

ENVIRONMENTAL LITERACY. A CRITICAL ELEMENT OF A LIBERAL EDUCATION FOR THE 21ST CENTURY.

Milton McClaren

Associate Professor, Faculty of Education, Simon Frazer University, Burnaby, B.C.

Recent surveys of Canadian public opinion by the Decima polling agency, as by other major polling firms have shown a sharp rise in the concern for, and priority given to the environment by people in all regions of the country. A recent Maclean's magazine survey found that 44 percent of Canadians think that by the year 2000 tap water will be undrinkable. In the same study 61 percent of respondents stated that they would be willing to spend between ten to twenty dollars more per week on household products that were less harmful to the environment. In the major news media reports concerning Acid Rain, the degradation of the ozone layer, or the problems of the Greenhouse Effect are common. The warnings that have been given by the scientific community for many years now appear to be taken seriously by many people, and even by some politicians.

But environmental concerns have risen, peaked, and declined in the past, with little fundamental change in human behaviour. Some environmentalists maintain that clean-up campaigns to address local pollution problems are merely cosmetic approaches to a disease which has much deeper causes. If we take the scientific findings concerning global environmental changes seriously, then they indicate the need for a much higher level of public awareness and greater commitment to personal and community action. As major agencies of education and socialization, public schools can play an important role in developing citizens who are environmentally informed and aware. But before programs can be developed or implemented effectively, we need to develop a clear understanding of the elements of environmental literacy.

ELEMENTS OF ENVIRONMENTAL LITERACY

1. The Ability to Think About Systems.

This might be described as the ability to think Eco-systematically. The central message of modern ecology is that everything is in fact connected ultimately to everything else. It may be convenient, and even necessary to separate a system into components in order to analyse and understand it, but it is also required that we think things together again. Approximately one third of all paper produced in North America is used in packaging. We take this for granted, but meantime the forests of the planet are vanishing at a rapid rate in order to produce things that have an actual use measured in minutes. Technology makes our lives easy, but it insulates us from the consequences of many of our actions. We don't know where our electrical power is produced, or where our wastes go when they disappear down the drain. It has been noted, with some measure of truth, that for many of today's urban children meat is produced in the supermarket and milk comes from vats in the grocery basement. So, the first challenge to developing environmental literacy is to reconnect ourselves to the planet, to understand where things come from, where they go, and how much energy and material is used along the way.

2. The Ability to Think in Time: To Forecast, to Think Ahead, and to Plan.

Along with systems thinking we also need to introduce the concept of time. We need to work at extending people's capacity to think beyond the here and now. What seems to be a quick and convenient "fix" today has often turned out to be the genesis of serious environmental problems in years to

come. Many human beings in the modern world seem to have genuine difficulty thinking beyond the term of their own life span. In fact, many seem to have difficulty thinking beyond this year. Most environmental problems will not be solved quickly. They will require extended effort over many years. Children living in an age of instant electronic miracles are impatient with the idea that something might produce results only after many years, if in their lifetimes. We need new modern fables and creative curricular activities to foster the capacity to think beyond the here and now.

3. The Ability to Think Critically About Value Issues.

Almost all modern problems, environmental or otherwise, have an important component based in human value systems. Contemporary society is pluralistic and multicultural. We do not have a common, culturally agreed set of values. Many environmental educators are people who value the outdoors in natural settings, if not real wilderness. Yet it has been estimated that the average North American now spends about 4% of his or her total life actually out of doors. For many children today the shopping mall offers more attractions than the forest or seashore. What we value is reflected in our actions. If we really value a healthy environment then we may have to sacrifice some of our conveniences. We will have to learn to ask hard questions even when besieged by the inducements offered through the mass media. We will have to learn to think about issues of quality.

4. The Ability to Separate Number, Quantity, Quality, and Value.

Many people in the modern world are confused about the differences between these elements. People assume that bigger or faster, or more expensive is better. We confuse the possession of many material possessions or money with higher moral authority.

We have difficulty distinguishing between the medium and its messages. We assume that if a lot of people do something, or believe something that it must be right or true. We assign numbers to things that can really only be assigned qualities, and assume that because we have enumerated them we have also addressed their value. Why do we need more trees? Why should we try to have high quality, clean water? Isn't the number of our possessions an indicator of our success and of the quality of our lives? Such problems are at the core of many environmental decisions. In the structure of modern life it is often apparently less expensive to pollute or to waste than it is to conserve. Only the capacity to think through number, quality, quantity and value issues can enable us to challenge these assumptions.

5. The Ability to Distinguish Between the Map and the Territory.

We are surrounded by high quality representations of the world. We have photos in full colour, video, stereo, models, and simulations. They can be very useful in helping us to understand components of the environment. We often become so fond of our maps that we forget that they may not be entirely faithful representations of how things actually are.

