive learning environment both indoors and outside
 - identify and use diverse settings for early childhood environmental education, appropriate to different subject matter and available resources. These may include the schoolyard, laboratory, field settings, community settings, museums, zoos, demonstration sites, or libraries
 - plan and implement instruction that first links content to the children’s immediate surroundings and experience, then expands learners’ horizons as appropriate to larger environmental concerns and contexts

CURIOSITY AND EXPLORATION

Children are naturally curious and enjoy exploring and playing. Play and exploration promote development of the whole child—physical, cognitive, social, and emotional. Planning for children is most effective when activities are open-ended, multimodal, multisensory, and novel:

Open-ended: An experience or activity should have many possible “outcomes”—what children create and learn—and “processes”—how children approach an activity or project.

Multimodal: Activities provide opportunities for children to interact with the world in different ways—motor, kinesthetic, musical, verbal, or visual-spatial, for example.

Multisensory: Activities that stimulate as many senses as possible—sight, sound, smell, touch, and, when appropriate, taste—are more meaningful for children (and all learners), and promote neurological connections in multiple areas of the brain. More interconnectivity promotes lasting memories and knowledge that is linked to the learners’ own lives.

Novel: Activities that defy “reason”—for example, asking children to paint under their tables with barks or brush, or providing a magnifying lens to examine leaves taped under the table evokes curiosity that in turn stimulate neural connections.



GUIDELINE 6.5—FOSTERING LEARNING

Early childhood environmental educators create a climate in which children are motivated to learn about and explore the environment.

What to look for:

- Opportunities for children to have firsthand experiences exploring the world around them are incorporated.
- Opportunities are provided for children to share their views and ideas with peers and adults; instructors actively and consistently listen to what children say.
- Learning by fostering openness and collaboration among children and creating an inclusive learning environment is maximized.
- Diverse cultures, races, genders, social groups, ages, and perspectives are included with respect, equity, and an acknowledgment of the value of such diversity.

- Diverse backgrounds and perspectives are used as instructional resources.
 - Proper planning is augmented with flexibility, taking advantage of instructional opportunities; modification of instructional plans and approaches, when appropriate, to take advantage of unexpected opportunities (for example, school or community events or items in the news), learner questions and interests, and teachable moments
 - Blend a variety of instructional methods and activities to meet instructional objectives (for example, questioning, small groups, projects, discussion). Make smooth transitions from one to another
 - Work collaboratively with other instructors, adapting instructional approaches as needed to blend or complement instructional styles and to meet shared environmental education goals

GUIDELINE 6.6—ASSESSMENT AND EVALUATION

Environmental educators possess the knowledge and skills to assess learner progress and evaluate the effectiveness of their own programs. Through these assessment activities, educators can identify children who may need additional assistance as well as evaluate progress toward meeting goals.

What to look for:

- The importance of tying assessment to learning is understood, and, when appropriate, educators should

STRUCTURING ACTIVITIES

Activities should be planned with a clear beginning, middle, and end. At the beginning of the activity, briefly tell children what the sequence of the activity will be, including transitions: "Teacher Jenny will tell you when it is time for your group to put on your coats. We are going to take our nature notebooks and go see how many animals we can find living in the trees on the playground. When you hear me sing the cleanup song, it will be time to line up by the door. Then we are going to come to the circle and share with our friends what we found." The beginning of the activity is also a time to generate enthusiasm: "I wonder what kind of animals might live in the trees on our playground? Does anyone have any ideas about that?"



DODGE NATURE CENTER

GAINING CONFIDENCE

A teacher was fairly new to Minnesota and unsure about traveling onto frozen ponds, especially with children. After training—finding out how to determine ice depth, strength, and safety—she ventured on cautiously. She began to grow comfortable and explore with children more readily and was able to help assure children of their own safety. Now, along with her students, she eagerly chops with an ice auger to explore and inspire wonder.

- identify national, state, and local standards and assess environmental education based on these standards
- develop and use a variety of strategies for assessing learning outcomes that reflect both subject area standards and environmental education goals and objectives (e.g., rubrics, checklists, journals)

- describe and use means for helping children set their own expectations for achievement; discuss the importance of these abilities in light of environmental education’s emphasis on learner-centered education and lifelong learning
- A variety of education outcomes, including attitudes, beliefs, actions, and engagement in learning are assessed as well as knowledge about the environment.
- Instructional experiences and assessments are employed competently to improve future instruction. Educators should
 - organize, interpret, and use the results of differing kinds of assessment to benefit those involved and help modify and improve future instruction
 - demonstrate a willingness and ability to collect additional information from and about

