

TOWARDS BETTER EDUCATION: ENVIRONMENTAL EDUCATION'S PIVOTAL ROLE IN THE TRANSFORMATION OF EDUCATION

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ABSTRACT

Environmental education as an agent for environmental problem solving has not produced the anticipated results. It is suggested that this is due to the implementation of environmental education in our present education system which espouses a reductionist and mechanistic epistemology. This epistemology is the underlying cause of environmental problems. What is needed, is a new non-exploitative epistemology; one on which better education is based. This new epistemology will resolve the present environmental crisis. Environmental education, using an action research approach, is presented as a transformation agent to enable epistemological change. Environmental education should act as a pivot in the transformation to better education rather than a band-aid trying to solve environmental problems.

INTRODUCTION

The dawn of the information age brought the threat of environmental degradation to the attention of the general public by authors such as Leopold (1949), Carsons (1962), Marshall (1968) and Ehrlich and Ehrlich (1972). The potential impact of problems such as overpopulation, soil erosion and pesticide poisoning, among others, elicited a call for environmental education.

The international debate has contributed significantly to the development of the concept of environmental education (Irwin 1988). The Belgrade Charter of 1975 (UNEP 1977) acted as an influential policy statement which advocated the implementation of environmental education as a subject in schools. This was done largely by external experts using structured processes of intervention. The RDDA (Research, Develop, Dissemination and Adoption) model (figure 1) of curriculum design and implementation was utilised in this regard.

Fixed curriculum packages, planned by the 'experts' were developed for 'undoing' the obvious degradation of the environment and the corresponding decline in the quality of life. Approach 1 of table 1 illustrates this. This approach effectively depoliticized and over simplified environmental problems by framing them as technical issues which could best be addressed by powerholders and experts (Di Chiro 1987).

When the intended improvement in the environment failed to materialize, it was realised that environmental education should not only play a role in combating manifested environmental problems, but that it should

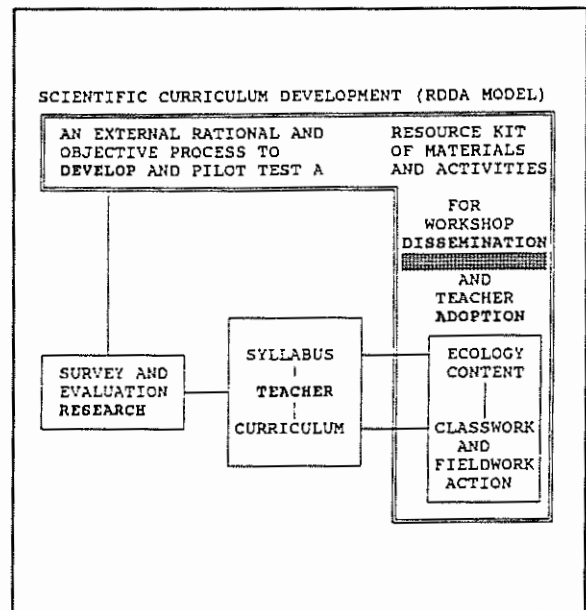


Figure 1: A deterministic model for curriculum development (RDDA) (from O'Donoghue and McNaught 1990)

also be critical of those social structures and relations that cause and support these manifested problems. The root cause of these manifested problems was attributed to overconsumption and materialism (Capra 1982). The Tbilisi Declaration (UNESCO - UNEP 1978) provided a set of guidelines for environmental education in the formal, nonformal and informal education communities. Through holistic education in the 'total environment' Tbilisi aimed for people to acquire the knowledge, values, attitudes and practical skills which would help solve environmental problems. It promoted a participatory approach which incorporated the critical examination of social structures and relations that underpin environmental problems. Approach 2 of table 1 illustrates this. Despite these innovations, environmental education has not produced the anticipated results.

PERCEIVED PROBLEMS

Contrary to its call for participation, the general form of organization recommended at Tbilisi is managerial and hierarchical in character. For example, many of the 'strategies for the development of environmental education' assume a rationalist, objectives-based view of the educational change. The RDDA model of educational change is maintained which is bureaucratic, technicist and fails to bring about change (Popkewitz 1984).