Many of our notions about the environment are in fact elaborate stereotypes. We have learned ideas about animals from the cartoon creatures of our childhood. As enjoyable as these were, they are less than reliable representations of how animals actually behave. We also have stereotypes about the "wilderness" and about the beauties of nature. Not all natural environments are obviously beautiful in the "calendar art" sense of the term. Few North Americans have ever seen the equatorial rain forest and few are likely to. Most would find this incredibly important ecosystem uncomfortable and forbidding, if not frightening, at least at first. But this would hardly be an argument against

its conservation. Natural environments seldom measure up to the manicured pleasure gardens we have been taught to expect.

6. The Capacity to Move From Awareness to Knowledge, to Action.

The need to have people take personal actions that contribute to the solution of environmental problems has been widely recognized by writers about environmental education. A popular slogan has been: Think Globally, Act Locally. In actual fact, however, the link between awareness, knowledge, and action is poorly understood by many educators and curriculum designers. It is important to understand that knowledge, and certainly information, carries no automatic set of instructions converting it into appropriate actions. Many a young scientist learns the hard way that no matter how much data you gather the data itself makes no decisions. Furthermore, there are things to be learned that can be learned only through action itself. Thus, a class may learn about water pollution and about how to test for various aspects of water quality. They may become aware of problems in a local creek. But, if they actually decide to act upon the problem then they move into new territory, territory where they will confront the need for tools, the requirement to act politically, to be able to interact with various community groups. From these experiences they will gain powerful new learning, most of it not available other than through action. By continually disconnecting the cycle of learning from action we have removed from schooling some of the most important resources for educational development.

7. A Basic Set of Concepts and Facts Plus the Ability to Learn New Ones and to Unlearn the Old.

There are concepts to be learned and useful facts to be recalled in the course of developing environmental literacy. Ecological principles and concepts are important

organizers for experiences in the environment and provide insights to be applied to critical thinking about environmental issues. Students need to understand biological and geological cycles, bioenergetics, food and energy relationships, and concepts such as adaptation and diversity. But, equally as important there is a need for students to become expert in learning how to access information and how to evaluate its quality. Environmental citizenship often requires the ability to use up-to-date, accurate information. Learning how to find this information is an important aspect of environmental literacy. At the same time, students must also learn to expect that many of the things they learn today, especially specific facts and figures, may prove to be wrong tomorrow. This is to be expected given the rate of growth of new knowledge and the deployment of new technologies. Life long learning is as essential to environmental education as to any other field.

8. The Ability to Work Cooperatively With Other People.

There is scarcely any modern environmental problem that we can expect to be solved by a single person. It has been noted that many environmental issues are complex. They will require international cooperation as well as cooperation among neighbours in local communities. Effective skills in group processes and communication will be very important. Many specialists will have to work in interdisciplinary teams. These teams will have to learn to solicit and employ citizen participation. Experts alone cannot solve environmental problems. Thus, cooperative learning becomes as critically important here as it is in many other fields of endeavour today.

9. The Capacity to Use Skills in Eight Processes: Knowing, Inquiring, Acting, Judging, Opening, Imagining, Connecting, and Valuing.

This set represents an "ecosystem" of processes that are essential to effective intelligence. They are generic not only to environmental education, but to all forms of education. In order to develop them fully, curricula need to be designed to attend to them all at some time or another during the student's development in the course of schooling. Not all need receive equal emphasis at all times, but all need emphasis during some phases of learning. All are equally important. They need not be seen as being in any universally appropriate logical sequence in all contexts.

In some situations, students may begin with their awareness of a problem or opportunity (Opening). In others, taking stock of what is known and developing strategies for finding out more is of central importance (Knowing and Inquiring).

In still other situations, starting with value positions may be most useful.

However, by encountering a variety of educational problems and by learning in a variety of contexts, through a number of teaching models, students can develop proficiency in these process elements.

Environmental Education--a set of new courses or a thread woven through the tapestry of schooling?

Public schools are asked to address a host of modern problems, from AIDS to Driver Education, from Drug Abuse to Child Abuse. As a result the curriculum has become crowded and incoherent. For this reason I prefer to see environmental education not as a separate special course, but as an element of virtually all courses. In fact, many courses now in place provide ample opportunities for the development of environmental literacy as described above. However, there is always the danger that this approach results in teachers assuming that environmental education is anything and everything, and that it has been dealt with. In fact, we need a clear focus on environmental understanding in teaching some of the courses which now provide

opportunities for it. We also need to exploit special events and programs, including Environment Week, field trips, energy conservation programs, recycling drives, programs like Project Wild or the SEEDS energy education materials, and school trips to residential outdoor centres. Environmental education is likely to be accomplished only if there is school wide planning, supported by district policies and ministry or department incentives. By blending a thematic approach with special events and programs over the 12-13 year course of public schooling we can hopefully graduate students who are environmentally literate citizens of tomorrow. Perhaps we can also raise the awareness of more adults in the process. But to do that we will need to make the development of environmental literacy a clear priority as an element of a 21st century liberal education.

¹Milton McClaren is an Associate Professor in the Faculty of Education and an Associate Member of the Faculty of Science, Department of Biological Sciences at Simon Fraser University, in Burnaby, British Columbia. He is a member of the program committee of the Man and Biosphere Program of UNESCO, Canada, and a member of the Steering Committee of Project Wild in the United States.