



## Research Based Advocacy for Environmental Education Some Current Citations

### Healthy Lifestyles:

Hofferth, S. L. & Sandberg, J. F., "How American Children Spend Their Time," *Journal of Marriage and Family* 63, no. 2 (2001): 295-308.

Hofferth, S.L. & S.C. Curtin, "Changes in Children's Time, 1997-2002/3: An Update." University of Maryland, College Park, MD (2006).

- *From 1997-2003, the number of children in the United States ages nine to twelve engaging in outdoor activities such as hiking, walking, fishing, beach play and gardening declined 50%. Our nation's youth are spending less time outside than at any time in our nation's history.*
- *Children under 13 living in the United States spend on average only about half an hour of unstructured time outdoors each week*

Kaiser Family Foundation, "Zero to Six: Electronic Media in the Lives of Infants, Toddlers and Preschoolers" (2005).

Kaiser Family Foundation, "Generation M2: Media in the lives of 8 to 18 year olds" (2010).

- *our children are spending less than half the time out of doors that their parents did growing up*
- *children are spending as much as 7.5 hours a day in front of electronic media*

### Physical and Mental Health:

Coon JT, et al, "Does Participating in Physical Activity in Outdoor Natural Environments Have a Greater Effect on Physical and Mental Wellbeing than Physical Activity Indoors? A Systematic Review", *Environmental Science & Technology*, DOI: 10.1021/es102947t (2011).

*Exercising in natural environments was associated with greater feelings of revitalization and positive engagement, decreases in tension, confusion, anger, depression, and increased energy. Participants also reported greater enjoyment and satisfaction with outdoor activity and declared a greater intent to repeat the activity*

Dyment, Janet E., "Grounds for Action: Promoting Physical Activity through School Ground Greening in Canada." *Evergreen*. (2006).

*Children who experience school grounds or play areas with diverse natural settings are more physically active, more aware of good nutrition, more creative, and more civil to one another.*

### Social Justice:

Committee on Environmental Health, "The Built Environment: Designing Communities to Promote Physical Activity in Children" *Pediatrics*, 123(6):1591-1598 (2009).

*Many low-income and minority children are often more cut-off from nature due to the built environment" around them: poor housing conditions, high-volume traffic, and a lack of parks and green space*

### **Environmental Literacy:**

NEETF/Roper Starch Surveys - NEETF, 1999 and 2005

- *Most Americans believe they know more about the environment than they actually do*
- *Only 3 out of 10 Americans can pass a quiz on basic environmental knowledge*

McBeth, W., Hungerford, H., Marcinkowski, T., Volk, T., & Meyers, R. (2008). National Environmental Literacy Assessment Project: Year 1, National baseline study of middle grades students. Final report.

(Report to the U.S. Environmental Protection Agency, National Oceanic and Atmospheric Administration,

and North American Association for Environmental Education under Grant #NA06SEC4690009). Available at [http://www.oesd.noaa.gov/NAEE\\_Report/Final\\_NELA%20minus%20MSELS\\_8-12-08.pdf](http://www.oesd.noaa.gov/NAEE_Report/Final_NELA%20minus%20MSELS_8-12-08.pdf).

McBeth, W., Hungerford, H., Marcinkowski, T., Volk, & Cifranick, K. (2011). National Environmental Literacy Assessment, Phase Two: Measuring the effectiveness of North American environmental education programs with respect to the parameters of environmental literacy. Final research report.

(Report to the National Oceanic and Atmospheric Administration, and North American Association for Environmental Education under Grant #NA08SEC4690026). Carbondale, IL: CISDE. Available at

[http://www.oesd.noaa.gov/pubs\\_reports/NELA\\_Phase\\_Two\\_Report\\_020711.pdf](http://www.oesd.noaa.gov/pubs_reports/NELA_Phase_Two_Report_020711.pdf).

### **Attention Deficit Disorder:**

Taylor, Andrea Faber; Frances E. Kuo; and William C. Sullivan, "Coping with ADD: The Surprising Connection to Green Play Settings." In *Environment and Behavior*, Vol. 33, No. 1, (2001).

Taylor, Andrea Faber; Frances E. Kuo; and William C. Sullivan. "Views of Nature and Self-Discipline: Evidence from Inner City Children." *Journal of Environmental Psychology*, 21, (2001)

Kuo, F.E. & Taylor, A.F. (2004). A potential natural treatment for attention-deficit/hyperactivity disorder: Evidence from a national study. *American Journal of Public Health*, 94(9), 1580-1586.

