

## Addressing Barriers to Ecological Literacy

by Kim Monaghan and Lesley Curthoys

In the midst of the current environmental crisis, many scientists, academics, authors and leaders are urging us to create sustainable communities “designed in such a way that [their] ways of life, businesses, economy, physical structures, and technologies do not interfere with nature’s inherent ability to sustain life” (Capra, 1999, p. 1). As Orr sees it, however, there is “no prospect whatsoever for building a sustainable society without an active, engaged, informed and competent society” (1992, p. 84). Orr further states that addressing the current ecological crisis will require more than just ecologically knowledgeable citizens; it will require people in all sectors of society who are *ecologically literate* (1992). The process of fostering an ecologically literate citizenry is not straightforward, but it is undoubtedly a process to which outdoor education, with its focus on the natural world and experiential learning, can make a significant contribution.

Capra defines ecological literacy as “understanding the basic principles of ecology and being able to embody them in daily life” (1999, p. 2). Roth describes ecological literacy as “the capacity to perceive and interpret the relative health of environmental systems and to take appropriate action to maintain, restore, or improve the health of those systems” (1992, p. 8). It is clear from these definitions that ecological literacy is more than just a measure of one’s ecological knowledge; it is also a measure of one’s ability and willingness to use that knowledge to live a more sustainable lifestyle. Furthermore, bioregionalists remind us that there is a dynamic interplay between ecology and culture that brings vibrancy to home-place; both must be restored together (Andruss, Plant, Plant, & Wright, 1990). Accordingly, advocates of place-based learning suggest ecological literacy is best developed through meaningful participation and action-oriented learning in our local

communities with their inherent ecological, social, political and economic realities (Sobel, 2004). A review of the literature suggests ecological literacy involves six competencies (Bell, 1997; Berkowitz, Ford, & Brewer, 2005; Capra, 1999; Curthoys, 2007; Curthoys & Cuthbertson, 2002; Golley, 1998; Orr, 1992, 1994; Puk & Behm, 2003; Roth, 1992; Sandell, Ohman, & Ostman, 2003; Stables, 1998).

### Ecological Literacy Competencies

1. Natural history skills that foster familiarity with community members and life-sustaining processes of one’s own bioregion, as well as the ability to interpret ecosystem health.
2. Awareness, sensitivity and compassion toward other life forms that engenders kinship with natural systems.
3. Knowledge of ecological laws and patterns that inform how actions might affect natural systems.
4. Critical thinking skills that illuminate connections between actions, the health of natural systems and community well-being.
5. A sense of responsibility, willingness and practical skills that enable engagement in creative and socially just actions addressing sustainability issues.
6. Understanding of cultural values and worldviews that affect human perceptions of and relationships with nature.

Examining this list of competencies, it is easy to see that outdoor and ecological education have central roles to play in both the development of ecological literacy and sustainable communities. Yet despite the growing support for sustainability education (Coyle, 2005; Government of Canada, 2002), and increased knowledge of gateways to effective environmental action (see Chawla, 1998, 1999; and Tanner, 1980), fostering

ecological literacy through education has proven more difficult than anticipated.

### Western Culture and Barriers to Ecological Literacy

Why is ecological literacy so difficult to achieve? Bowers (1996) suggests that the answer

can be found in how early Western . . . narratives represented humans as separate from nature – as being in control of their own destiny regardless of how their actions degraded the environment. Another part of the answer can be found in the modern practice of nearly every aspect of the human/natural world. (para. 9)

Bowers is alluding to the presence of serious barriers within current Western values and institutions that interfere with education aimed at creating sustainable communities. These barriers include ecologically unsustainable assumptions, which, unfortunately, are deeply engrained in the prevailing consumer-technological mainstream culture. These assumptions were characterized by Pirages and Ehrlich (1974) and used to explain the Dominant Social Paradigm. These authors and McElroy (1997) indicated that the assumptions driving current Western societal values are actually falsehoods; McElroy refers to them as *myths* based on the idea that, like traditional myths, they are passed down from generation to generation and are used to teach values and guide behaviours. McElroy described four modern myths:

**Dominance Myth** — assumes that humans are the dominant species, the materials of the natural world are for our use, and destruction of natural habitat is a regrettable, but acceptable, consequence of human affairs.

**Civilization Myth** — proposes that Western culture is enlightened and civilized, and that our technologies, socio-economic values and

ways of life would be good for less developed countries to adopt.

**Growth Myth** — claims that there are no limits in industry or economics, nor should there be. This myth equates economic growth with success and lack of growth with failure.

