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Environmental Education and Ecological Literacy by David Orr

Knowing, Caring, and Practical Competence

EARTH-CENTERED learning rests on seven propositions:

1. All education is environmental education. By what is included or excluded, emphasized or ignored, students learn that they are part of or apart from the natural world. Conventional education, by and large, has been a celebration of all that is human to the exclusion of our dependence on nature. As a result, students frequently seem to be devoid of any sense of place or stewardship, or inkling of why these are important.
2. Environmental issues are complex and cannot be understood through a single discipline or department. Despite a decade or more of discussion and experimentation, interdisciplinary environmental education remains an unfulfilled promise. The failure occurred because it was tried within discipline-centered institutions. A more promising approach is to reshape the larger institutional structure to function as an interdisciplinary laboratory that includes components such as agriculture, solar technologies, forestry, land management, wildlife, waste cycling, architectural design, and economics. Part of the task of interdisciplinary education is the study of interactions across the boundaries of conventional knowledge and experience.
3. The study of place is a fundamental organizing concept for education. To a great extent, formal education prepares students to reside, not to inhabit. The difference is important. The resident is a temporary and rootless occupant who mostly needs to know where the banks and stores are in order to plug in. The inhabitant and a particular habitat cannot be separated without doing violence to both. The sum total of violence wrought by people who don't know who they are because they don't know where they are is the global environmental crisis. To reside is to live as a transient and as a stranger to one's place and inevitably to some part of self. The inhabitant and a place mutually shape each other.

Knowledge for the resident is theoretical and abstract. Its purpose is control. For the resident, education is akin to training, the overdevelopment of one part of self. For the inhabitant, education aims toward wholeness.

4. For inhabitants, education occurs in part as a dialogue with a place and has the characteristics of good conversation. Formal education happens mostly as a monologue of human interest, desires, and accomplishments that drowns out all other sounds. It is the logical outcome of the belief that we are alone in a dead world of inanimate matter, energy flows, and bio-geo-chemical cycles. But true conversation can occur only if we acknowledge the existence and interests of the other.

In good conversation, words represent reality faithfully. And words have power. They can enliven or deaden, elevate or degrade, but they are never neutral because they affect our perception and ultimately our behavior. The use of words such as resources, manage, channelize, engineer, and produce can determine whether we are engaged in conversation or

monologue with nature. The language of nature includes the sounds of animals, whales, birds, insects, wind, and water: a language more ancient and basic than human speech. To hear this language requires patient, disciplined study of the natural world. But it is a language for which we have an affinity.

Good conversation is unhurried. It has its own rhythm and pace. Dialogue with nature cannot be rushed; it is governed by cycles of day and night, the seasons, the pace of procreation, and the larger rhythm of evolutionary and geological time. Human sense of time is increasingly frenetic, driven by clocks, computers, and revolutions in transportation and communication.

Good conversation has form, structure, and purpose. Conversation with nature has the purpose of establishing what is here, what nature will permit here, and what nature will help us do here. The form and structure of any conversation with the natural world is the discipline of ecology as a restorative process and healing art.

5. The way education occurs is important as its content. Students taught environmental awareness in a setting that does not alter their relationship to basic life support systems learn that it is sufficient to intellectualize, emote, or posture about such things without having to live differently. Environmental education ought to change the way people live, not just how they talk.

Learning in this view best occurs in response to real needs and the life situation of the learner. The radical distinctions typically drawn between teacher and student, between school and community, and between areas of knowledge are dissolved. Real learning is participatory, experiential, and interdisciplinary, not just didactic. The flow can be two ways--between teachers, who function best as facilitators, and students, who are expected to be active agents in defining what is learned and how.

6. Experience in the natural world is both an essential part of understanding the environment and conducive to good thinking. Experience trains the intellect to observe land carefully and to distinguish between health and its opposite. Direct experience is an antidote to indoor, abstract learning. It is also a wellspring of good thinking. Understanding nature demands a disciplined and observant intellect. But nature is also a source of language, metaphor, and symbol. Natural diversity may well be the source of much of human creativity and intelligence. If so, the simplification and homogenization of ecosystems can only result in the lowering of human intelligence.

7. Education relevant to the challenge of building a sustainable society will enhance the learner's competence with natural systems. Practical competence is an indispensable source of good thinking. Good thinking proceeds from the friction between reflective thought and real problems. Aside from its effects on thinking, practical competence will be essential if sustainability requires that people take an active part in rebuilding their homes, businesses, neighborhoods, communities, and towns. Shortening supply lines for food, energy, water, and materials, while recycling waste locally implies a competence not necessary in a society of residents dependent on central vendors and experts.