FLEXIBLE ASSESSMENT

Young children learn and display their learning in a variety of ways. Assessment strategies should be flexible, meet identified objectives, and be designed with the knowledge that learning is not a simple input-output process. Young children process information uniquely and not always visibly. The impact of classroom experiences may show up at home, not necessarily at school.

children to help modify and improve future instruction

- seek out opportunities to reflect, individually and with colleagues, on their own instructional practices and the broader practice of environmental education within the field
- keep a journal or a record of what worked and what didn't
- Developmentally appropriate assessment is used. Use of developmentally appropriate assessment by educators may include the following:
 - Continuous observation of children
 - Listening to the children's comments and asking them clarifying questions as they work
 - Keeping anecdotal records, post-its, or notebooks
- Inviting the children to represent their knowledge through a drawing, story, dance, dictated journal entry, or verbal explanation
- Assembling examples of the child's work in a portfolio
- Using group assessments such as a mural, play, dance, or construction project
- Constructing a know-wonder-learn (KWL) chart that gathers the children's initial knowledge about a topic, their wonderings, and (as the chart is developed) the discussions of the children as they accumulate their new knowledge
- Tracking the books used, the engagement of the children in an activity, or how knowledge shows up in their play.
 - Using language-experience stories accompanied by photographs to record the group's learning

Appendix A

Acronyms Used in the Guidelines

- ACEI: Association for Childhood Education International
- ADA: Americans with Disabilities Act
- DAP: Developmentally Appropriate Practices
- EETAP: Environmental Education and Training Partnership
- NAAEE: The North American Association for Environmental Education
- NAESP: National Association of Elementary School Principals
- NAEYC: National Association for the Education of Young Children
- ND: No Date give for a citation
- NPEEE: National Project for Excellence in Environmental Education
- USEPA: United States Environmental Protection Agency

Appendix B

Citations—Works Cited in the Guidelines

- Almeras, B. G., Heath, D., Cooper, S., and Wynne, P. J. *Access Nature*. Reston, Virginia: National Wildlife Federation, 2001.
- American Forest Foundation, Project Learning Tree. *Environmental Experiences for Early Childhood*. Washington, D.C.: Project Learning Tree, 2010.
- Arbor Day Foundation. *Learning with Nature Idea Book*. Lincoln, Nebraska: Arbor Day Foundation, 2008.
- Arbor Day Foundation. *Nature Explore Families' Club*. Retrieved from natureexplore.org/families on March 25, 2010.
- Arbor Day Foundation and Dimensions Educational Research Foundation. *What Is the Nature Explore Program?* Lincoln, Nebraska: Arbor Day Foundation.
- Association of Waldorf Schools of North America. *Why Waldorf Works*. Retrieved from www.whyywaldorfworks.org on June 2, 2010.
- Boise, P. *Go Green Rating Scale for Early Childhood Settings*. Saint Paul, Minnesota: Redleaf Press, 2007.
- Carson, R. *The Sense of Wonder*. New York: Harper and Row, 1956 reprinted 1998.
- Chalufour, I., and Worth, K. *Discovering Nature with Young Children*. Saint Paul, Minnesota: Redleaf Press, 2003.
- Chawla, L. "Life paths into Effective Environmental Action." *Journal of Environmental Education* 31:1 (1999): 15–26.
- Cobb, E. *The Ecology of Imagination in Childhood*. New York: Columbia University Press, 1977.
- Compton, J., and Sellar, C. "Do Outdoor Education Experiences Contribute to Positive Development in the Affective Domain?" *Journal of Environmental Education*, Washington, D.C.: Heldref Publications, 1981.
- Copple, C., and Bredekamp, S., editors. *Developmentally Appropriate Practice in Early Childhood Programs (Third Edition)*. Washington, D.C.: National Association for the Education of Young Children, 2009.
- Council for Environmental Education, Project WILD. *Growing Up WILD*. Houston, Texas: Council for Environmental Education, 2010.
- Curtis, D. "What's the Risk of No Risk?" *Exchange Magazine* (March-April 2010).
- Curtis, D., and Carter, M. *Designs for Living and Learning: Transforming Early Childhood Environments*. Saint Paul, Minnesota: Redleaf Press, 2003.
- Dewey, J. *Experience and Education*, New York: Collier Books, 1938.
- Dodge Nature Center Preschool. *Four Seasons at a Nature-Based Preschool*. West Saint Paul, Minnesota: Dodge Nature Center Preschool, 2005.
- Edwards, C., Forman, G., and Gandini, L., editors. *The Hundred Languages of Children: The Reggio Emilia Approach to Early Childhood Education*. Norwood, New Jersey: Ablex Publishing, 1993.
- Erikson, E. *Childhood and Society*. New York: W. W. Norton and Company, 1950.
- Finch, K. *A Parent's Guide to Nature Play*. Omaha, Nebraska: Green Hearts Institute for Nature in Childhood, 2009.
- Gardner, H. *Intelligence Reframed: Multiple Intelligences for the Twenty-first Century*. New York: Basic Books, 1999.
- Gettman, D. *Basic Montessori: Learning Activities for Under-Fives*. New York: St. Martin's Press, 1987.
- Greenman, J. *Caring Spaces, Learning Places: Children's Environments That Work*. Redmond, Washington: Exchange Press, 2007.
- Greenspan, S. *Building Healthy Minds*. New York: Perseus Books Group, 1999.
- Harlan, J. and Rivkin, M. *Science Experiences for the Early Childhood Years: An Integrated Affective Ap-*