APPROACH	CAUSES OF ENVIRONMENTAL DEGRADATION (ANALYSIS)	SUGGESTED STRATEGY TO SOLVE ENVIRONMENTAL CRISIS (RESPONSE)
1	Manifested problems such as, soil erosion, overpopulation, pollution, etc.	Environmental education in formal education to tackle specific manifested problems in the environment. Example: cleaning up polluted rivers. REACTIVE MODE
2	The result of underlying personal values like over consumption and materialism.	Environmental education to use critical analysis to determine what caused the manifested problem. Example: why, and how rivers are polluted and what line of action do we take to solve this problem. REACTIVE MODE.
3	Mechanistic and reductionist epistemology on which education is based.	BETTER EDUCATION (based on a new epistemology) is suggested as a solution. Environmental education can help attain this Better Education by acting as a pivotal hegemony or transformation agent enabling epistemological change. PROACTIVE MODE.

Table 1: Historical, contemporary, and suggested future analyses and responses to environmental crisis

Some major weaknesses of the RDDA model are:

- It views social change and change of natural phenomena in a similar way, i.e., as one of control and manipulation (Popkewitz 1991) via the rational process of external management and innovation diffusion (O'Donoghue 1990).
- It does not account for the context variation of users (teachers) (Papagiannis et al. 1982).
- Communication breakdown between the central planners (experts) of the curriculum innovation and the implementers (teachers) of the innovation (Olsen 1982).
- Lack of user (teacher) participation in designing curriculum innovation (Eisner 1985) as it views teachers as technicians (Robottom 1987).

For these reasons the RDDA model has proved to be inappropriate for environmental education (O'Donoghue and McNaught 1990, Greenall 1987, Robottom 1987).

The schools themselves hinder the progress of environmental education. The rhetoric of environmental education focuses on improving the quality of life by ensuring that 'no nation should grow or develop at the expense of another nation and that the consumption of no individual should be increased at the expense of other individuals' (UNEP 1977, p. 2). This challenges the traditional purposes of schools which are intended to perpetuate and not challenge those value systems that dominate environmental decision making (Stevenson 1987). Stevenson adds that schools were not intended to develop critical thinkers, social inquirers, problem solvers or active participants in decision making. This has resulted in environmental education bringing superficial reforms to educational practices and procedures which, in the long term, are little more than

attempts at making the transmission of theoretic knowledge more palatable (Gough 1987). Class sizes, syllabus loads and lesson time schedules are additional factors inhibiting the implementation of intensive dialogue in the classroom. Stevenson (1987) points out that competitive and objectives-based examination systems also lead to avoidance of controversy and critique. Instead, he states, knowledge that represents consensus and certainty is encouraged.

A further hindrance is embedded in the term 'environmental education' itself. In the writers' experience, there is a distinct lack of understanding of the term despite numerous papers clarifying its multi-disciplinary facets (Gough 1987, Irwin 1988, Robottom 1987, O'Donoghue 1987). O'Donoghue (1987) defines the environment as having political, social, economic and biophysical components. No doubt as a result of its historical roots, environmental education is constantly associated with nature (biophysical component) and is automatically considered the responsibility of science and geography education. The writers have experienced even 'enlightened' environmental educationists using the terms 'environment' and 'nature' interchangeably thereby perpetuating the misunderstanding.

Many educationists assume that as the environmental approach to education is improved, and as the school systems become more open to its inclusion as a critical praxis into the curriculum, the result will be positively reflected in the environment. We are of the opinion that this would serve only to heighten peoples'

awareness of the environment and will not necessarily empower people to effect change and solve or prevent future environmental crisis via a critical process of cultural reconstruction. The *reactive* mode in which environmental education is operating prevents humankind from progressing through issues towards a better future. Instead, we are backpedalling as increased awareness makes the environmental crisis correspondingly more daunting. Society should, in our opinion, be operating *proactively*, i.e., instead of superficially focusing on problems and their causes, we should critically examine the world view that drives our lifestyles.

THE REAL PROBLEM

According to Gough (1987) the core of a society's world view rests in an epistemology - a particular set of theories about how people gain knowledge of themselves and their world. It becomes necessary to determine what comprises the present epistemology and its relationship to the environmental crisis. (Although strongly western industrial in origin, a number of factors which will not be discussed in this paper, have contributed to the worldwide adoption of this epistemology.)

