Alternatives to National Standards for Environmental Education: Process-Based Quality Assessment

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Abstract

Stripped from the rhetoric, the national standards debate in the *Environmental Communicator* reveals essential disagreements on "the" goals and objectives of environmental education. These disagreements reflect different positions as to what environmental education is to expose learners and what the result should be. Basically, they represent different world views about the roles of both science and education in society. This contribution discusses these different world views, questions some of the arguments put forward by proponents of national standards for environmental education in the United States, and lastly, argues for an alternative form of quality assessment in environmental education which is process-based instead of product- or outcome-based.

The authors conclude that environmental education should be a learning process with four dimensions in that it seeks to enable participants to construct, transform, critique, and emancipate their world in an existential way. Working within these four dimensions is incompatible with the idea of setting national standards for environmental education. Instead of focusing on (pre)determining the content and outcome of environmental education, the debate should focus on developing learning enhancement criteria for environmental education that focus on these four dimensions by utilizing teachers', students' and the school community's own knowledge, ideas, and concerns.

Résumé

Dégagé de son enveloppe réthorique, le débat sur les standards nationaux dans le *Environmental Communicator* révèle finalement des désaccords essentiels sur "les" buts et objectifs de l'éducation relative à l'environnement. Ces désaccords réflètent différentes positions sur les contenus d'apprentissage et les résultats attendus de l'éducation relative à l'environnement. Fondamentalement, ils représentent différentes visions du monde, concernant en particulier le rôle de la science et de l'éducation dans la société. Les auteurs de cet article discutent ces différentes visions du monde; ils remettent en question certains des arguments mis de l'avant par les tenants des standards nationaux pour l'éducation relative à l'environnement aux États-Unis; finalement, ils apportent des arguments en faveur d'une forme alternative d'évaluation de la qualité en éducation relative à l'environnement, basée sur le processus plutôt que sur les produits - ou résultats.

En conclusion, les auteurs signalent que l'éducation relative à l'environnement devrait être un processus d'apprentissage incluant quatre dimensions permettant aux participants de construire, transformer, critiquer et émanciper leur monde d'une manière existentielle. Intégrer ces quatre dimensions est incompatible avec l'idée de mettre en place des standards nationaux pour l'éducation relative à l'environnement. Plutôt que de se centrer sur la (pré)détermination des contenus et les résultats de l'éducation relative à l'environnement, le débat devrait porter sur le développement de critères d'amélioration de l'apprentissage pour l'éducation relative àl'environnement, qui prennent en compte ces quatre dimensions, en utilisant le savoir, les idées et les préoccupations des enseignants, des élèves et de la communauté.

> The American people . . . have come to feel utterly powerless, unable to control events and influence decisions . . . . Feeling powerless, they have become powerless. Lacking the information against which to evaluate political claims, they have collectively become far more susceptible to manipulation by emotion-laden campaign commercials, simplistic political slogans or divisive appeals to fears and prejudices. (A departing Michigan congressman, quoted in Bull, 1992, p. 17)

> It is not up to the state to educate the people. It is up to the people to educate the state. (Marx in: Jensen, Kofoed, Uhrenholdt, & Vognsen., 1995, p. 15)

Environmental education has received healthy criticism recently from a variety of interest groups representing a range of political agenda's. The national standards "debate" in *Environmental Communicator*, the North American Association for Environmental Education's (NAAEE's) periodical, captures some of the critique. Of course we should recognize that there are many versions and interpretations of environmental education and to say that environmental education is being critiqued is a meaningless statement without specifying what environmental education-paradigm is being questioned. Stripped from the rhetoric, the debate in *Environmental Communicator* reveals essential disagreements on "the" goals and objectives of environmental education. These disagreements reflect different positions as to what environmental education is to expose learners and what the result should be. Basically, they represent different world views on the role of both science and education in society (Sauvé, 1996). In this contribution we will discuss these different world views, question some of the arguments put forward by proponents of national standards for environmental education in the United States. Lastly, we argue for an alternative form of quality assessment in environmental education which is process-based instead of product- or outcome-based.