- proach. Englewood Cliffs, New Jersey: Prentice Hall, 2007.
- Harms, T., Clifford, R., and Cryer, D. *Early Childhood Environment Rating Scale (Revised Edition)*. New York: Teachers College Press, 1978.
- Hatheway, B., Gallagher, S., and Henderson, S. *Teacher's Implementation Guide to Elementary Globe*. University Corporation for Atmospheric Research. Retrieved from classic.globe.gov/fsl/elementaryglobe/docs/ImplementationGuide_30Nov.pdf on July 1, 2010.
- Kamii, C., and Ewing, J. K. "Basing Teaching on Piaget's Constructivism." *Childhood Education* 72 (1996): 260–64.
- Keeler, R. *Natural Playscapes. Creating Outdoor Play Environments for the Soul*. Redmond, Washington: Exchange Press, 2008.
- Kellert, S. *Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations* (edited with P. H. Kahn Jr.). Cambridge, Massachusetts: MIT Press, 2002.
- Klein, M. D., Cook, R. E., and Richardson-Gibbs, A. M. *Strategies for Including Children with Special Needs in Early Childhood Settings*. Albany, New York: Delmar Thomson Learning, 2001.
- Kolb, D. *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, New Jersey: Prentice-Hall, 1984.
- Lewin, K. *A Dynamic Theory of Personality*. New York: McGraw-Hill, 1935.
- Miles Elementary School. 1986–87 School Report. Atlanta: Miles Elementary School, 1987.
- Montessori, M. *The Secret of Childhood*. New York: Ballantine Books, 1982.
- National Association for the Education of Young Children. *Early Childhood Program Standards and Accreditation Criteria*. Washington, D.C.: National Association for the Education of Young Children, 2006.
- National Wildlife Federation Be Out There Campaign. Retrieved from www.nwf.org/Get-Outside/Be-Out-There.aspx on May 10, 2010.
- Nebraska Department of Education Early Childhood Training Center. *Nebraska Early Learning Guidelines for Ages Three to Five*. Lincoln, Nebraska: Nebraska Department of Education, 2005.
- Nebraska Department of Education Early Childhood Training Center. *Nebraska Early Learning Guidelines for Ages Birth to Three*. Lincoln, Nebraska: Nebraska Department of Education, 2007.
- Nebraska Department of Education Early Childhood Training Center. *Nebraska Early Learning Guidelines: Connecting Children to Nature (2008)*. Retrieved from ectc.nde.ne.gov/ELG/nature_education.pdf on June 3, 2010.
- Nielsen, T.W. *Rudolf Steiner's Pedagogy of Imagination: A Case Study of Holistic Education*. New York: Peter Lang, 2004.
- North American Association for Environmental Education. *Guidelines for the Preparation and Professional Development of Environmental Educators*. Washington, D.C.: NAAEE, 2010.
- North American Association for Environmental Education. *Environmental Education Materials: Guidelines for Excellence*. Washington, D.C.: NAAEE, 2009.
- North American Association for Environmental Education. *Excellence in Environmental Education: Guidelines for Learning (K–12)*. Washington, D.C.: NAAEE, 2010.
- Outdoor Arizona. *Best Practices for Connecting Children and Nature*. Phoenix Arizona: Outdoor Arizona, 2009.
- Patridge, E. "Nature as a Moral Resource." *Environmental Ethics* (Summer 1984): 101–30.
- Pelo, A. "A pedagogy for ecology." *Rethinking Schools* (Summer 2009): 30-35.
- Pranis, E., and Gifford, A. *Schoolyard Mosaics: Designing Gardens and Habitats*. South Burlington, Vermont: National Gardening Association, 2003.
- Pulaski, M. *Understanding Piaget: An Introduction to Children's Cognitive Development*. New York: Harper and Row, 1971.
- Sebba, R. "The Landscapes of Childhood." *Environment and Behaviour* 23:4 (1991): 395–422.