During the 17th century significant advances were made in mathematics and science by Descartes, who stressed the separation of mind and body, and Newton, who showed mathematically that all observable motions can be predicted in terms of a few physical laws. Their work heralded the advent of modern science and laid the foundations for the mechanistic world view and reductionism (Brown 1986). Modern science had developed towards attaining certainty, predictability, control and rationality of knowledge and the environment.

This epistemology has led to a world view which encourages exploitative manipulation and, ultimately, destruction of the environment.

The Newtonian/Cartesian Synthesis constructed a way of looking at the world which permitted later generations to mistakenly believe that they were 'masters of nature', separate from, or above, natural processes. (Slaughter 1989, p. 256)

Our present education system espouses the above mentioned epistemology and serves to perpetuate this manipulative ideology. This epistemology is manifested in classroom scenarios of discipline-bound, uncritical, transmissive teacher practices aimed towards cognitive development and behaviour manipulation of pupils through the use of text books and rote learning.

As long as environmental educationists attempt to overcome the environmental crisis within the present mechanistic and reductionist epistemology, our most significant achievement will be the perpetuation of a manipulative and exploitative system!

Environmental education will remain reactionary in nature and will provide nothing more than a band-aid for the environmental crisis.

TOWARDS BETTER EDUCATION

If the environmental crisis is to be overcome, society needs more than environmental education, it needs a better education system (Approach 3 of table 1) based on a new epistemology which:

- provides an explicit basis for refusing reductionism by dealing holistically with the environment.
- provides insights into the underlying sources of global problems.
- explores problems beyond a taken-for-granted level using open and

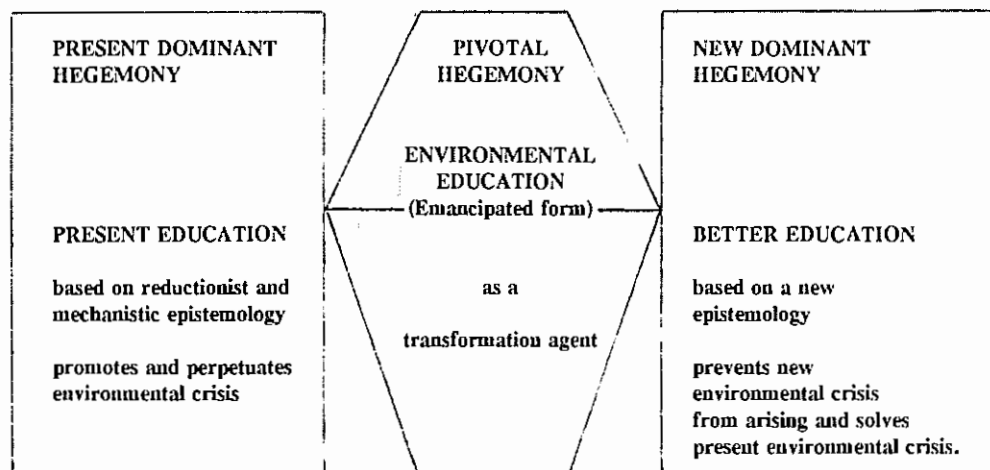


Figure 2: Environmental education as a pivotal hegemony or transformation agent to enable BETTER EDUCATION

flexible approaches.

- helps us locate the potential within conflict and crisis for reconceptualisation and renewal.
- should be interdisciplinary.
- develops higher levels of integration and consciousness (more than cognitive and rationality).
- helps us to cope with change and uncertainty.

No doubt most of us regard this idea of better education as idealistic and flawed with impracticalities. Certainly, the transformation from our existing mechanistic, reductionist, epistemological educational system to one of better education is monumental - **BUT NOT IMPOSSIBLE** if a pivotal hegemonic base is used for the transformation process (figure 2). We would like to suggest that the 'baby not be thrown out with the bathwater'. Although the present environmental education is a poor agent for solving the environmental crisis, an emancipated form of environmental education can provide that much needed pivot towards a new educational epistemology that is self-critical and fluid, one that does not perpetuate humankind's destructive and manipulative world view. *Instead of acting as a band-aid for problems, environmental education should act as a transformation agent which enables epistemological change.* The solving of environmental problems and the prevention of future environmental problems will be resolved by this new world view based on a new epistemology.