One could argue that despite their good intentions, many environmental education projects seem to fall short in realizing ambitious learning goals such as helping citizens become environmentally knowledgeable, skilled and dedicated people who are willing to work individually and collectively towards achieving a balance between the quality of life and the quality of the environ-

ment (Gigliotti, 1990; Wals, 1994a). Without always challenging the nature and content of these goals, many researchers and practitioners are trying to resolve the discrepancy between the theory and practice of environmental education. Some have tried to instrumentally structure environmental education content, and the way it is presented to students, using hierarchical levels of universal goals and objectives (e.g., Hungerford, Peyton & Wilke, 1980; Hines, Hungerford, & Tomera, 1986/87; Marcinkowski, 1993). Others, who question the value or the status of universal goals and objectives, have put emphasis on contextual development of environmental education within the school community (e.g., Robottom, 1987; Stapp, Wals, & Stankorb, 1996; Wals, 1994a).

Several of our own presuppositions or biases concerning environmental education run through this article. First, environmental education has the potential to lead to educational reform that ultimately can help reshape relationships between people, and between people and their environment. We view environmental education as a participatory *process* that can lead to educational change. Educational change can contribute to the improvement of *relationships* between people, and between people and their environment. This view of environmental education stands in contrast with the more behaviourist view which basically holds that environmental education is an instrument that can modify behaviour in a pre- and expert-determined direction.

The second presupposition is that environmental education should lead to the development of autonomous thinking about issues that affect the quality of life of humans and other species. An emphasis on autonomous thinking about environmental issues, or any issue for that matter, confirms that it would be wholly inappropriate to prescribe behavioural outcomes that a learning activity, or sequence of activities, needs to foster (Jickling, 1992).

The third presupposition is that our planet is facing destruction as a result of symptomatic environmental problems such as overpopulation, deforestation, excessive and hazardous waste, and the degradation of water, air and soil. In turn, these problems are rooted in the unequal distribution of wealth, the uninhibited striving for economic growth, and inadequate education (CEI, 1991). Again this idea includes several points of view which are still contested, including the ideas that there are limits to growth, and that "resources," including "human resources" such as education,

should be distributed in a more equitable manner. Many international statements on environment and development do not seriously challenge the principles of economic growth or even the inequitable distribution of resources (IUCN, 1980; World Commission on Environment and Development, 1987).

Finally, good environmental education also enhances a critical stance towards the world and toward oneself by promoting discourse, debate and reflection. It is through discourse that participants engage in a process of self-reflection on the relationship between their own guiding assumptions and interpretations and those of others. Inevitably, the process of values clarification comes into play here. Since values cannot ethically and pedagogically be imposed, environmental education is to provide situations in which all participants feel free to discuss and make explicit their values. To achieve the necessary "communicative competence" (Habermas, 1971) requires both equal participation in discussion, undistorted by power relationships, and an unlimited scope for radical questioning of societal structures and procedures. We will address this later on.

Now that we have made our own biases explicit, we will turn to the notion of national standards for environmental education and the different world views underlying the current debate.

Environmental Education and Contesting Ideologies

> By presuming to provide a set of common guidelines, an understanding of what students should know and be able to do, and a definition of what is valued, [the leaders of NAAEE] appear to be rapidly retreating into the modernist, or deterministic, world view that so many environmental philosophers have identified as the very root of our environmental problems. (Jickling, 1995, p. 13)

The national standards debate in the *Environmental Communicator* boils down to fundamental differences of opinion about goals and objectives of environmental education. The debate also reflects different world views about the role of science and education in society. In the above statement, Jickling suggests that the NAAEE's leadership appears to have its feet firmly planted in the past.