Shaw, L. G. "Designing Playgrounds for Abled and Disabled Children." In C. S. Weinstein and T. G. David, editors, *Spaces for Children: The Built Environment and Child Development*. New York: Plenum, 1987.

Steiner, R. *The Education of the Child and Early Lectures on Education (Foundations of Waldorf Education)*. New York: Anthroposophic Press, 1996.

Tilbury, D. "The Critical Learning Years for Environmental Education." In R. A. Wilson (editor), *Environmental Education at the Early Childhood Level*. Washington, D.C.: North American Association for Environmental Education, 1994: 11–13.

Tovey, H. *Playing Outdoors: Spaces and Places, Risks and Challenges*. Berkshire, England: McGraw-Hill, Open University Press, 2007.

U.S. Environmental Protection Agency. *Go Green Rating Scale*. Washington, D.C.: U.S. Environmental Protection Agency, 2007.

U.S. Department of Health and Human Services Administration for Children and Families/Head Start Program. *The Head Start Path to Positive Outcomes*. Washington, D.C.: U.S. Department of Health and Human Services, 2003.

United Nations Conference on Environment and Development. *Agenda 21: Programme of Action for Sustainable Development. Rio Declaration on Environment and Development*. New York: United Nations, 1992.

United Nations Educational, Scientific, and Cultural Organization (UNESCO). *Final Report Intergovernmental Conference on Environmental Education*. Organized by UNESCO in Cooperation with United Nations Environment Programme (UNEP), Tbilisi, USSR, 14–26 October 1997, Paris: UNESCO ED/MD/49 (1978).

UNESCO. *Thessaloniki Declaration. Conference on Environment and Society*. Paris: UNESCO, 1997.

UNESCO-UNEP. *The Belgrade Charter. Connect: UNESCO-UNEP Environmental Education Newsletter, Vol. 1:1 (1976): 1–2*.

United Nations. *Report on the World Summit on Sustainable Development*. New York: United Nations, 2002.

United Nations Bruntland Commission: "Report of the World Commission on Environment and Development." General Assembly Resolution 42/187. New York: United Nations, 1987.

United States Government, NASA. *The Globe Program*. Retrieved from www.nasa.gov/audience/foreducators/k-4/features/F_Elementary_GLOBE.html on June 2, 2010.

Vygotsky, L. S. *Mind and Society: The Development of Higher Mental Processes*. Cambridge, Massachusetts: Harvard University Press, 1978.

Ward, J. *I Love Dirt: Fifty-two Activities to Help You and Your Kids Discover the Wonders of Nature*. Boston, Massachusetts: Trumpeter Books, 2008.

Wilson, E. O. *Biophilia*. Cambridge: Harvard University Press, 1984.

Wilson, R. "Starting Early: Environmental Education during the Early Childhood Years." ERIC Digest. Education Resources Information Center Clearinghouse for Science, Mathematics, and Environmental Education, Columbus, Ohio (1992).

Wilson, R. *Environmental Education at the Early Childhood Level*. Washington, D.C.: North American Association for Environmental Education, 1994.

Wilson, R. *Starting Early: Environmental Education during the Early Childhood Years (1996)*. Retrieved from www.ericdigests.org/1998-1/early.htm on May 10, 2010.

Wortham, S. C. *Early Childhood Curriculum: Developmental Bases for Learning and Teaching (Second Edition)*. Upper Saddle River, New Jersey: Merrill, 1998.