**Omnipotence Myth** — asserts that our ability to solve problems is boundless and that the natural world can be understood and managed with technology, intelligence, ingenuity and the scientific method.

Chapman (2004) maintains these modern myths must be exposed as faulty and damaging if we are to foster values for ecological sustainability. Bowers (1996) suggests we must go beyond unmasking these faulty assumptions by reclaiming the traditional cultural role myths once played.

Campbell (1988) defines myth as “metaphorical of spiritual potentiality in the human being, and the same powers that animate our life animate the life of the world” (p. 28). For thousands of years, these metaphorical stories functioned as the primary vehicle to transmit inter-generational knowledge about the way the world works and how to live in accord with both each other and the more-than-human community. More recently, Knudston and Suzuki (1992) demonstrated that ecological wisdoms embedded in myths of indigenous peoples from around the world show striking similarities to scientific findings. Modern myths passed down from generation to generation in Western society, however, have little to do with teachings linked to local ecologies and how to create sustainable communities. Unfortunately, our socio-cultural institutions – specifically scientific, educational, media, economic and political institutions – are rife with means to perpetuate modern myths. The actions of these institutions can thus create significant barriers to the development of an ecologically literate citizenry (Monaghan, 2003). For

example, media organizations inhibit the development of ecological literacy by not providing people with enough information to critically evaluate their environmental actions, while science, by prizing objectivity, perpetuates the belief that humans can be separated from the natural world (Monaghan, 2003).

### Ecological Wisdoms and New Cultural Practices

Perhaps traditional myths are a thing of the past in terms of communicating ecological wisdoms, yet we certainly need something to counteract the influence of mainstream thinking, which typically devalues nature. So how do we make the transition from faulty assumptions about the way the world works to more life-sustaining patterns of thought? How can we counteract barriers to ecological literacy created by institutions that are built upon and perpetuate faulty assumptions? Providing sustainable alternatives to current worldviews and behaviours through environmental and outdoor education initiatives is one important way. The good news is that functioning ecosystems provide round-the-clock evidence of successful sustainable communities in action. According to Capra (2007),

we can model human communities after nature's ecosystems, which are sustainable communities of plants, animals, and microorganisms. The outstanding characteristic of the biosphere is its inherent ability to sustain life. To be sustainable, a human community must be designed so that its ways of life, technologies and social institutions honour, support, and cooperate with nature's ability to sustain life (p. 10).

Recognizing the inherent wisdom of nature will likely require *daily ecologically centered cultural practices*. These practices should acknowledge the interdependence of humans with other life forms, instruct us on

sustainable ways of being, reward ecological intelligence, and celebrate the wonder of life. In this way we can replace the damaging myths of modernity with narratives that enable us to live well in our places. Listed below are some possibilities (that range from simply talking about nature to rethinking building designs) that need to become the cultural norm rather than special events if barriers to ecological literacy are to be removed.

### Ecological Literacy Practices

- Pay attention to the natural world every day and share observations in daily conversations to foster a kinship with nature.
- Initiate reminders of life-sustaining processes provided by our bioregions and create culturally appropriate ways to encourage gratitude for these free ecological services. Such reminders can foster an appreciation for the interconnectedness of humans with other elements of the natural world.
- Incorporate bioregional foods into events as a tasty way to experience and celebrate the dynamic interplay between culture and nature.
- Regularly provide time to experience and share stories grounded in place-based discoveries. Ask people to reflect upon lessons learned directly from nature.
- Encourage "bioregional gossip" through a wildlife happenings board, websites and other public communication spaces. Build upon these first-hand observations as a way to increase relevancy of abstract ecological laws.
- Facilitate action-oriented projects that enable people to apply laws of sustainability (see Capra). Such learning can supplement knowledge gained from media sources and can help inform environmental behaviours. For example, knowing that matter (such as toxins found in pesticides) is continually recycled and incorporated into all living systems



(including our bodies) could stimulate steps to ban the use of harmful chemicals.

- Promote sun-powered ways of getting to and from school/work/camp.
- Re-imagine indoor learning spaces in ways that bring the outdoors inside. Ways include murals, photographs, community maps, indoor gardens, worm-composting bins, living machines and building designs that work with the laws of nature.
- Re-imagine outdoor learning spaces in ways that honour local flora and fauna, and the ecological processes that sustain them. Naturalized schoolyards, butterfly gardens, bat houses, murals, planting native trees, wildlife monitoring and stream restoration are just a few examples.

