'ENVIRONMENT AS TEXT':
INITIAL INSIGHTS INTO SOME IMPLICATIONS FOR PROFESSIONAL DEVELOPMENT IN ENVIRONMENTAL EDUCATION

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This paper describes part of a current international research capacity-building project in South Africa. In the project a research-based approach to professional development is adopted, one in which participants develop detailed case studies relating to their own changing practices in environmental education. It is argued that such an approach is consistent with the highly contextual nature of the field of environmental education. The article describes a central three-day 'moment' in the project, drawing on this experience to consider a number of issues concerning participatory research and the role of case study in professional development.

PART 1: THE CONTEXT OF THE PROJECT

Introduction

The project entitled *Educating for Socio-Ecological Change: Capacity-building in Environmental Education*, focussing on South Africa's tertiary educators, is funded by AusAID and administered by IDP Education Australia. The structure of the project is quite complex, involving a total of eight tertiary institutions in two countries (South Africa and Australia). All project activities have been conducted in South Africa, in the Eastern and Western Cape, Northern and North West Provinces. Workshops have been scheduled at all institutions, thus ensuring that the project engages environmental education in a range of different environmental and educational contexts.

The policy context of the project is a key shaping factor in the project. After the 1994 general federal election South Africa has experienced policy changes which affect all aspects of social, economic and political life (Kraak & Smith, 1997). Educational transformation is a central focus of socio-political and socio-economic change with the integration of education and training and the restructuring of the qualifications system within a National Qualifications Framework (NQF), framed by principles of equity, access and redress, being particularly significant (*Government Gazette*, March 1998). The defining of the NQF and the re-structuring of educational qualifi-cations as outcomes-based, and relevant to the development needs of the country, have significant implications for colleges of education, which were historically established to serve political rather than educational needs (NEPI, 1992). Within the Northern Province for example, 22 colleges of education were established by the former apartheid government with-in racial 'homeland' boundaries.

After the 1994 elections a process of reconstruction was set in motion and the 22 colleges in this province are being rationalised to seven pre-service (PRESET) teacher education colleges. Colleges of education around the country are now transforming to community colleges and, together with all tertiary institutions, are faced with the task of developing vocational and community-based educational programmes which are more suited to the country's developmental needs (Kraak & Smith,1997).

Thus within this project, Tshisimane College in the Northern Province and Thlabane College in the North West Province are currently transforming their curricula and programmes to provide for vocational education and training and in-service (INSET) teacher education programmes. In addition, Thlabane also provides PRESET teacher education programmes. Shingwedzi College is one of the seven remaining PRESET teacher education institutions in the Northern Province and is responding to the need to meet new national requirements for General Education and Training through transformed teacher education curricula.

The changes in national curricula for General Education and Training and the phasing in of Curriculum 2005 are influencing all other teacher education providers (COTEP, 1998). For example, the defining of 'environment' as a cross curricular phase organiser in Curriculum 2005 (Department of Education, 1997) requires the teacher education sector to consider possibilities of including environmental education processes into both pre- and in-service teacher education programmes.

Other participating institutions in the project, namely the Universities of Stellenbosch, Rhodes and Venda are all in the process of re-orienting and re-shaping existing environmental education programmes or developing new programmes with this changed policy environment in mind.

These developments are positive in the light of the pressing need for sustainable development in South Africa, and the imperative to not only protect the country's natural resource base, but also to ensure quality of life in a healthy environment for all its citizens (Constitution of South Africa, 1996; RDP Document, 1995). However, the new policies find the educational community with very limited capacity to respond to the considerable challenges. This project therefore aims to enable participants to enhance their own capacity to respond to changes in their context, and it seeks to do so through the establishment of supportive networks and interactive collaborative processes based on principles of participatory research and professional development. Hall describes participatory research as "at the same time, an *approach* of social investigation, an *educational* process, and a *means* of taking action" (Hall, 1981:455 emphasis in original). *Note that the project supports an orientation to capacity building which views all participants as learners and educators* (NGO Forum, 1992) *able to enhance their own professional capacities in ways which respond appropriately to the complexities and challenges of their working lives.*

The Links Project

The overall focus of the project is the professional development of new and existing environmental education staff in participating tertiary institutions. The project is organised into four Activities which aim to develop curricula and materials (Activity 1), enhance existing programmes by reviewing courses and planning new courses (Activity 3) and review research capacity through reviewing and developing research supervision strategies and resources (Activity 4). Activity 2, which forms the focus of this paper, seeks to enhance research and professional capacity by working with colleagues in a process of workplace-based participatory research aimed at the development of original case studies of changing environmental education practice.

In this Activity 2, we examine developing case studies of changing practice as processes of professional development in two distinct ways: firstly as a moment in professional self-development, as participants reflect critically on the meaning and significance of their theories, policies, organisational arrangements and teaching practices. Secondly the emerging case studies themselves were seen as possibly forming the basis of useful professional development interactions with other (non-project participant) environmental educators in the future. The stage of Activity 2 reported in this article is concerned with the first of these - the process of developing original workplace-based case studies as/for an engaging contextual process of professional development. This article outlines our conceptual orientation as well as some of the participatory research processes and issues emerging from the first project workshop which took place over a period of three days.

The definition of case study that guided our work describes the process as:

> The study of particular incidents and events, and the selective collection of information on biography, personality, intentions and values, all of which allows the case study worker to capture and portray the elements of a situation that give it meaning (Walker 1980:33).

Following this perspective, the 'particular incidents and events' under study were of two kinds: the local environmental issues that affected or were actively drawn upon by participants in their environmental education curriculum; and the environmental education (pedagogical and curriculum) issues with which participants were grappling in their efforts to change their own practices. Photographs of local issues were used to 'capture and portray the elements of a situation that give it meaning'.