One of the major criticisms of the predominant approach to environmental education research stems from its behaviouristic

tendencies which reduce students and teachers to manipulable objects (e.g., Robottom & Hart, 1995). An example of this is given by Monroe (1988) who states:

> If environmental educators have done their job, we should see environmental education curricula clearly promoting a non-anthropocentric ethic and indoctrinating youth in it. (p. 4)

And by Hungerford and Volk (1990) who state:

> The research is very clear on the matter. Responsible citizenship behaviour can be developed through environmental education. The strategies are known. The tools are available . . . . (p. 18)

Phrases such as "indoctrinating youth" and "developing responsible behaviour" do not evoke the idea of a process that leads to autonomous thinking individuals. According to this view of environmental education, it might be considered proper to apply "behavioural intervention strategies" and to "manipulate situational factors" in order to produce desired behavioural changes even if individuals do not necessarily want to change in this way (Robottom & Hart, 1995). This perception is contradictory to the way in which others perceive it (e.g., Hart, 1996; Jensen et al., 1995; OECD-CERI, 1994; OECD-CERI, 1995; Stapp et al., 1996; Wals, 1994a).

Within the field of environmental education roughly three different research traditions have been distinguished: the empirical-analytical, the interpretive-hermeneutical, and the social-critical paradigm. The differences between different approaches to educational research are "paradigmatic" in that they express, or are expressions of fundamentally different ideologies or world views. In environmental education there are fundamental differences underlying empirical-analytical, interpretive-hermeneutical, and social-critical methods that imply epistemological differences (Mrazek, 1993; Robottom & Hart, 1993). The empirical-analytical paradigm is often referred to as being behaviouristic, and the interpretive-hermeneutical, and social-critical paradigms are referred to as non-behaviouristic (Robottom, 1993). According to Robottom, the most obvious difference between the non-behaviouristic and the behaviouristic paradigm in environmental

education is the perception of what counts as an educational theory. Whose goals are the focus of the research? In the interpretive-hermeneutical and the social-critical paradigms, the interpretive activities of practitioners are explicated; their aspirations, presuppositions, assumptions, and values can be made intelligible. In the empirical-analytical paradigm it is the researcher, or the sponsor of the research who decides what is important. Table 1, for the sake of debate, roughly shows some differences in emphasis between "behaviouristic" and "non-behaviouristic" approaches to education.

When accepting the premise that the above "paradigms" are ideologically different, one also accepts that they are incompatible. Consequently, operating as an environmental educator within the behaviouristic paradigm implies a specific view of the role of education in society, as does operating within a non-behaviouristic paradigm. One could argue that the current environmental or ecological crisis is deeply rooted in a deterministic world view and its positivist and behaviourist science traditions. It is questionable, to say the least, that the same world view and science tradition is able to solve the very crisis to which it contributed. Translated to environmental education we argue that behaviouristic approaches to environmental education are part of the problem and not part of the solution. Instead, environmental education that is concerned with *human development*, rather than with *human behaviour*, could contribute to the formation of new lenses for re-examining our lifestyles, power relationships, connections with the earth, and connections with other (human) beings in order to develop alternative pathways for living.

Turning back to the issue of national standards for environmental education, one could argue that from a behaviourist perspective, such standards seem logical, desirable and feasible. Basically, the setting of standards is an issue of reaching some kind of "national" consensus on specific goals, objectives, methods, learning outcomes and the ways of measuring them. One could even design some kind of accreditation system for environmental education. For environmental education, and for human development, the setting of *national* standards for environmental education is more like an oxymoron since human needs and interests—fortunately, perhaps—vary with context. This does not mean that there should not be any standards by which we can tell

	Behaviouristic	Non-Behaviouristic
Focus	Learning for Knowing	Learning for Being
Epistemology	Objectivist Positivistic	Subjectivist Socially/ Historically Constructed
Knowledge Generated	Propositional Linear Universal	Experiential Non-linear Contextual
Structure	Subjects Disciplines	Issues Life-world
Teacher's Role	Expert Instructor	Facilitator Co-learner
Role of Learner	Consumer	Creator of Knowledge
Teaching Strategies	Lectures on Theory Modular Instruction	Real-world Experiential
Research Style	Experimental RDDA-model (linear-expert driven)	Participatory R *is* D-model (non-linear-practitioner driven)
Role of Researcher	Producer of Knowledge & Solutions External Expert	Co-creator of Improvements Participant
Research Goal	Abstract Knowledge	Local Theory and Action for Change
Power Relationships(PR)	Reinforces Existing PR	Challenges Existing PR
Focus of Reflection	What do I now **Know?**	Who am I **Becoming?**

