Ecological Literacy as the First Imperative

Principles for Achieving Ecological Literacy in the Next Ten Years:

First Steps

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Principles for Achieving Ecological Literacy

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Description of Principles for Achieving Ecological Literacy

The following sequence flows from localized to more general behaviors, and to some extent from basic to more complex involvement. These principles cross all boundaries including personal, community, provincial, national and global. They are also interdependent, some more so than others.

1. A New Meta-Perspective, “Ecological Education”, Should be Created

A new meta-perspective called “ecological education” should be created. This title would replace environmental education, environmental studies and environmental science. The purpose should be to achieve ecological literacy in schools and throughout society (see Image of the Ecologically Literate Person p.4). The focus should be on ecological concepts and their relationships to each other (both the “big picture” and the details) and to the active preservation of the ecosphere and all organisms within it. [The ecosphere is composed of the lithosphere (rocks, minerals and soil), hydrosphere (water) and atmosphere (gases surrounding the other two layers).]

Ecological education would examine the relationships found within the ecosphere, among the components of solar energy, the air, water, soil, rocks, flora and fauna, people, and all other organisms and components, both biotic and abiotic. Ecological education should be developed as a meta-perspective, composed of an enriched subject-matter including sciences, social sciences, and philosophy. Ecology might be described simply as being the study of the transfer and use of solar energy that effects all of our lives in every way. Ecology might even more generally be described as the examination of a finite set of atoms and molecules found within the ecosphere.

Simple concepts such as recycle, reduce and reuse are misleading in their ability to solve complex ecological problems and as a consequence people often believe they are making a significant difference. Many scientists believe that we may be approaching a time very soon when
The ecologically literate person of the 21st century will be considered as the responsible, lifelong learner who strives to improve the human condition and the environment within the context of self, human groups, the biosphere and the ecosphere. This person will find purpose and meaning for life by continuously aspiring to higher levels of balanced growth, in his or her cognitive, affective, psychomotor, reflective, intuitive, aesthetic, social, creative and spiritual capabilities. The development of these qualities will be conducted in the pursuit of significant life work.

In order to accomplish this overriding aim, he or she would:

. become an inquirer by actively securing the basic skills and knowledge (i.e., knowledge of the relationships found within the ecosphere, among the components of solar energy, the air, water, soil, rocks, flora and fauna, people, animals and all other organisms and components, both biotic and abiotic) that facilitate the carrying out of ecological responsibilities. This knowledge and skill will empower the individual to reach her or his own potential and place in human and natural environments.

. become a reflective learner by acquiring the understanding of the value and limitations of human knowledge, the power and limitations of the natural world, the role of intuition in real life pursuits, and the role of self as it is manifested in one's personal narrative.

. become intelligently self-directed by engaging in self-appraisal, setting new learning objectives, developing plans to achieve those objectives, carrying out such plans in a flexible inquiry-oriented manner, while reflecting on the whole process.

. become a morally responsible person by governing personal action with precepts which contribute to the maintenance and growth of the relationships that give life meaning. Such precepts would include responsibility for helping others, seeking justice and equality for all, performing legitimately assigned roles to the best of one's ability, and living in harmony with other people and with nature.

. become an ecologically responsible person by embodying ecological ideals in daily operations and by living in the most competent, informed manner allowed by natural capabilities.

. seek self-transcendence by moving beyond the limitations of personal ego by identifying with human groups (past and future), ecological principles, flora and fauna and the ecosphere, that transcend the individual life in scope and time.

The ecologically literate person of the 21st century will have a positive view of life, grounded in the faith that each person has within himself/herself some elements which connects them with a universal and timeless energy, and has the capacity to competently perform significant life work, and its related tasks and responsibilities. Such a view will enable this person to look upon the human experience positively, and all living things compassionately.
complex changes occurring in the environment will become irreversible (E.O. Wilson describes the period we are going through as a “bottleneck”). Thus, ecological sustainability will require fourth and fifth “r’s”, i.e., “refuse” and “rethink/reconceptualize”. [We must be careful of the bare/unmodified use of the word “sustainability”. Often in the industrial/business world, the word “sustainability” is mimicked to mean constant economic growth through a/ continued dependency on finding new sources of fossil fuels to provide energy, b/ improved technology to maintain or increase current profits, and c/ cheaper labor, higher commodity pricing and more barren products. Sustainability in this sense means continued record profits using finite resources. This distorted model is in fact “unsustainable”.]

What is required is a fundamental shift in our daily thinking and behaviour. In some cases it will involve personal sacrifice as we rearrange our personal habits. If we begin now, that sacrifice need not be “painful”. If we do not begin now, we may be directly responsible for a great deal of pain that we will leave as a legacy for future generations to endure. We all need to be shaken out of our naivete and lethargy. Ecological literacy is not just another special interest initiative. It is about the survival of the ecosphere and everything in it. It is different and needs to be expressed as our first imperative.

