

Can postpositivist research in environmental education engender ethical notions within higher education?

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ABSTRACT

In this article we contend that postpositivist research in environmental education can contribute towards promoting ethical activity within higher education. We argue that postpositivist inquiry breaks with utilitarian and uncritical assumptions about research in environmental education and also creates unconfined spaces for ethical notions such as truth telling and sincerity, freedom of thought, clarity of meaning, non arbitrariness, a sense of relevance and respect for people and evidence. Drawing on recent case study research in environmental education involving higher education institutions, we show that ethical notions of postpositivist research can engender self determination, trust and respectful collaboration among diverse people.

environment is enshrined in the bill of rights of the new South African constitution. Key policy documents emphasise the importance of using the country's natural resource in a sustainable manner as well as the need for sustainable development (Reconstruction and Development Programme 1994, Environmental Education Management Bill 1998). Environmental education (EE) has been included in the most recent South African Government White Paper (1995) on Education and Training, as one of the key principles for education and training policy in a post apartheid South Africa. The principle states: "Environmental education, involving an interdisciplinary, integrated and active approach to learning, must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources" (Principle No 20:22). Our concern in this article is to investigate whether environmental education and research can contribute to achieving ethical notions within higher education.

INTRODUCTION

The release of Nelson Mandela (from prison) and the unbanning of the liberation movements in 1990, and our country's first democratic elections in 1994, signaled dramatic changes to all aspects of South African social life. Pendlebury (1998:334) points out that education, which was a primary site of contestation under apartheid, now is a primary site of transformation. She argues that transformation is not only paramount for education's own sake but also because education is recognised as crucial for transforming other spheres of social life. Since 1994 in particular the Department of National Education (DNE) has released a plethora of policy documents intended to provide frameworks for transforming educational practices and the institutions in which they occur.

Recently developed policies emphasise the importance of addressing environmental concerns and its centrality for South Africa's development and transformation. The right of every citizen to a healthy

WHAT IS ENVIRONMENTAL EDUCATION?

Environmental education is a polysemous term open to various interpretations. It emerged as a response to environmental problems, which have reached crisis proportions on a global scale. Early responses to environmental crises were informed by limited conceptions of "environment" equating it with nature and ecological studies. Today, however, it is widely accepted among environmental educators that "environment" is a complex concept that encapsulates interacting biophysical, social, political and economic dimensions. Conceptions of environmental education have paralleled changes to how "environment" is viewed. For example, the environmental education principles defined at the intergovernmental convention at Tbilisi in 1977 tended to be value neutral. However, the more recently defined principles of the non governmental organisation (NGO) forum, which met at the 1992 Rio Earth Summit, embody concerns

such as the active promotion of democracy and social transformation. The principles include *inter alia* that:

- Environmental education, whether formal, non formal or informal, should be grounded in critical and innovative thinking in any place or time, promoting the transformation and construction of society.
- Environmental education is not neutral but is value based. It is an act for social transformation.
- Environmental education must stimulate solidarity, equality, and respect for human rights involving democratic strategies and an open climate of cultural interchange. Fundamental issues in relation to development and the environment, such as population, health, peace, human rights, democracy, hunger, degradation of flora and fauna, should be perceived in this manner.
- Environmental education must facilitate equal partnerships in the processes of decision making at all levels and stages.
- Environmental education should empower all peoples and promote opportunities for grassroots democratic change and participation. This means that communities must regain control of their own destinies.
- Environmental education must stimulate dialogue and cooperation among individuals and institutions in order to create new lifestyles which are based on meeting everyone's needs regardless of ethnicity, gender, age and religious, class, physical or mental differences.

Trainer (1990) has pointed out that curricula of schools (and higher education institutions) play a major role in reproducing the ecologically unsustainable values of modern society. Fien (1993:9) has argued that environmental education challenges the role of educational institutions as agencies of cultural and economic reproduction. From what has been discussed it is clear that some environmental educators have taken up discourses of social transformation and democracy and view these as the *sine qua non* of environmental education.