MAKING THE TRANSFORMATION PRACTICABLE

In order for environmental education to act as a successful pivot, the present educational environment needs to be transformed to espouse the following:

- classroom scenarios characterised by cooperation, critical inquiry, interdisciplinary lessons, a learner-environment focus using social and cognitive learning theories.
- curriculum development which is participatory, enquiry-based and critical so as to encourage dialogue which leads to reconceptualisation and renewal. It should serve social, political, economic and biophysical processes critically.

In practice, these processes require:

- joint planning of teaching, curriculum and curriculum materials by teachers.
- the use of groupwork and other cooperative classroom techniques.
- problem-solving which goes far beyond the use of exercises.
- the type of dialogue between pupils and teachers and among pupils where mistakes and unusual ideas are welcomed. This frees and challenges all concerned.
- the acknowledgement of the actual or possible significance of one another's ideas.
- the exploring of links with all fields of knowledge that may be relevant.
- the willingness to try out ideas.

In order for the above educational environment with such practices to be realized, an emancipatory form of action research which is geared towards the empowerment of all people, becomes an important mode. Currently these practices are being explored with teachers, students and pupils at a local level using an action research framework

Briefly, action research in education acknowledges that learning takes place in a context. Its method involves recurrent processes of acting, observing, reflecting and planning. The most widely accepted definition of action research is by Carr and Kemmis (1986, p. 8):

Action research is a form of self-reflective enquiry undertaken by participants in social (including educational) situations in order to improve the rationality and justice of;

- their own social or educational practices*
- their understanding of these practices and*
- the situations in which these practices are carried out*

Inherent in action research is the ever-widening spiral of critical reflection as more and more people are drawn into the process of dialogue (figure 3). *This is fundamental to the transformation of environmental education which now can act as a pivotal hegemony in transforming our present education system into a better one.*

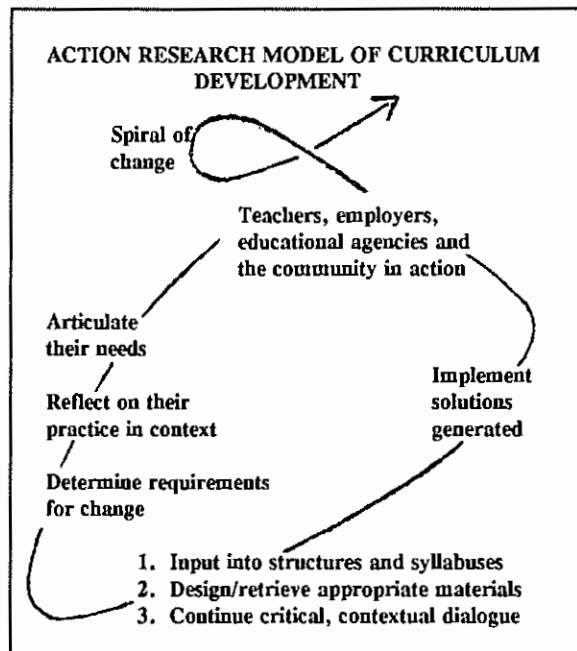


Figure 3: Action research model of curriculum development to effect change (from McNaught et al. 1990)

CONCLUSION

Despite its apparent enormity, the writers are convinced that the transformation to better education will be more easily attainable than attempts at solving environmental problems using present-day environmental education. By focusing superficially on environmental problems, environmental education operates largely in a

reactionary mode which serves to make environmental crises increasingly daunting and hopeless.

The underlying cause of environmental problems is the reductionist and mechanistic epistemology which is espoused by our present education system. To overcome environmental problems we need a better education system based on a new epistemology which will overcome and prevent further environmental problems.

An emancipated environmental education acting as a pivotal hegemony can transform our present education system into better education. Environmental education should act as a transformation agent which will bring about better education. This will ensure that environmental education operates in a proactive mode and does not focus on the problems, but instead, brings about epistemological change.

ACKNOWLEDGEMENT

The authors wish to thank Carmel McNaught, Jim Taylor, Rob O'Donoghue, and Pat Irwin for their valuable comments of the earlier drafts

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