We must “rethink” how we conduct our daily lives and the ways in which we interact with the environment- which presently are not ecologically sustainable. We need to “refuse” to purchase barren products. We need to “reconceptualize” our relationship with the ecosphere. To do this people must understand that the earth and the atmosphere do not have unlimited potential to absorb abuse. In terms of air, water and soil, we have no outside, magical source for new molecules. For the foreseeable future, we have to use a finite set of molecules over and over again- “everything in the natural world is interconnected”. How we take care of these atoms and molecules will determine the future of living organisms. Terms such as “renewable resources” will need to be redefined because at the present rate we are using our natural resources, they will not be able to be “renewed” in time to be reusable. Molecules are being exponentially corrupted at a rate with which nature may not be able to keep pace (Suzuki & Vanderlinden, 1999). These same atoms and molecules have been with us for billions of years and will be here long after our brief sojourn. We should treat them kindly.
Ecological education must also look at the interrelationships between the environment, health (link with #13) and “economics, politics and technics of social ecologies” (Luke, 2001). We must find a balance between an ecologically sustainable economy and a healthy ecosphere—denying the importance of the former will only continue to place in jeopardy the latter.

2. Compulsory, Discrete Ecological Courses Should be Created to Serve as the School Hub

First, compulsory, discrete ecological education courses (and the corresponding curriculum) should be created for secondary schools. Four inter-related meta-themes would characterize this curriculum: i/ ecological literacy/ecological responsibility, ii/ sense of community, iii/ outdoor experiential learning, and iv/ development of self. Second, ecological education subject-matter should then be harmonized into most other subject areas—strong, purposively-planned connections must be made. [The term “perspective” is being used to replace “disciplines”. In the 21st Century, it is time to change the way we have dealt with subject-matter, as if it appears in the real world in separate, 40-70 minute components, without connections to each other. This mythical way of looking at life is harmful to developing minds but more importantly, it discourages the ability to see relationships and connections—which ecological literacy and ecological sustainability are all about]. Ecological education courses must serve first as a base and then secondly the curriculum must cross all disciplines, i.e., these courses should serve as the hub of curriculum in schools by providing the integrating context (link with #4 & #8) for connections with other subject-matter and other courses. In the future, new curriculum guidelines should be developed and flow from the ecological meta-perspective.

3. A Sequenced Curricula Should be Sensitive

A sequential order for teaching ecological concepts within each course and from grade to grade (link with #8) should be developed (environmental activities sporadically interspersed in the curriculum, without connection to a comprehensive plan, will contribute very little to ecological literacy). This sequence should begin at the elementary level and continue through the secondary years. As Sobel (1995) points out, young children can suffer “ecophobia” when too much responsibility for global problems are introduced at too early an age. [Even adult graduate students can find an over-emphasis on global environmental problems to be stressful—this does not mean avoiding facts and issues, but rather being sensitive to a correlation between personal acclimatization
and environmental intensity. Young children need to rejoice in the wonders of the natural world rather than experiencing guilt for the loss of the rain forests. The new curricula must be ever vigilant of the emotional impact that stories about the suffering environment can have on developing minds. This curricula should be age and maturity sensitive.

4. Ecological Education Should be Taught Through Experiential Learning

Ecological education and outdoor experiential learning need to be closely aligned (link with #8). Using Simmons’ (1998) categories for outdoor learning, students should spend significant amounts of time in four different natural environments: 1/rivers, ponds, and marshes, 2/ deep woods, 3/ county park, and 4/ urban nature. Ecology needs to be studied first hand in natural settings where it exists, i.e., outside the classroom. In the past, it has been assumed mistakenly that environmental education and/or outdoor education are undertakings common only to rural, northern and wilderness locations. In fact, air, water, soil, flora, fauna and their physical locations are found everywhere (link with #6). The urban environment is a rich setting for ecological explorations. Most urban areas have within their boundaries lakes/ponds, shorelines, rivers, streams, wetlands, gravel pits, ravines, parks, farms, woodlots, landfill sites, waste disposal services, water treatment plants, etc., (Puk, 1999).

As well, outdoor experiential learning conducted regularly requires and develops a higher level of physical fitness. The amount of cardio-vascular activity that students experience in schools is woefully inadequate- it is now estimated that one in four Canadians are obese. Outdoor experiential learning provides an enjoyable, authentic learning experience while at the same time promoting physical and emotional well-being.