ENVIRONMENTAL EDUCATION AND RESEARCH

Features of modernity have been implicated in the socio ecological crises. They are, *inter alia*, an uncritical belief in science (scientism), a fixation on technique as an end in itself (technicism), an unquestioning belief in material progress (consumerism), prevalence of the notion of the individual (individualism) and a preoccupation with the structure of phenomena, as determinants of their function (Janse van Rensburg 1994:3). Further, modernist maxims and conventions have come to dominate environmental education research internationally and in South Africa (Janse van Rensburg 1996:68),

described variously as positivist, behaviourist, instrumentalist, technocratic, determinist and so on. These approaches to research hold utilitarian and uncritical assumptions about research, knowledge, education and social change (*ibid*). Robottom (1993:134) has argued that behaviourism has become the ideology of positivist environmental education research. He argues that it prefigures decisions about research focus, design, data collection, and more importantly it prefigures perceptions we have of the relationships between educators, pupils, subject matter, and educational settings. In behaviourist approaches to environmental education research people (teachers and learners) and well as situational factors are seen as manipulable by researchers in order to produce desired behavioural changes. Such approaches are not in line with active participation and critical thinking characteristic of democratic processes of social engagement.

A deeper understanding of the complex nature of socio ecological issues and challenges have elicited many calls for critical reconsideration of education, and research practice (Janse van Rensburg 1994). Consequently as a response new approaches to research have emerged, interpretive, critical and deconstructive processes broadly subsumed in what is referred to as postpositivist inquiry. Postpositivist inquiry represents contemporary intellectual work within a time characterised for its disturbance of the formerly secure foundations of knowledge and understanding (Lather 1991). In a different way, post positivist research (in environmental education) involves developing or producing knowledge which contributes to our individual and collective understanding of the world and new ways of seeing things in the world (including seeing our own experiences) (Marton 1998:184-185). Research is seen as ways of experiencing and understanding the world around us "oriented towards the knowledge to be gained or the object about which knowledge is to be gained" (1998:196). It further, denotes social inquiry in a period noteworthy of the contestation of the positivist perspective (or the hegemony of it) as the only way of knowing and understanding the reality. A post positivist orientation does not view environmental education and research as the means to the goal of social change but indeed processes of social change themselves (Janse van Rensburg 1994, Janse van Rensburg 1996). Robottom (1993) states that such research is concerned with the generation of knowledge within and for the context in which it is used and has meaning.

ENVIRONMENTAL EDUCATION AND HIGHER EDUCATION

Socio political and socio economic change in South Africa in the 1990s necessitated imperatives for transformation of all education sectors. A recently

published White Paper, *A Programme for the Transformation of Higher Education*, emphasises the importance of equity, redress and a need for a single coordinated higher education system that will facilitate life long learning (Department of National Education 1997). The phasing in of a new national curriculum for General Education and Training, *Curriculum 2005* is influencing the programmes of teacher education institutions (Department of Education 1998). Central curriculum concerns are the introduction of outcomes based education and learner centred education as well as defining of "environment" as a phase organiser in *Curriculum 2005* (Department of Education 1997). This will require teacher education providers to consider possibilities of including environmental education processes into both pre and inservice teacher education programmes (Lotz & Robottom 1998).

Now that we have established links between environmental education, research and higher education, we shall attempt to answer the question: Can environmental education research promote ethical notions within higher education? As has been alluded to earlier, environmental education research is concerned with problem solving or applied as opposed to disciplinary research (ways of experiencing and constructing knowledge) as a result of a growing demand for social relevance and accountability (Muller 1999:10). In view of this emergent shift in knowledge production or formation (research), higher education institutions are increasingly being challenged in terms of their responsiveness and relevance to societal needs (Subotzky 1999:17). Given the extent of world wide moral, economic, social and environmental problems, there is increasing pressure on higher education institutions to actively promote the moral good and its concomitant concern with enabling ethical notions aimed at transforming society at large. We contend that environmental education research can promote ethical notions in order to enhance transformation in higher education.