Table 1. Some differences in emphasis between "behaviouristic" and "non-behaviouristic" approaches to education

the "good" from the "bad," but such standards should focus on the quality of the learning process and not on some kind of learning outcome or product. It should be noted that the "paradigm-compatibility" debate within the environmental education community, or should we say the environmental education elite, mimics or follows a similar debate in educational research in general (i.e., Moss, 1996; Posch, 1994; Sanger, 1995).

In the next section we will further challenge the notion of developing product-based (or output-based) national standards for environmental education.

Challenging Output-Based National Standards

In his recent contribution to the *Environmental Communicator*, Hungerford (1996) condemns the environmental education field for not having standards. According to him, standards will bring sense and order to the field, and demonstrate the educational community that there can be scope and sequence of goals and objectives for the field of environmental education. Hungerford emphasizes the importance of science in the environmental education curriculum. He argues that environmental educators tend to stop short of good science in their instructional planning and delivery, and that environmental education should be part of social studies, since, as he argues, environmental issues are science-related social issues. From Table 1 it follows that there is a strong adherence to the behaviourist paradigm here. We have already identified positivist and behaviourist world views as the root of our environmental problems (see also Jickling, 1995; Robottom, 1993; Robottom & Hart, 1993; Stevenson, 1993; Wals, 1993). Some of the critique is summarized as follows:

- Individual human agency is not the key factor in issue resolution; environmental issues are almost always political struggles, and therefore, collective action is more productive.
- The behaviourist paradigm is limited in helping us deal with moral and ethical issues. Since it provides only scientific knowledge, curriculum change becomes a purely technical or behavioural concern, requiring that teachers implement ideas of external curriculum developers.

- The approach fails to recognize that curriculum change results from practitioners' struggles to understand their own values, theories and intentions, and how these are played out in their own particular setting.
- The approach has a deterministic character: teachers and students are seen as essentially manipulable by the researchers (even if they don't want to change; this is contradictory to a democratic society with critically thinking individuals).
- There is no objective way to study human phenomena.
- It is counterproductive and dangerous to objectify the world.
- There is more than one way of thinking, and knowing.

One may well wonder, taking these points of criticism into account, whether the development of national standards for environmental education is a wise thing to do. Or, as Weston (1995) puts it:

> It is partly for structural reasons that environmental education in practice tends toward closed, given, theoretical, fact-based approaches, and thus to take quite a different direction from, if not to actively discourage, the kind of delight in and care for the Earth which I would define as true environmentalism. The structure of the school (isolated, hierarchical, and all the rest) itself pushes in that direction. (p. 15)

A similar phenomenon occurs when specific outcomes for environmental education are formulated. Weston argues that environmental education tends toward closed, codified, theoretical, expert-certified systems. Nothing guarantees that deep matters such as our relationship with the earth, can be captured or codified, or formally "taught" in any way at all. The assumption that it can be is possibly part of our general epistemological over-confidence. If we, environmental education researchers, start formulating goals and outcomes for environmental education, it will be us who decide what is good for the students:

> All of these are "lessons" in which students are required to learn to receive the necessary certifications. We are still deciding what is good for them, only now it is not American history or chemistry labs anymore, but getting back to their senses or back in touch with the Earth. And, of course, once again, there is everything to be said for these goals. Getting back into their senses is good for them. I love the

> idea of students taking responsibility for their own school grounds, and so on. The problem is not with these goals. The problem is that they are our goals. They are not goals that emerge naturally out of these children's or students' own lives. (p. 6)

If, as Jickling and Spork (1996) argue, environmental education is defined programmatically—for instance, by formulating universal standards or outcomes for it—then there is a tendency towards narrowing of perspective, limiting of possibilities, anthropocentrism, and militating against the evolutionary tendencies of ethics. They state that:

> If we want students to examine ideologies, criticize conventional wisdom, and participate in cultural criticism and reconstruction, then we must accept that they may well reject the externally imposed aim that has been pre-selected for them. If we are serious about education, we should, in the first place, put aside our most promising visions for the future. Moreover, if we really want to open students' minds to alternate world views, it makes little sense to steer them, however gently, towards a particular vision. (p. 19)

One of the presuppositions stated in the beginning of this article is that our planet is facing destruction as a result of symptomatic environmental problems which are rooted in the unequal distribution of wealth, the uninhibited striving for economic growth, and inadequate education. We also suggested that environmental education can potentially act as a catalyst for educational reform that can ultimately help reshape relationships between people, and between people and their environment. If we think it is important that students think critically and autonomously about these matters and develop the necessary communicative competence, then it is essential—taking into account the critique on a behaviourist approach to environmental education—that we move towards process-based standards for environmental education. In the next section we will further explore this idea.

Towards Process-Based Quality Assessment of Environmental Education

In the former section the development of standards for outcomes of environmental education is rejected. Jickling and Spork (1996) also

state that deterministic tendencies in environmental education must be reversed:

> Perhaps we need to ensure consciously that we build indeterminacy into our programs and instruction. We can do this by acknowledging that our objectives are not external to education, and that education is a process which engages students in a fertile field of activities and ideas without specified ends or outcomes. Students will be encouraged to think critically about even the most environmentally enlightened practices available at present. To do this they will need to hear a variety of theories, and participate in a range of activities. From these they can learn to critique old standards and be encouraged to create new possibilities. (p. 20)

Thus, the world of environmental education focuses too much on formulating the content and outcome of environmental education, and too little on the quality of the learning process. Instead of focusing on the output, more attention must be given to the process of environmental education. The quality of the learning process determines whether a learning experience is fundamental enough to penetrate the world of the learner. Environmental education, by its very nature, should be education that focuses on the life-world of the learner. A prerequisite is that the educator immerses him/herself in the world of the learners and the realities by which they are challenged, inspired, or motivated. Only if this world is understood well enough, can it act as a base for learning. In process-based environmental education the learner determines to a great extent the content and direction of the learning process him/herself, while the educator is much more concerned with the quality of the learning process. Such an approach is illustrated by the Action Research & Community Problem Solving (AR&CPS) approach.

In the AR&CPS approach, environmental education is defined as:

> The process that enables students and teachers to participate more fully in the planning, implementing, and evaluating of educational activities aimed at resolving an environmental issue that the learners have identified. (Wals, 1994b, p. 163)

This approach to environmental education is embedded in the social-critical environmental education paradigm. What an

environmental issue is depends on the perceptions and the experiences of the learner as well as on the context in which education takes place. In a community problem solving project the teachers simultaneously become co-learners and facilitators of learning, while the students also become co-learners, but at the same time are considered experts when it comes to knowing their own (community) world. For a detailed description of AR&CPS we refer to Stapp et al. (1996). A critical aspect of AR&CPS is the democratic way in which decisions are made regarding the content and direction of the learning process.

A concern for democracy is also stressed in an alternative approach to environmental education that comes from Denmark. The quotation from Marx—which opened this contribution— reflects the main idea behind an environmental education project in Denmark: The Jægerspris Project (Jensen et al., 1995). In this project emphasis is put on the idea of a democratic approach towards environmental education. An important task of the school is to educate for and with democracy in order to develop action competent citizens who are able to contribute to a democratic society. According to the participants in the Jægerspris Project environmental problems can only be solved if democracy is strengthened at every level. Consequently the development of environmental education should be school-based and context-specific (Jensen et al., 1995).

To reveal the emancipatory potential of these alternative approaches to environmental education, the critical theories in the Marxist tradition should be re-examined. Marx stated that, institutions in an exploitative society ensure elite domination or the reproduction of class and gender relations. Education is used to transmit the predominant ideology—which is often connected to an economic base—and therefore has a socialising function. Critical realists and structural Marxists emphasize the importance of breaking reproductive patterns. In their view education is a means to provide learners with a way of understanding and transforming the complex world of which they are a part. However, currently it is still assumed that the state is the key agent of regulation, and that regulatory networks should be created to regulate people's behaviour. Education has become one of the principle instruments used to meet this goal. The 1990s still represent an era in which the restructuring of (environmental) education takes place in

conservative ways, leaving reproductive processes and exploitive economics unquestioned thereby in essence strengthening them. The development of positivistic and deterministic national standards for environmental education outcomes fits very well in this tradition.