5. A Sense of Community Should be Developed During the Learning Process

Learning does not involve simply laying out the bare facts on a website and allowing people to inhale (link with #4). Learning that leads to ecological literacy and responsible behavior is much more complex. Learning about the environment should be a shared undertaking. People need to interact with each other, with textual materials, with those who have some expertise, and with natural settings (i.e., in a constructivist manner) in order to make sense from first-hand observation and conversation. Individual citizens will more likely be willing to make personal sacrifices in their
own ecological practices if they can trust that others are willing to do so as well (link with #10). Developing openness and trust takes time and involves a sequence of interactions so that a sense of community can be created. [However a sense of community does not imply that everyone should think exactly the same way].

6. Funding Is Required for the Development of Outdoor Ecological Centers

Outdoor centers, with a strong focus on ecological education, need to become integral partners with schools, rather than auxiliary services. Students need to study in natural settings, including outdoor ecological centers, as much as possible. Personnel from these outdoor centers need to work within the school setting on a regular basis.

7. Teacher Education Should be Revamped

Various authors have described the challenges facing teachers in teaching ecological concepts and teaching in the outdoors (Cherif, 1992; Simmons, 1998). A systematic model for preservice and inservice training must exist in order to thoroughly prepare teachers. Teachers need a solid foundation so that they do not become dependent upon the activity-guide mentality (link with #8). Some degree of ecological education should be compulsory for all new teachers as well as discrete programs for specialists (i.e., by maintaining/creating a teachable). Especially in Canada, we need graduate level programs at the master’s and doctoral levels in ecological education.

8. Research Funding for Acquiring Ecological Literacy is Critical

Governments at various levels need to fund research into the best practices for teaching ecological literacy. Much of what is taught in schools does not necessarily have any lasting effects. Schooling in general must be fundamentally reconceptualized (e.g., learning for internalization does not occur in atomistic, 40-70 minute disparate episodes). Extended explorations outdoors will require a more fluid use of the instructional day. “Ecological macro modeling” provides hands-on understanding of complex natural systems. Funded research also needs to be provided to develop models for lifelong learning (link with #10). We need to determine what works best to encourage ecologically knowledgeable, responsible, and caring citizenship.

9. Postsecondary Education Must Provide Leadership
Ecological literacy will require life-long learning at all levels. In the main, postsecondary institutions have provided inconsistent leadership in regard to ecological sustainability. Orr (1994) reminds us that what we need from postsecondary institutions are “faculty and administrators who provide role models of integrity, care, and thoughtfulness” and the ability to embody ecological ideals in daily operations. All university degrees and college diplomas need to provide an ecological emphasis. Students should not be able to graduate without some degree of ecological literacy.

10. Lifelong Ecological Literacy is the Ultimate Goal

Many people do not experience formal post-secondary education. The general public needs to be educated, now, in regard to ecological education. Governments and the private sector need to find new ways to educate society on an ongoing basis. Citizens will need to return to “school” in order to become life-long ecological learners. Ecological responsibility (a component of ecological literacy) must begin with the individual. It is too easy and ultimately self-defeating to be critical of other institutions, other countries, other people when it comes to handing out advice in regard to environmental behaviors. In order to carry forward a moral integrity, each person, each family, each school and school board, each organization, each institution and each government can must get their own house in order before advising others to do so. It is a false doctrine to believe that if only industry and business stops polluting and is less greedy, or if other countries would behave more responsibly, our environmental problems will be solved. The future of the ecosphere is dependent upon a global, critical mass of human behaviors. We all must play our part. However, most people have not been given the opportunity to acquire the knowledge, skills and values required to become or remain ecologically literate. We need to create models and mechanisms that will assist this lifelong process.

11. Funded Regional Ecological Centers Are Required

Centers need to be created that will support many of the initiatives described in this framework, in particular in the ongoing, daily contact with citizens at the community level (link with #10 & #12).

12. Intergovernmental and Private Sector Cooperation Must be Promoted

Lifelong ecological literacy involves all citizens. All levels of government and the private
sector will need to work together towards shared goals. Environmental policy and practice should be based on the 7th generation rule: we should do what we think will be best for the 7th generation from now. The ecosphere does not belong to us; we are privileged visitors. Citizens of the future must also play a role.

13. The Reciprocal Relationship Between Health and the Environment

Most importantly, we must create an unbreakable bond between a focus on health and a focus on environment (link with #1). Health and Environment should no longer be perceived as separate entities. It is well understood now that a healthy environment means healthy organisms within the ecosphere (and vice versa), whether plant or animal and yet funding seldom facilitates this connection. We spend millions/billions of dollars in treating health-related problems, less on preventing them (i.e., educating the general public) and least of all on solving the environmental problems that fuel our health costs. The reciprocal relationship between health/wellness and ecological literacy must be emphasized in the development of ecological curriculum and during the learning process. At the governmental level, it means that there should be one department (with subdivisions) responsible for Health and the Environment (i.e., the Department/Ministry of Health and Environment).

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