Appendix C

References—Additional Works of Interest

- Almon, J. *The Vital Role of Play in Childhood*. Waldorf Early Childhood Association of North America. Retrieved from www.waldorfearychildhood.org/article.asp?id=5 on May 30, 2010.
- Arbor Day Foundation and Dimensions Educational Research Foundation. *Nature Explore Classrooms: Opportunities to Meet National Education Standards, Benchmarks, and Outcomes*. Lincoln, Nebraska: Arbor Day Foundation.
- Beecher, A., Death, B., Dockett, E., and Farmer, S. *Programming and Planning in Early Childhood Settings*. Southbank, Victoria, Australia: Thomson, 2008.
- Berk, L., and Winsler, A. *Scaffolding Children's Learning: Vygotsky and Early Childhood Education*. Washington, D.C.: NAEYC, 1995.
- Centers for Disease Control and Prevention. *State Indicator Report on Physical Activity, 2010*. Atlanta, Georgia: U.S. Department of Health and Human Services, 2010.
- Davis, J., and Elliott, S. "Early Childhood Environmental Education: Making It Mainstream." *Research into Practice*. Canberra: Early Childhood Australia, 2003.
- Davis, J. "Revealing the Research 'Hole' of Early Childhood Education for Sustainability: A Preliminary Survey of the Literature." *Environmental Education Research* 15:2 (2009): 227–41.
- Davis, J. M. (ed.) *Young children and the environment: Early education for sustainability*. Port Melbourne, AU: Cambridge University Press, 2010.
- DeBord, et al. *Making the Most of Outdoor Time with Preschool Children*. Raleigh, North Carolina: North Carolina Cooperative Extension, 2003.
- DeBord, K., Hestenes, L., Moore, R., Cosco, N., and McGinnis, J. *POEMS: Preschool Outdoor Environment Measurement Scale*. Lewisville, North Carolina: Kaplan Early Learning Company, 2005.
- Durrett, C., and Torelli, L. "Deconstructing Green." *Exchange Magazine* (May-June 2009).
- Edwards, S., and Cutter-Mackenzie, A. "Eco-literacy and the Content-Pedagogy Relationship in Early Childhood Education." In S. Wooltorton, and D. Marinova, editors, *Sharing Wisdom for Our Future: Environmental Education in Action* (Proceedings of the National Conference of the Australian Association for Environmental Education). Sydney, Australia: Australian Association for Environmental Education, 2006.
- Elliott, S., and Davis, J. "Exploring the Resistance: An Australian Perspective on Educating for Sustainability in Early Childhood." *International Journal of Early Childhood* (May 1, 2009).
- Elliott, S., editor. *Outdoor Playspace: Naturally*. Sydney, Australia: Pademelon Press, 2008.
- Gandini, L. "Recycled Materials: Beginnings Workshops—Learning Materials." *Exchange Magazine* (January-February 2005).
- Ginsburg, K. "Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds." *Pediatrics* 119:1 (January 2007).
- Green Hearts Institute for Nature in Childhood. *Twenty-five Easy Nature Play Ideas for Preschool Yards*. Omaha, Nebraska: Green Hearts Institute for Nature in Childhood, 2009.
- Healthy Schools Network. *Guide to Green Cleaning: Healthier Cleaning and Maintenance Practices and Products for Schools*. Albany, New York: Healthy Schools Network, 2006.
- Huber, D. "Making a Difference in Early Childhood Obesity." *Exchange Magazine* (September-October 2009).
- Hughes, M. *Climbing the Little Green Steps*. Gosford, New South Wales, Australia: Gosford and Wong Council, 2007.
- Hutchinson-Harmon, L. "Kinder-Gardeners: The Power of Nature to Nurture." *Exchange Magazine* (January-February, July-August 2009).
- Kahn, P. H., and Kellert, S. R. *Children and Nature*. Cambridge, Massachusetts: MIT Press, 2002.

Keeler, R. *Natural Playscapes*. Wellsphere, 2009. Retrieved from stanford.wellsphere.com/parenting-article/creating-natural-playscapes/566457 on May 12, 2010.

Louv, R. *Last Child in the Woods*. Chapel Hill, North Carolina: Algonquin Books, 2008.

Miller, D. "The Seeds of Learning: Young Children Develop Important Skills through Their Gardening Activities at a Midwestern Early Education Program." *Applied Environmental Education and Communication*. Philadelphia, Pennsylvania: Taylor and Francis, 2007.

Miller, D., Tichota, K., and White, J. *Young Children Learn through Authentic Play in a Nature Explore Classroom: A White Paper Based on Research Conducted at Dimensions Early Education Programs*. Lincoln, Nebraska: Dimensions Educational Research Foundation, 2009.

Moore, R., and Marcus, C. "Healthy Planet, Healthy Children." In Kellert, S. R., Heerwagen, J., and Mador, M., editors, *Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life*. Hoboken, New Jersey: Wiley, 2008.

Moore, R., and Wong, H. *Natural Learning: Creating Environments for Rediscovering Nature's Way of Teaching*. Berkeley, California: MIG Communications, 1997.

Moore, R., and Wong, H. *Natural Learning: The Life History of an Environmental Schoolyard*. Berkeley, California: MIG Communications, 1997.

Nabhan, G., and Trimble, S. *The Geography of Childhood: Why Children Need Wild Places*. Boston, Massachusetts: Beacon Press, 1994.

National Wildlife Federation. *Time Out: Using the Outdoors to Enhance Classroom Performance*. Reston, Virginia: National Wildlife Federation.

New South Wales Environment Protection Authority. *Patches of Green: A Review of Early Childhood Environmental Education*. Sydney: New South Wales Environmental Protection Agency, 2003.