ENVIRONMENTAL EDUCATION RESEARCH AS ETHICAL ACTIVITY

As has been mentioned earlier, postpositivist environmental education research involves processes of social change and is concerned with knowledge production within/for the context of its application, referred to by Gibbons (1998) as "socially distributed knowledge". Similarly, "transformation is not its own goal; the goal is an improved, more just and more equitable society" (Van Niekerk 1998:65). When one *transforms* society from, say, the inequities of the present to a "more just and equitable society", one responds to a future one wishes to achieve through an ongoing process of rethinking a process of change from one form to another. In this way, there exists a link between postpositivist research and transforma-

tion. But, transformation (in this instance, within higher education) is itself understood as a shift in the level of knowledge acquired, produced, implemented and questioned on the part of educators and learners processes of coming to know, understand, implement, reflect. This makes transforming higher education more than just a process of producing "skilled acolytes" but also about "... producing people who can lead, who can produce new knowledge, who can see new problems and imagine new ways of approaching old problems. Higher education has a role to prepare people to go beyond the present and be able to respond to a future which cannot be imagined" (Harvey & Knight 1996:10).

Transformation in higher education involves a process of new knowledge production, reflexive action, which means seeing new problems and imagining new ways of approaching old problems and, deconstruction and reconstruction or constant exploring beneath surface appearances "to respond to a future that cannot be imagined". In this regard, Esterhuysen's (1996:79) claim that transformation concerns a process where no "correct" projection can be made into the future in the light of present and past socio political developments is valid.

So transformation in higher education is not merely adding to students' knowledge base, skills and potential. At its core, transformation refers to the *ongoing change* in the way educators and students approach the acquisition of knowledge and skills and relate them to a broader context (Harvey & Knight 1996:12). By implication, transformation is about empowering those involved in the higher education process, to develop the critical ability of students and educators to the extent that they become self determined (rational) and reflexive.

However, just as reflexivity involves being rational, so too higher education can be shaped by transformative conditions which effect changes in the experiences of educators and students. Makgoba (1996:183 184) states that transformative conditions which impact mostly on the experiences of educators and students at higher education institutions embrace ethical notions. For the reason that transformation within higher education is linked to enhancing ethical activity, as well as postpositivist research in environmental education, the possibility exists that environmental education research can promote ethical notions within higher education transformation. How? We contend that environmental education research has to be linked to the idea of enhancing ethical notions.

The question arises: Which ethical notions can be engendered through postpositivist research in environmental education? Postpositivist research in environmental education as has been alluded to earlier, happens when such critical and reflexive inquiry

(Egèa Kuehne 1995:296) is "willing to rigorously critique and analyse its own heritage (and) ... move forth and grow richer". Our emphasis is on the moral notion such as to "grow richer". This implies a reference to promote "intrinsically worthwhile ends" (Peters 1966:54). To say that postpositivist inquiry has "intrinsically worthwhile ends" is to talk about research as an ethical activity where, in the words of Peters (1998:217): "... truth telling and sincerity, freedom of thought, clarity, non arbitrariness, impartiality, a sense of relevance, consistency, respect for evidence, and for people as a source of it ... must be accepted as virtues by anyone who is seriously concerned with answering questions by the use of (postpositivist) reason".

In a different way, what makes postpositivist inquiry ethical is its concern with achieving the "good life" described as engaging in research in the pursuit of moral consciousness (Hirst 1998:393), in this sense, as an enduring excellence of character with respect to any given human activity (Evers 1998:108). An explanation of postpositivist inquiry has as its basis the notion of ethical activity which can be related to practices such as those "worthwhile ends" noted above by Peters (1998:217).

This leads to a discussion of ethical activity as a necessary condition of postpositivist research. In the next section we elucidate the notions of "truth telling and sincerity, freedom of thought, clarity, non arbitrariness ... a sense of relevance ... respect for evidence, and for people as a source of it" as forms of ethical discourse grounded in postpositivist spheres of meaning making in environmental education.

As has been argued for already, it is through postpositivist inquiry that we consider how our educational discourses shape both ourselves and the communities that we are striving to participate in and serve; often renewing possibilities for changing others, and understanding that we too must be open to change. Tierney (1994:98) argues that postpositivist inquiry "constructs our beings and roles in relation to others over and over again through engagement with others in meaning making". Implicit in this notion of postpositivist inquiry is an understanding that it is our obligation to clarify our reasons and rationales for choosing to pursue research. Also, postpositivist inquiry demands that we question our intentions for interacting with others in certain ways, methodological choices, and reasons for focusing on certain topics. We shall now tease out forms of ethical activity that underscore postpositivist inquiry with reference to environmental education research in higher education.