As our planet is facing destruction as a result of symptomatic environmental problems rooted in the unequal distribution of wealth, the uninhibited striving for economic growth, and inadequate education, it appears that our global environmental predicament calls for a higher state of morality. Habermas (1972) argues that achieving such a state of morality is blocked by the forms of language use and communication which lead to a false consensus shaped by traditional power, domination and ideology. He suggests that the possibility of universal moral consensus is inherent in the nature and use of human language. He speaks of an "ideal speech situation" in which all participants have equal power to defend their contributions as meaningful, true, justified and sincere. He also stresses the importance of a discursive democracy which exposes claims to truth and justification to public scrutiny, and allows a rational consensus based on open argument to undermine the false consensus which is at the heart of the rationality crisis (see also Huckle, 1993).

So far we have emphasized the exploration of alternative, non-behaviouristic modes of development in environmental education. In doing so we have rejected the notion of setting national standards for environmental education, specifically those that focus on environmental education learning outcomes and content. If we are ready and willing to abandon the quest for developing national standards for environmental education in terms of content and outcomes, then we still are left with questions like: What then entails good environmental education? How can the development and quality assessment of environmental education become more democratic and contextual?

Learning Enhancement Criteria for Environmental Education

Like it or not, it is the current reality that many sponsors of environmental education, whether they are governmental or commercial, are looking for some way to assess the quality of

environmental education. In line with our previous arguments we would rather look for some criteria which can help teachers, students, school communities, and indeed, outsiders to assess the quality of the learning process. Of course there are many ways of conceptualizing "quality." Quality is in itself an ill-defined concept. We believe that a) the quality of the learning process is determined by the level of involvement in the learning process of the learner, and b) the relationship between "quality of the learning process" and "learner involvement" is mutually reinforcing. Notice that in this view, quality of the learning process is *not* determined by a preselected outcome or product the learner should master or display. Explorative research at our department, carried out in conjunction with the University of Utrecht, led to the development of a set of so-called learning enhancement criteria for environmental education (Alblas, Broertjes, Janssen, & Waarlo, 1993; Alblas, Van den Bor & Wals, 1995; Janssen, Waarlo, Alblas, & Broertjes, 1994). The research focused on finding those elements of environmental education which are particularly suitable for increasing students' understanding of environmental concepts on the one hand, and their involvement in environmental issues on the other. Five experienced teachers from secondary schools, with a strong affinity for environmental education, were interviewed extensively on several occasions about their own praxis theories concerning environmental education.

Hence, the learning enhancement criteria (Table 2) have been derived mainly from experienced teachers' *own* theories about learning in environmental education. They are intended to serve as an instrument to help improve the content and quality of learning processes in environmental education within a specific context.

The criteria are not listed in any order but are intended to help practitioners reflect on their own teaching and to assist them in developing new teaching materials. It should be noted that good environmental education does not have to meet *all* the criteria listed in Table 2. In all likelihood a subset of criteria will have to be considered depending on the context and purpose of the learning process. The criteria should not be seen as an evaluation device, but more as a tool for constructing and reconstructing teaching and learning. For a detailed discussion of each category and every single criterion we refer to Alblas and Wals (1995).