Office of School Readiness, North Carolina. *Play Outside: Recommended Resources for Outdoor Learning Environments* (2007). Retrieved from www.osr.nc.gov/_pdf/RecommendedResourcesforChildrensOutdoorEnvironments.pdf on May 12, 2010.

Ottman, M., editor. *Natural Wonders: A Guide to Early Childhood for Environmental Educators* (Minnesota Early Childhood Environmental Education Consortium). Saint Paul, Minnesota: Minnesota Children's Museum, 2002.

Rivkin, M. *The Great Outdoors: Restoring Children's Right to Play Outside*. Washington, D.C.: National Association for the Education of Young Children, 1995.

Rivkin, M. "The Schoolyard Habitat Movement: What It Is and Why Children Need It?" *Early Childhood Education Journal* 25:1 (1997): 61–65.

Rivkin, M. "Happy Play in Grassy Places: The Importance of the Outdoor Environment in Dewey's Education Ideal." *Early Childhood Education Journal* 25:3 (1998): 199–201.

Shonkoff, J. P., and Phillips, D. A., editors. *From Neurons to Neighborhoods: The Science of Early Childhood Development* (Committee on Integrating the Science of Early Childhood Development). Washington, D.C.: National Academy Press, 2000.

Sobel, D. *Childhood and Nature*. Portland, Maine: Stenhouse Publishers, 2008.

Stine, S. *Landscapes for Learning*. Hoboken, New Jersey: Wiley, 1996.

U.S. Environmental Protection Agency. *SC3: Protecting Students and Staff with Green Cleaning*. Washington, D.C.: U.S. Environmental Protection Agency, 2008.

United Nations Educational, Scientific, and Cultural Organization. *Early Childhood and Its Contribution to a Sustainable Society*. Paris, France: UNESCO, 2008.

Wenner, M. "The Serious Need for Play." *Scientific American Mind* (February 2009).

White, R., and Stoecklin, V. *Moving from Biophobia to Biophilia: Developmentally Appropriate Environmental Education for Young Children*. White Hutchinson Leisure and Learning Group (2008). Retrieved from www.whitehutchinson.com/children/articles/nurturing.shtml on March 25, 2010.

Wilson, R. "The Color Green: A "Go" for Peace Education." *Exchange Magazine* (May-June 2009).

Wilson, R. *Fostering a Sense of Wonder during the Early Childhood Years*. Bowling Green, Ohio: Greyden Press, 1993.

Wilson, R. "Healthy Habitats for Children." *Early Childhood Education* 28:4 (1996): 235–38.

Wilson, R. "The Wonders of Nature: Honoring Children's Ways of Knowing." *Early Childhood News* (2000): 6–9, 16–19.

Wirth, S. "Benefits of Learning in Nature." *Children and Families* (Summer 2009).

World Forum Foundation. *Working Forum on Nature Education: New Tools for Connecting the World's Children to Nature*. Redmond, Washington: World Forum Foundation, 2008.

Appendix D

Overview of Selected Theorists Important to Early Childhood Education

In early childhood education, researchers and theorists such as Dewey, Piaget, Vygotsky, Montessori, Erikson, Gardner, Steiner, and the founders of the Reggio Emilia schools in Italy have contributed valuable insight into how young children learn.

- John Dewey (1938) theorized that experiential learning engaged the physical, emotional, and mental aptitudes of students and created opportunities for a deeper understanding. "I assume that amid all uncertainties there is one permanent frame of reference: namely, the organic connection between education and personal experience" (Dewey, 1938, p. 25). In *Experiential Learning*, David Kolb describes learning as a four-step process (Kolb, 1984). He identifies the steps as (1) watching and (2) thinking (mind), (3) feeling (emotion), and (4) doing (muscle). He draws primarily on the works of Dewey (who emphasized the need for learning to be grounded in experience), Lewin (1935) (who stressed the importance of a people being active in learning), and Jean Piaget (who described intelligence as the result of the interaction of the person and the environment).
- Jean Piaget established the theory of Constructivism, one of the most widely used educational theories currently. He understood that children construct knowledge by exploring, manipulating objects, and processing thoughts. It has been widely reported that he said, "Every time we teach a child something, we keep him from inventing it himself . . . that which we allow him to discover himself will remain with him."
- Lev Vygotsky's (1987) social-cultural theory emphasizes the important role of social interaction in supporting children's cognitive development. Vygotsky's concepts of the "zone of proximal development," referring to what a child can do with support of an adult or more competent peer, but not yet alone, and "scaffolding," referring to attuned support that helps a child competently do what they cannot yet do alone, underscore the importance of observing children closely in order to understand children's current abilities and needs and using those observations to plan curriculum.
- Maria Montessori (Getman, 1987. Montessori, 1982, Wortham, 1998) worked with young children with severe disabilities and then with those in poverty leading to well developed theories about how children learn in the first five years of life. Montessori observed that young children learn through their senses and through movement and exploration, and therefore "prepared environments" indoors and outdoors can promote purposeful learning. Montessori emphasized the importance of "authentic work," in which children are given the opportunity to use real tools that are child sized and the opportunity to take responsibility and make contributions to others through activities such as gardening and cooking. Therefore, teachers prepare and carefully maintain the preschool environment, facilitate the child's interactions with materials and with others, and observe each child's work and development.
- Erik Erikson (1950) articulated stages of social-emotional development that have been hugely influential in early childhood practice: Basic trust (v. mistrust) for infants, Autonomy (v. shame) for toddlers, Initiative (v. guilt) for preschoolers, and Industry (v. inferiority) for school-age children. While stage theory, which suggests advancement is predicted on completing previous stages, is subject to discussion, these overall descriptions resonate with many observations by others, including cross-culturally.
- Howard Gardner is the architect of multiple Intelligence theory. He theorized that people have at least eight different intelligences and every person has capabilities in each area but some areas are stronger than others are. The following are the eight intelligences: Logical-mathematical (numbers, reasoning), Linguistic (reading, writing, talking), Bodily-kinesthetic (moving, physical activity), Musical (songs, pat-