Truth-telling and sincerity

Ethical activity implies that research has to be practised in a sincere and truthful way. Sincerity and

truthfulness are based on an understanding that one has to be honest, conscious and willing in one's actions – more specifically in research. Human beings engage in research, which makes the latter a form of public as opposed to a private discourse. This means that people engaging in research have to be sincere, prepared and willing to listen to each other's, at times, conflicting views and differences. By implication, they should be patient and tolerant towards one another even if they express diverse views. Even in the wake of conflict and severe differences of opinion between participants in research, the probability of confrontation would be ruled out by the willingness of both partners in the ethical discourse to engage with each other. In this regard, it is worth noting Olivier (1990:104) who claims the following: "What makes of our discoursing (research) together a conversation (form of engagement) as opposed to a confrontation, is the fact that even the most resolute defence of each participant's view is regulated by the courtesy principle of give and take, of allowing the other his or her rejoinder".

In addition, regarding the notions of willingness and consciousness, participants must enter the public discourse (research) with an attitude of openness. By this we mean that either should not enter research whereby agreement is a prerequisite. One person should not coerce another into accepting his or her views before embarking upon public discourse with someone else. Olivier (1990:103) drawing on Rorty (1980) makes the point that this would be "a conversation (public discourse) which presupposes no disciplinary matrix which unites the speakers, but where the hope of agreement is never lost as long as the conversation lasts". This he sees as a kind of rational discourse. Hence, agreement in research should be a desired goal, rather than a prerequisite.

This notion of ethical activity draws upon the moral virtues of patience and constancy that can cultivate in people the capacity for tolerance and mutual respect for "reasonable" differences of opinion. In defence of achieving an ethical discourse, Gutman (1998:31) claims the following:

A necessary (but of course not sufficient) condition of living well in a society where people differ in their moral convictions is effective teaching of the liberal virtue of toleration. A more distinctly democratic virtue that a good society must also teach effectively is mutual respect for reasonable differences of moral opinion. Mutual respect demands more than the attitude of live and let live; it requires willingness and ability to accord due intellectual and moral regard to reasonable points of view that we cannot deem ourselves as correct. In the political realm, toleration is a precondition for peaceful competition and prag

matic compromise; mutual respect is a precondition for democratic deliberation and moral compromise.

Also, sincerity and truth constitute virtues of ethical activity which, in turn, allows moral space for intuition, what Taylor (1985:139) refers to as "love and happiness": "Our research efforts ought to enable our readers to reflect on their own lives and to help us to envision lives for ourselves and our students that exist within communities of difference and hope".

The phrase "envision lives for ourselves and our students" suggests that human beings have a responsibility to make research intuitively positive for participants, which includes human relationships as well. Dewey posits (1984:249): "Intuition in short, signifies the realisation of a pervasive quality such that it regulates the determination of relevant distinctions or of whatever, whether in the way of relations, becomes the accepted object of thought (and research)". In another way, Dewey's concern for intuition in research implies that we need to develop a sense of care in our relations with each other at an individual level and at the same time relate that intuitive care to societal issues. Dewey and Bentley (1989:247) felt that the notion of intuitive care in research "ranges from solicitude, through caring for in the sense of fondness, and through being deeply stirred, over to caring for in the sense of taking care, looking after, paying attention systematically, or minding".

If we do not care, then we do not engage in ethical activity; thorough research must be care full. Tierney (1994:99) framed his use of research by linking it to intuitive care: "Caring (through research), then, is a way to work on an individual level and at the same time relate that care to the broader questions about the structure of society".

Freedom of thought

In pursuit of achieving ethical activity is an understanding that people ought to have choices to exercise control over their lives (Jarvis 1998:95); that is, they practise a particular kind of liberty (freedom) accepted and supported by all those involved in the research. But what kind of liberty seems to be the most desirable to make sense of ethical activity? Berlin's (1969:131) view of positive liberty seems to be the most appropriate kind of liberty, one which can ensure the validity of an ethical discourse.

Central to positive liberty is the notion that human beings are rational, that is, self directing and self determining beings. They are in control of their lives. Reason, purpose and potential shape their own choices and decisions in life. In a different way, achieving self direction through reason is, according

to positive liberty, a way of attaining liberation. When the individual rationally analyses, understands and then takes appropriate action, such an individual has acquired self mastery and is liberated. Berlin (1969:131) explains it as follows:

I wish to be the instrument of my own, not of other men's (women's) acts of will. I wish to be a subject, not an object; to be moved by reasons, by conscious purposes, which are my own, not causes which affect me, as it were from outside. I wish to be somebody, not nobody; a doer deciding, not being decided for, self directed ... This is at least part of what I mean when I say that I am rational, and that my reason distinguishes me as a human being from the rest of the world.