It is important to note that the purpose of these cultural practices and their links to ecological wisdoms *need to be explicitly communicated* rather than assumed to be common knowledge. Explicit communication is needed to dispel current myths of unsustainability and replace them with life-affirming messages. Educators must play a key role in helping students identify

and overcome prevailing barriers to the development of ecological literacy.

### References

- Andruss, V., Plant, C., Plant, J., & Wright, E. (1990). *Home: A bioregional reader*. Gabriola Island: New Society Publishers.
- Bell, A. (1997). Nature study from a learner's perspective. *Canadian Journal of Environmental Education*, 2, 132-144.
- Berkowitz, A.R., Ford, M.E. & Brewer, C.A. (2005). A framework for integrating ecological literacy, civics literacy and environmental citizenship in environmental education. In E.A. Johnson and M.J. Mappin (Eds.), *Environmental Education and Advocacy: Perspectives of Ecology and Education* (pp. 227-266). Cambridge, UK: Cambridge University Press.
- Bowers, C.A. (1996). The cultural dimensions of ecological literacy. *Journal of Environmental Education*, 27(2). Retrieved November 12, 2007 from <http://search.ebscohost.com.ezproxy.library.dal.ca/login.aspx?direct=true&db=ah&AN=9604111673&site=ehost-live>.

- Campbell, J. (1998). *The power of myth*. Toronto: Doubleday.
- Capra, F. (2007). Sustainable living, ecological literacy, and the breath of life. *Canadian Journal of Environmental Education*, 12, 9–18.
- Capra, F. (1999). *Ecoliteracy: The challenge for education in the next century*. Liverpool Schumacher Lectures. California: Center for Ecoliteracy.
- Chapman, D. (2004). Sustainability and our cultural myths. *Canadian Journal of Environmental Education*, 9, 92–108.
- Chawla, L. (1999). Life paths into effective environmental action. *Journal of Environmental Education*, 3 (1), 14–21.
- Chawla, L. (1998). Significant life experiences revisited: A review of research on sources of environmental sensitivity. *Journal of Environmental Education*, 29(3), 11–21.
- Coyle, K. (2005). *Environmental literacy in America*. Washington, DC: The National Environmental Education and Training Foundation.
- Curthoys, L.P. (2007). Finding a place of one's own: Reflections on teaching in and with place. *Canadian Journal of Environmental Education*, 12, 68–79.
- Curthoys, L.P. & Cuthbertson, B. (2002). Listening to the landscape: Interpretive planning for ecological literacy. *Canadian Journal of Environmental Education*, 7(2), 224–240.
- Golley, F. (1998). *A primer for environmental literacy*. New Haven: Yale University Press.
- Government of Canada. (2002). *A framework for environmental learning and sustainability in Canada*. Ottawa, ON: Author.
- Knudtson, P. and D. Suzuki (1992). *Wisdom of the elders*. Toronto: Stoddart Publishing.
- Monaghan, K. (2003). *A study of the development and expression of ecological literacy in light of the influences of Western culture*. Unpublished undergraduate thesis, Lakehead University, Thunder Bay, Ontario.
- McElroy, M. (1997). Paradigms lost and the myths we teach our children. *Green Teacher*, 53(3), 6–10.
- Orr, D. (1992). *Ecological literacy: Education and the transition to a postmodern world*. Albany, NY: State University of New York Press.
- Orr, D. (1994). *Earth in mind: On education, environment and the human prospect* (2<sup>nd</sup> ed.). Washington DC: Island Press.
- Pirages, D.C. & Ehrlich, P.R. (1974). *Ark II: Social response to environmental imperatives*. San Francisco: W.H. Freeman.
- Puk, T.G. & Behm, D. (2003). The diluted curriculum: The role of government in developing ecological literacy as the first imperative in Ontario secondary schools. *Canadian Journal of Environmental Education*, 8, 217–232.
- Roth, C. E. (1992). *Environmental literacy: Its roots, evolution, and directions in the 1990s*. Columbus, OH: ERIC/CSMEE.
- Sandell, K., Ohman, J. & Ostman, L. (2003). *Education for sustainable development: Nature, school, and democracy*. Sweden: Studentlitteratur.
- Sobel, D. (2004). *Place-based education: Connecting classrooms and communities* (Nature Literacy Series No. 4). Great Barrington: The Orion Society.
- Stables, A. (1998). Environmental literacy: Functional, cultural, critical. The case of the SCAA guidelines. *Environmental Education Research*, 4(2), 155–164.
- Tanner, J. (1980). Significant life experiences. *Journal of Environmental Education*, 11(4), 20–24.

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