terns, sound), Interpersonal (understanding other people and social interactions), Intrapersonal (self-knowledge), Spatial (drawing, mapping), and Naturalist (understanding of the physical world). Teachers have found his description useful in designing curriculum to meet all children.

- Rudolph Steiner, like Piaget, Montessori, and Vygotsky, developed his theories in the first part of the 20th century, but those ideas have received wide currency only in the last half of the century. Indeed, Waldorf Schools, named for the founding school, are one of the fastest growing schools in the world. Waldorf schools emphasize natural materials and sensitivity to children's imaginations and fantasy (Nielsen 2004).
- The Reggio Emilia approach to education is committed to the creation of conditions for learning that will enhance and facilitate children's construction of "his or her own powers of thinking through the synthesis of all the expressive, communicative, and cognitive languages" (Edwards, Forman, and Gandini 1993). In Reggio Emilia schools, the environment is considered the "third teacher." Teachers carefully organize space for small and large group projects both indoors and outdoors. Teachers provide intimate workspaces for individual and small groups. Documentation of children's work is used to assess children's learning and plan subsequent learning experiences. Documentation is displayed in ways that children and adults can appreciate and enjoy.

Appendix E

Head Start—A Checklist for Early Childhood Curriculum

DOES THE CURRICULUM . . . ?

1. Promote interactive learning and encourage the child's construction of knowledge
2. Help children achieve social, emotional, linguistic, physical, and cognitive goals
3. Encourage development of positive feelings and dispositions toward learning while leading to acquisition of knowledge and skills
4. Have expectations that are realistic and attainable at this time
5. Include children with disabilities in the curriculum
6. Build and elaborate on children's current knowledge and abilities
7. Lead to conceptual understanding by helping children construct their own understanding in meaningful contexts
8. Facilitate concept learning and skills development in an integrated and natural way
9. Challenge children with disabilities to attain goals beyond those specified in the individual education plans or individualized family service plan
10. Permit flexibility for children and teachers
11. Encourage active learning and frequently allow children to make meaningful choices
12. Foster children's exploration and inquiry, rather than focusing on "right" answers or "right" ways to complete a task
13. Promote the development of higher-order abilities, such as thinking, reasoning, problem-solving, and decision-making
14. Promote and encourage social interaction among children and adults
15. Respect children's psychological needs for activity, sensory stimulation, fresh air, rest, and nourishment
16. Promote feelings of safety, security, and belonging
17. Provide experiences that promote feelings of success, competence, and enjoyment of learning
18. Promote positive relationships with families

IS IT . . . ?

- Based on sound child development principles of how children grow and learn and grounded in the Head Start program performance standards?
- Meaningful for these children? Is it relevant to the children's lives? Can it be made more relevant by linking it to personal experiences the children have had or can have easily?
- Sensitive to and respectful of cultural and linguistic diversity? Does the curriculum expect, allow, and appreciate individual differences?

Adapted from NAEYC

"Checklist for Early Childhood Curriculum." Curriculum. Head Start Bulletin # 67. HHS/ACF/ACYF/HSB. 2001. English retrieved from http://eclkc.ohs.acf.hhs.gov/hslc/ecdh/eecd/Curriculum/Definition%20and%20Requirements/edudev_art_00527_030907.html on July 12, 2010.