But taking appropriate action based on rationality (reason and understanding) does not mean that one can do only what one wants to do because this could seriously curb the freedom of others. Here positive liberty undermines the notion of individual freedom unhampered by the interference of other human beings, that is, negative liberty. Whereas negative liberty limits the control of others to infringe on the individual person's freedom, positive liberty is concerned with "what" or "who" should interfere with the individual's activities. Positive liberty is concerned with the individual's "higher self" as the source of control, that is, it aims to increase the individual's conscious and willing enactment of one's own decisions and actions in life otherwise a person is not free. It is in the context of Berlin's notion of positive liberty that I understand the argument by Bowles and Gintis (1987:4) that "liberty entails freedom of (individual) thought and association, freedom of political, cultural and religious expression, and the right to control one's body and express one's preferred spiritual, aesthetic, and sexual style of life". Hence, ethical activity appeals to the notion of positive liberty identified with the idea that human beings are by nature rationally self controlling and self directing. Berlin (1969:136) emphasises this as follows: "... the essence of men (women) is that they are autonomous beings authors of values, of ends in themselves, the ultimate authority of which consists precisely in the fact that they are willed freely then nothing is worse than to treat them as if they were not autonomous, but natural objects ...".

Clarity of meaning

The idea of postpositivist research as a process concerned directly with the pursuit of ethical discourse, following Taylor (1985:139), implies that one has to communicate clear meanings to others through research. In other words, ethical activity ensures that our interpretations and knowledge are articulated to others who may be interested in our perceptions and perspectives in a clear, logically consistent (Taylor

1985:139) and unambiguous manner. Consequently, the transforming of our experiences into an ethical activity heightens the importance of our interpretations and constructed meanings as we seek to improve our situations and contexts. Hassard (1993:5) argues that when we enter ethical discourses, we involve ourselves in dynamic meaning making within which we are agents of change who suggest possibilities for renewal and development. Ethical discourse in the sense that one attunes oneself contemplatively, critically and reflexively to the social world has shifted research discourse from merely "free enquiry" or "curiosity driven" to problem solving priorities (Gibbons 1998:16-17).

Moreover, the question needs to be answered: what exactly constitutes a rational or clear meaning making style? Clarity in writing style as to how human beings communicate their findings implies a transparent language written in plain rather than flowery language. This transparency in Lanham's (1974:17) words is not just "any single verbal configuration (such as 'Be clear', 'Avoid jargon', 'Be sincere', and so on) but a relationship between a reader and a writer". In this way, clarity in communicating one's findings means that one has to be "attuned to the relationships *between* listener and storyteller, *between* writer and reader, *between* knowledge and language" (Zeller & Farmer 1999:14). Often, "confusing and impenetrable prose" defeat the meaning making style characteristic of clear, transparent and narrative rationality. In addition, clarity and articulation in postpositivist research is built on the assumption that "all forms of human communication can be seen fundamentally as stories, as interpretations of aspects of the world occurring in time and shaped by history, culture and character" (Fisher 1989:56-57).

Non-arbitrariness

Through ethical activity human beings individually and collectively build their research which rejects arbitrariness. When one engages in ethical activity one does not do so as a solitary individual but as a bearer of a particular social identity through shared experiences which cause one to ethically reject arbitrariness such as bias, one sidedness, prejudice, discrimination, intolerance, dogmatism, sexism, racism, injustice, and so on. In this way, engaging ethically in research offers space for diversity whereby "subordinate groups can develop their voices and articulate their needs if they have their own spaces rather than if they are absorbed in a consensual overarching public sphere" (Hernandez 1997:57). This idea of diversity of identities through postpositivist inquiry opens up the possibility for different social groups to tolerate each other and to work together in the same territory or public sphere (Torres 1998:425). In a different way, postpositivist research is an arena of the conflicting interest groups in a

society, rather than of the overarching representation of the choices of individuals who pursue their separate interests (Gould 1988:10).