Main category	Criterion
Close to daily life	• **Recognizable** in daily life • **Usefulness** in daily life • **First hand experience** of phenomenon at stake • **Connected** to past experience • **Reflection** on past experiences (behaviour, feelings) • **Varied and diverse** to accommodate the interests and abilities of the individual student
Cognitively challenging	• **Cognitive dissonance** leading to a rethinking of prior knowledge • **Issue-based** to handle existential (controversial) issues and to develop problem solving skills and action competence • **Theoretically deepening** to enhance and broaden knowledge and understanding • **Discovery learning** to enter new realms of experience • **Intellectually challenging** in that students need to raise their thinking and acting to a higher level
Controversial	• **Social conflict** to pique curiosity and to stimulate discussion • **Socially acceptable** or not too threatening for the community of which the school and the students are part
Focused	• **Accurate observation** using all senses • **Action-oriented** to develop action competence • **Sufficient time** to study issue in depth

Table 2. Learning enhancement criteria divided into four main categories (Source: Alblas & Wals, 1995)

The learning enhancement criteria—which by no means are carved in stone—are valued most by teachers who themselves developed teaching modules. First, they can relate to many of them intuitively or from personal experience. Teachers who are asked to generate their own criteria for "good" (environmental) education usually come up with a subset of almost identical criteria. Second, the criteria enable them to look more critically and systematically at their own teaching and teaching materials. Consequently, teachers using the criteria can now identify strengths and weaknesses in the modules they had previously developed or used. Finally, the criteria make them rethink the relationship between learning objectives, learning content and learning process (i.e. the criterion of problem-based learning cannot be met by a lecture).

The use of the enhancement criteria has also unearthed some potential shortcomings or areas in need of improvement. Each criterion leaves a lot of interpretation space, making it easy for teachers to say, "Oh, I always do that." Some of the criteria do not easily coexist (i.e. sufficient time and discovery learning). The criteria may prove to be quite contextual and transfer to other areas of education may require some modification. Nonetheless, developing learning enhancement criteria for improving the learning process may be more useful in safeguarding the quality of environmental education than setting national standards which are mostly outcome or content driven.

Discussion

Hungerford is right when he acknowledges, in the *Environmental Communicator*, that there is a lot of "fluff" in environmental education, that in many instances environmental education is "not working," and that there is a lot of "redundancy in environmental education" (Hungerford, 1996). A lot of the criticism of environmental education in the North American scene—ironically coming from conservative groups—suggests that environmental education indoctrinates and is based on flawed science. The NAAEE, rightly so, seems concerned about negative publicity and the potential eroding of the funding of many NAAEE-affiliated programs. Other environmental education-groups pushing other agendas and alternate "indoctrination schemes" may stand to gain.

We believe NAAEE's response would be much stronger if it would focus more on the quality of the learning process, and less on its content, recognizing that people and communities are challenged in different and often unique ways. Any attempt to standardize people's realities into one universal world view, or to a few at best, will indeed make environmental education vulnerable and fluffy. Instead, differences and unique qualities should be highlighted and celebrated to allow for the learning process to become existentially relevant and meaningful. Strength through diversity should be a core theme, not only in multi-cultural education but also in environmental education. Only then can environmental education become rooted in schools and communities around the country. This rooting will not occur by meeting certain national standards or by changing people's behaviour in a pre- and expert determined way, but rather by making environmental education relevant to people and communities around the country and by helping them understand themselves, their community and their relationship with the (natural) environment.

We conclude that environmental education should be a learning process with four dimensions in that it seeks to enable participants to construct, transform, critique, and emancipate their world in an existential way: *construct* in the sense of building upon the prior knowledge, experiences and ideas of learners; *critique* in the sense of investigating underlying values, assumptions, world views, morals, etc., as they are a part of the world around the learner and as they are a part of the learner him/herself; *emancipate* in the sense of detecting, exposing and, where possible, altering power distortions that impede communication and change; and *transform* in the sense of changing, shaping, influencing the world around them, regardless of scope or scale.

The learning enhancement criteria we presented represent just one avenue we could explore to find ways to assess the quality of the learning process. The criteria focus mostly on realizing involvement in the learning process and the constructing of knowledge. We have argued that environmental education should also be concerned with democracy. Perhaps we can also generate similar criteria for the "transformative," "critical," and "emancipatory" aspect of environmental education by using teachers' and students' own ideas about good environmental education, and by analysing the few examples that exist world-

wide of environmental education that does include all four dimensions.

Notes on Contributors

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