Appendix F

Child Development and the Role Educators Play

	Infant, toddler	Preschool	Primary
Child's Development	Sensory development, discovery in their environment, development of motor skills	Sensory development, observation, questioning, discovery in their environment, independent but may work with others, development of motor skills	Observation, questioning, discovery in their environment and community, cooperative learning and group work, development of motor skills
Role of Educator	Appreciate and enjoy the child, contribute to vocabulary development, sensory activities, engage children with nature, model positive environmental behavior, make learning relevant, encouraging creativity (song, dance, role play)	Appreciate and enjoy the child, contribute to vocabulary development, direct child's questioning, sensory activities, facilitate instruction, clarify content, engage children with nature, model positive environmental behavior, make learning relevant, encourage creativity (song, dance, role play)	Appreciate and enjoy the child, contribute to vocabulary development, facilitate child's questioning, facilitate instruction, clarify content, engage children with nature and their environment, model positive environmental behavior, make learning relevant, encourage creativity (song, dance, role play)



For more than four decades, the North American Association for Environmental Education (NAAEE) has been a leader in promoting excellence in environmental education throughout North America. With members in more than 30 countries, and affiliations with more than 50 state and provincial environmental education organizations, NAAEE's influence stretches across North America and around the world. Our mission is to bring the brightest minds together to advance environmental literacy and civic engagement through the power of education.

NAAEE supports the field with a variety of programs and services, including:

Annual Conference and Research Symposium—NAAEE has convened an annual conference for environmental education professionals since 1972. The conference is the largest national gathering of environmental education professionals in North America and promotes innovation in the field, networking, new tools and resources, and dissemination of research and best practices.

Resources—NAAEE provides its members and supporters with high-quality professional resources including books, resource guides, essays, peer-reviewed research, best practices, research reviews, job listings, grant opportunities, news across the field, and more.

Professional Development—NAAEE offers unique services in professional development and support. Through online networking and professional learning, training seminars, strategic convening of environmental education leaders, and support of certification programs, NAAEE promotes leadership development and builds the capacity of its members and affiliates.

Advocacy—NAAEE is a non-partisan organization that plays a leadership role in raising the profile of environmental education at an international level. NAAEE works with partners to advocate for environmental education with agencies, organizations, foundations, and others to increase funding and support for the field.

Inspiring Innovation—NAAEE is committed to bringing new voices, ideas, and innovation to the field and broadening the reach and impact of environmental education.



The Natural Start Alliance is NAAEE's project to advance early childhood environmental education. Natural Start is a network of educators, parents, and organizations that connect young children to nature and the

environment through education. Natural Start supports early childhood environmental education by promoting networking, professional development, research, and advocacy.

naaee.org

naturalstart.org



2000 P Street NW, Suite 540, Washington, DC 20036 • (202) 419-0412

The National Project for Excellence in Environmental Education

The North American Association for Environmental Education (NAAEE) launched the National Project for Excellence in Environmental Education in 1993 to help educators develop and deliver high-quality education programming. The project works to create a more environmentally literate citizenry with the knowledge, skills, and inclinations to make informed choices and exercise the rights and responsibilities of members of a community. To date, NAAEE has published five sets of guidelines that promote the use of balanced, scientifically accurate, and comprehensive environmental education materials and programs that advance environmental literacy and civic engagement.

Publications

Publications created by the National Project for Excellence in Environmental Education include:

- **Environmental Education Materials: Guidelines for Excellence** (4th edition, 2009). A set of recommendations for developing and selecting environmental education materials.
- **Excellence in Environmental Education: Guidelines for Learning (K-12)** (4th edition, 2010). A comprehensive framework for environmental education, demonstrating environmental education's alignment with national academic standards.
- **Excellence in Environmental Education: Guidelines for Learning (K-12) Executive Summary & Self Assessment Tool** (4th edition, 2010). An easy-to-use outline listing the guidelines and a set of checklists for analyzing educational activities.
- **Guidelines for the Preparation and Professional Development of Environmental Educators** (3rd edition, 2010). A set of competencies for educators preparing to teach environmental education in a variety of job settings.
- **Nonformal Environmental Education Programs: Guidelines for Excellence** (2nd edition, 2009). A set of recommendations to be used in the development of comprehensive environmental education programs or to trigger improvements in existing ones.
- **Early Childhood Environmental Education Programs: Guidelines for Excellence** (2010). A set of recommendations to be used in the development of comprehensive early childhood environmental education programs or to trigger improvements in existing ones.

Hard copies and free downloadable pdfs of the Environmental Education Guidelines publications can be ordered from NAAEE at www.naaee.org/our-work/programs/guidelines-excellence.