Diversity through research also repudiates the idea that the hegemonic power of the dominant culture can be imposed on different peoples in the name of integration (Fletcher 1999:150). In fact, diversity provides the conditions for subordinate groups to articulate their needs, and deepens the emancipatory possibilities of different social groups (including subordinate ones) to free (liberate) themselves through ethical activity. In this way, they maintain, promote and develop their own culture and identity in a process of collective empowerment that allows them to reflect about their experience and situation within the wider society (Fraser 1990:57).

Ethical activity is strongly linked to critical arguments that emphasise differences among viewpoints and explanations of social events rather than those types of explanations that assume the value of only one right, arbitrary (absolute) interpretation. In other words, ethical activity implies that one has to search for other voices, other interpretations, and other stories. This view of diversity in postpositivist research is vindicated by McLaren (1991:10) for whom "all knowledge is relational and can only be understood within the context of production, its distributions, and the way it is taken up by different individuals and groups". Put differently, praxis does not comprise a universal, value free body of facts, independent of the understandings of people. Rather, it is produced, located and understood within existing social and cultural formations (Giroux 1999:7). According to praxis, "scientific knowledge" and school/academic knowledge do not just represent an immutable body of unquestioning facts, unrelated to the diverse and every day life experiences of learners. Any form of knowledge is context specific, relevant and "emerge(s) ... out of social conventions and some times in opposition to them" (McLaren 1991:10). This shows that postpositivist research grounded in ethical activity creates unconfined spaces for a plurality of voices.

A sense of relevance

Ethical activity in postpositivist research demands that human beings pay close attention to unique and specific aspects of every context. By implication, ethical activity means that no single postpositivist research will be useful in the same ways in all situations. In this regard, Hermes (1998:158) posits that research's emphasis should shift from discourse for discourse's sake to research "that serves a specific purpose or need of the community within which it is situated". In a different way, ethical activity implies that research has to be relevant and socially accountable "primarily by supporting the economy and

promoting the quality of life of its citizens" (Gibbons 1998:1). Moreover, ethical activity also guides post positivist research by using reflexive and continually changing procedures of educational discourse that act as a "situated response" (Hermes 1998:157). Ethical activity engenders research as a "recursive process", that is a reflexive activity specific to the culture, the problems, and the dynamics of a particular context.

Respect for evidence and people

The idea of practising ethical activity through post positivist research provides an important constraint: the necessity for research to proceed in relation to impartiality, non arbitrariness and consistency, even if a person or group introduces a "new vocabulary" which is incommensurable with another person's view. This shows the necessity of respect for people and for research to proceed, even if one person (or group) justifiably introduces a viewpoint incommensurable with the prevailing ideas. In this regard, it is worth noting Olivier (1990:105), who draws on Rorty's "ethical pragmatic" approach to research. Olivier claims that research should not be one, whereby "any power or institution (or its agents) ... arbitrarily and irrationally silences, terrorises, eliminates or excludes certain justifiably interested parties from dialogue (research) merely because the latter introduces a new vocabulary into the discourse one which is incommensurate with the prevailing dogma". To exclude people from research or by denying them participation is to show disrespect for them and to "stifle rational deliberation of competing conceptions of good lives and good societies" (Gutman 1998:34). Gutman argues that the idea of respect for people is an important virtue of ethical activity for the reason that it "... prevents the state, and all groups within it, from denying anyone an educational good on grounds irrelevant to the legitimate social purpose of that good (in this instance the good of postpositivist research)" (1998:34).

Moreover, being impartial, non arbitrary and consistent in postpositivist research do not necessarily result in agreement. It is one thing to be sincere, open and willing to participate in research, but what makes it irrelevant is precisely the lack of courage and commitment on the part of one person to accept the point the other person makes. In another way, ethical activity is necessarily grounded in commonly accepted rational principles such as the commitment to follow through on the best judgement, that is, showing respect for evidence and for each other.

Conclusion: ethical notions within postpositivist environmental education research involving higher education institutions

This brings us to a discussion of recent case study research related to professional development in environmental education, involving six higher education institutions conducted as part of a South African/Australian Institutional Links programme. With reference to environmental education research in this case study, we shall show how ethical notions such as truth telling and sincerity, freedom of thought, clarity of meaning, non arbitrariness, a sense of relevance and respect for evidence and people manifested in postpositivist inquiry within higher education. In this way, we contend that postpositivist research in environmental education can promote ethical notions within higher education.