- *Green outdoor settings appear to reduce ADHD symptoms in children across a wide range of individual, residential, and case characteristics.*
- *Children with attention-deficit disorder (ADD) benefited from more exposure to nature – the greener a child's everyday environment, the more manageable are the symptoms of ADD*

### **Academic Achievement:**

Archie, M., *Advancing Education through Environmental Literacy*. Alexandria, VA: Association for Supervision and Curriculum Development (2003).

- *EE offers opportunities for rich, hands-on, real world and relevant learning across the curriculum*
- *Environment-based education emphasizes specific critical thinking skills central to "good science"—questioning, investigating, forming hypotheses, interpreting data, analyzing, developing conclusions, and solving problems*

Lieberman, G.A. & Hoody, L.L., "Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning. State Education and Environment Roundtable" (1998).

- *Improved performance on standardized measures of academic achievement in reading, writing, math, science, and social studies.*
- *Reduced discipline and classroom management problems.*
- *Greater enthusiasm for language arts, math, science, and social studies.*
- *Better ability to apply science to real-world situations.*
- *Greater proficiency in solving problems and thinking strategically.*
- *Better application of systems thinking and increased ability to think creatively.*
- *More advanced skills in applying civic processes to real-life situations.*

### **Teacher Responses**

National Wildlife Fund Online Survey of 1878 teachers, 'Back to School: Back Outside' (2010)

- 78% Strongly Agreed -- Children who spend regular time in unstructured outdoor play are better able to concentrate and perform better in the classroom
- 82% Strongly Agreed -- Students need daily unstructured outdoor time as a counterbalance to the significant time spent indoors in front of electronic media
- 75% Strongly Agreed -- Students who spend regular time outdoors tend to be more creative and better able to problem solve in the classroom

### **Environmental Attitudes:**

Wells, N. and K. Lekies, "Nature and the Life Course: Pathways from Childhood Nature Experiences to Adult Environmentalism." *Children, Youth and Environments* 16(1): 1-24 (2006).

- *participation with "wild" nature before age 11 is a particularly potent pathway toward shaping both environmental attitudes and behaviors in adulthood.*
- *childhood play in nature is associated with recycling, buying green products, voting green, and the choice of natural areas for recreation in adulthood.*
- *Neither childhood participation in environmental education nor childhood experiences in nature with other people had significant effects on adult environmental behaviors*

### **Promoting Learning and Citizenry:**

The North American Association for Environmental Education (NAAEE) and The National Environmental Education and Training Foundation (NEETF), "Using Environment-Based Education to Advance Learning Skills and Character Development". Washington, DC: NAAEE and NEETF (2001).

- *Environmental education emphasizes cooperative learning (i.e., working in teams or with partners), critical thinking and discussion, hands-on activities, and a focus on action strategies with real-world applications.*
- *Hands-on experiences in local communities help students develop a sense of connectedness and stewardship, making school learning relevant and interesting.*
- *EE provides opportunities for students to develop and practice leadership skills such as:*
  - *Working in teams*
  - *Listening to and accepting diverse opinions*
  - *Solving real-world problems*
  - *Taking the long-term view*
  - *Promoting actions that serve the larger good*

- *Connecting with the community*

**Additional Resources:**

NEEF – [www.neefusa.org](http://www.neefusa.org) and [http://www.eeweek.org/pdf/EE\\_Benefits.pdf](http://www.eeweek.org/pdf/EE_Benefits.pdf)

Louise Chawla's Fact Sheets -

[www.ucdenver.edu/academics/colleges/ArchitecturePlanning/discover/centers/CYE/Publications/Pages/FactSheets.aspx](http://www.ucdenver.edu/academics/colleges/ArchitecturePlanning/discover/centers/CYE/Publications/Pages/FactSheets.aspx)

NWF Back to School: Back Outside -

<http://www.nwf.org/~media/PDFs/Be%20Out%20There/Back%20to%20School%20full%20report.ashx>

Children and Nature Network - [www.childrenandnature.org/research/](http://www.childrenandnature.org/research/)

NAAEE - <http://eelinked.naaee.net/n/eeeresearch>