If these can be taken as the foundations of good education, what can be said of its larger purpose? In a phrase, it is ecological literacy, a quality of mind that seeks out connections. It is the opposite of the specialization and narrowness characteristic of most education.

The educated person has the knowledge necessary to comprehend interrelatedness and the attitude of care or stewardship. This implies a minimum level of practical competence in order to act on the basis of knowledge and feeling. Competence can be derived only from the experience of doing and the mastery of a "practice." Knowing, caring, and practical competence together can be regarded as the basis of ecological literacy.

Ecological literacy, further, implies a broad understanding of how people and societies relate to one another and to natural systems, and how they might do so sustainably. It presumes both an awareness of the interrelatedness of life and the knowledge of how the world works as a physical system.

Ecological literacy presumes that we understand our place in the story of evolution. It is to know that our health, well-being, and ultimately our survival depend on working with, not against, natural forces.

A second stage in ecological literacy is to know something of the speed of the crisis that is upon us. It is to know magnitudes, rates, and trends of population growth, species extinction, soil loss, deforestation, desertification, climate change, ozone depletion, resource exhaustion, air and water pollution, toxic and radioactive contamination, resource and energy use; that is, the vital signs of the planet and its ecosystems. To become ecologically literate is to understand the human enterprise for what it is: a sudden eruption in the enormity of evolutionary time.

Ecological literacy requires a comprehension of the dynamics of the modern world. It requires a thorough understanding of the ways in which people and whole societies have become destructive of the natural world. The ecologically literate person will appreciate something of how social structures, religion, science, politics, technology, patriarchy, culture, agriculture, and human cussedness combine as causes of our predicament.

The diagnosis of the causes of our plight is only half of the issue. But before we can address solutions, there are several issues that demand clarification. "Nature," for example, is variously portrayed as "red in tooth and claw," or like the film *Bambi*, full of sweet little critters. Economists see nature as natural resources to be used; backpackers see it as a wellspring of transcendent values. We are no more clear about our own nature, whether we are made in the image of God, or merely a machine or computer or animal. These are not trivial, academic issues. Unless we can make reasonable distinctions between what is natural and what is not, and why that difference is important, we are liable to be at the mercy of the engineers who want to remake all of nature, including our own.

Environmental literacy also requires a broad familiarity with the development of ecological consciousness. It is unclear whether the science of ecology will be "the last of the old sciences or the first of the new." As the former, ecology is the science of efficient resource management. As the first: of the new sciences, ecology is the basis for a broader search for pattern and meaning. As such, it cannot avoid issues of values and ethical questions.

The study of environmental problems is an exercise in despair unless it is regarded as only the preface to the study, design, and implementation of solutions. The concept of sustainability implies a radical change in the institutions and patterns that we've come to accept as normal. It begins with ecology as the basis for the redesign of technology, cities, farms, and educational institutions, and for a change in metaphors from mechanical to organic, industrial to biological. As part of the change, we will need alternative measures of well-being.

Sustainability also implies a different approach that gives a greater priority to technologies that are smaller in scale and less environmentally destructive and that rely on the free services of natural systems. Not infrequently, technologies with these characteristics are also highly cost effective, especially when subsidies for competing technologies are leveled out.

If sustainability represents a minority tradition, it is nonetheless a long one, dating back at least to Thomas Jefferson. In contrast to the directions of modern society, this tradition emphasizes democratic participation, the extension of ethical obligations to the land community, careful ecological design, simplicity, widespread competence with natural systems, sense of place, holism, decentralization of whatever can best be decentralized, and human-scaled technologies and communities.

It is a tradition dedicated to the search for patterns, unity, and connections among people of all ages, races, nationalities, and generations, and between people and the natural world. This is a tradition grounded in the belief that life is sacred and not to be expended carelessly on the ephemeral. It is a tradition that challenges militarism, injustice, ecological destruction, and authoritarianism, while it supports all actions that lead to peace, fairness, sustainability, and the people's right to participate in decisions that affect their lives. Ultimately, it is a tradition built on a view of ourselves as finite and fallible creatures living in a world limited by natural laws.

The contrasting Promethean view, given force by the success of technology, holds that we should remove all limits, whether imposed by nature or morality. Its slogan is found emblazoned on the advertisements of the age: "You can have it all," or "To know no boundaries." The ecologically literate citizen will recognize these immediately for what they are: the stuff of epitaphs. Ecological literacy leads in other, more durable directions toward prudence, stewardship, and the celebration of the Creation.

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