Firstly, the research involved participants from an Australian university, two South African universities and three South African colleges of education. The case studies were based on environmental and environmental education issues. The issues chosen for the developing case studies were relevant to the professional work and work places of the participants. This ensured that the research was contextual in that it respected and related closely to the professional contexts of participants. The research was also responsive in that the issues explored were of interest and concern to the participants themselves. The issues chosen by participants included: AIDS as a social problem, waste management concerns, water pollution in canalised rivers, waste disposal and litter in public open space, ecological disturbance from mining, and pedagogical concerns related to the concept sustainability.

Taylor (1985:37) links a sense of relevance to being attuned with society and to socially constructed meanings. In this way, our case study research is no longer a self contained activity carried out in "relative institutional isolation", but involves "interaction with a variety of other knowledge producers" (Gibbons 1998:1). For Gibbons (1998:37):

the research agenda and its funding are increasingly the outcome of a dialogue (praxis) between researchers and users, regulators, interest groups, etc. Unless that dialogue produces a consensus no research will be done. Leading edge research has become a more participatory exercise involving many actors and experts who move less according to the dynamics of their original disciplines and more according to problem interest ... (which) means that academics will be away from the university, working in teams with experts from a wide range of intellectual backgrounds, in a variety of organisational settings.

From the above, a sense of relevance in postpositivist research means that institutions like universities and

colleges in the South African/Australian Links programme needed to develop structures that “promote and reward group creativity” and produce knowledge under “continuous negotiation” (Gibbons 1998:ii & 6). This was the case with our research which examined developing case studies of changing practice as processes of professional development in two distinct ways: first, as a moment in professional self development, as participants reflected critically on the meaning and significance of their understandings of theories, policies, organisational arrangements and teaching practices; second, the emerging case studies themselves were seen as possibly forming the basis for useful professional development interactions with other environmental educators outside of the project (Lotz & Robottom 1998:20).

Secondly, the case study data produced were pictorial records of the issues identified and how these issues were used by participants in environmental education programmes at their different institutions. Each participant took photographs of key instances throughout the development of the case studies. Later captions were written for each photograph as well as a descriptive account of the case (a case study commentary). Although each participant developed individual case studies, related to their unique professional contexts, the research was also collaborative in that at different stages during the development of the case studies work in progress was shared with other project participants. This enabled each participant to receive critical feedback from others and the collective reflection contributed to the improvement of the developing case studies. The research was participatory in that participants were all involved directly and as equitably as possible in all dimensions of the professional development process, that is, in identifying the issues, collection and analysis of the case study data, and the development and dissemination of the materials and reports. In essence, our engagement in postpositivist research was linked to the non arbitrary, self determining and reflexive way members in the programme conducted

themselves with respect to environmental education. In the words of Hernandez (1997:58), our postpositivist inquiry “constitutes a space in which (different) people came to consciousness, deliberately transforming not only knowledge about themselves and their reality, but also transforming their own subjectivities”.

Finally, key to this research was the building of relationship of trust among participants. Because participants worked on the project over a period of two years and it was conceived as a collaborative participatory project, close and sincere interaction between participants inevitably occurred during workshop sessions. Informal social interaction (after hours) was also an important facet of enabling relationships of trust in order to develop our capacities. Project participants respectfully agreed that workshops would be held at all of the workplaces of the different participants. In this way the contextual “realities” within which each participant worked could be understood and respected by others. As relationships of trust developed the peer review tended to be more open, sincere and easily accepted. In this supportive environment of collaborative work, the participants were able to improve their understanding of participatory research, case study work and tertiary curriculum development for environmental education.

CONCLUSION

There are no *a priori* limits as to how ethical notions should be lived out in postpositivist environmental education research within higher education. Post positivist inquiry as unfolded in the South African/Australian International Links programme constitutes the use of ethical activities, cultivated by notions of truth telling and sincerity, non arbitrariness, freedom of thought, clarity, a sense of relevance, and respect for evidence and people. In other words, human beings’ acceptance of the forms of ethical activity is a prerequisite for postpositivist research in environmental education.

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