The starting points in our deliberations were the environmental and environmental education issues identified in particular workplaces - in short we were interested in exploring the idea of 'environment as text'. In this exploration of 'environment as text' we do not assume that the signifying experiences of everyday social life are analogous to and are fully captured in literary text. Disembedded text can be read in multiple ways, exposing a dynamic relationship among 'author, text, and audience' (Popkewitz, 1991:25). We draw on Popkewitz's (1991:25) reading of Giddens' view which indicates that social life is fundamentally complex and therefore different from the pages of a literary text. In referring to 'environment as text' we therefore recognise the fundamental complexity of social life, of environmental issues in diverse contexts, and of the environmental education issues which emerge from educational engagement in

response to these complex issues. Our perspective on 'environment as text' therefore reflects a dynamic relationship among 'author, context and audience'.

As participants presented, in a workshop situation, their illustrated accounts on developing case studies, the ensuing discussion was recorded on computer as people talked, and themes were identified for further development (through iterative discussion and refinement) during the course of the first project workshop. Ensuing days began with analysis and critique of overnight summaries of each previous days' deliberations by all concerned.

The next section presents a short description of the case studies being developed by participants.

PART 2: THE PROJECT-IN-ACTION: THE CASE STUDIES

The case studies described in this section indicate a range of insights and perspectives on environmental issues and environmental education issues which portray the diversity, particularity and contextual nature of environmental education. As workplace-based examples, the case studies illustrate some of the different ways in which South African tertiary educators are attempting to respond to the need for sustainable development and social change through education.

Case Study 1: Environmental issues as curriculum focus at Shingwedzi College

Khensani Mabunda is a lecturer in the Geography Department teaching Junior Primary Studies at Shingwedzi College. Khensani has recently been tasked with the development of an environmental education course for foundation phase student teachers. The initial photography work of his case study reflects a range of related environmental issues relevant to the setting of his college. Through the use of these photographs, Khensani was able to report on the nature and extent of waste management issues in the area. This included dumping in areas which affected the course and quality of a local river. In the Shingwedzi area many homes are still not supplied with running water and local communities are often dependent on nearby rivers for drinking water, cooking and washing. This issue was demonstrated through a further set of photographs illustrating water shortages at the college. The college provides residential accommodation for about 500 students.

Other photographs in his collection indicate a range of problems, risks and environmental impacts associated with poverty (including health risks). The conditions of work among the women and children working in street markets raised the point of considering poverty as an issue in itself, and not only issues which are a result of poverty. Another issue affecting the lives of local people was depicted through pictures of a local mine which had been closed down. The pictures reflected severe ecological degradation in the mine area, and Khensani reported that the pollution of nearby water sources was detected when goats died from drinking the water. This risk indicates the socio-historical and socio-economic causes and impacts of many environmental issues, which are often particular in their origin.

Khensani hopes to use these issues as a starting point for the development of the curriculum programme for the foundation phase course in environmental education. While he works in the Geography Department, other colleagues in the Health and Biology Departments have shown interest in this course, indicating the potential for cross-curricular work around environmental issues at college. He intends involving his students in the curriculum development process by encouraging them to investigate different aspects of the socio-historical and socio-ecological environment in the college setting.

Case Study 2: Environment and Society: Issues-based curriculum development at Thlabane College

Khantse Diutlwileng is a lecturer in the Geography Department at Thlabane College. With Tsabuki Makou, a colleague in the Science and Technology Department, she is developing issues-based curricula for the theme 'Environment and Society'. They have chosen to use this participatory research opportunity to address the issue of AIDS at their college. This issue is becoming critical in the local area and is affecting students, teachers and colleagues on campus.

Although global and broader national initiatives have been launched to address the AIDS issue, Khantse and Tsabuki felt that the issue should be addressed at a local level through educational programmes which would be socially and culturally sensitive in context. Khantse reports that there are a number of area-specific and culturally-oriented debates about AIDS, including a concern for the causes of the problem which include mining, homosexuality, prostitution

serving the mines, and levels of literacy. About 33% of the area surrounding the college is occupied by large scale mining.

Khantse sees the unfavourable response to AIDS educational programmes among local people (even by groups with higher literacy levels) as a further problem in addressing AIDS in the area. To provide education-al programmes which are to be relevant and 'accepted' by local people, Khantse highlights the need to explore a range of context-specific debates about the AIDS issue. Cultural considerations and culturally-based justifications of sexual practices are important to grasp. For example, the use of medicinal herbs are being said to be a possible cure for AIDS. There appears to be a tension between the use of indigenous knowledge and traditional medicine and scientific knowledge and Western medicine in the debates about AIDS-related treatment in the Thlabane area. Her analysis of the issue indicates the complexity and the socio-historical and socio-cultural causes and impacts of the issue.

In developing an issue-based curriculum around the above, Khantse and Tsabuki are experiencing problems in accessing information about the issue. To date they have had to use secondary sources of infor-mation (friends, local people etc.) as authorities in the area are unwilling to share sensitive statistical and other information with them (indicating the social sensitivity about this issue, and thus about the related educational programmes). To this end they have embarked on interviewing stakeholders to ascertain the range of perspectives and views about the issue in the local area. From this information, they intend drawing up modules for INSET, PRESET and community education programmes at the college.

Case Study 3: The formation and activities of a teachers' environmental education network in the Northern Region of the Northern Province

Two of the project participants, Edgar Neluvhalani and Shoni Mphaphuli are collaborating on developing a case study about teacher networking in environmental education. Edgar works at Tshisimane Community College and runs INSET programmes. Shoni works at the University of Venda. She is developing a B.Ed. module on environmental education, and hopes to use the case study process as a possible method to replicate in the B.Ed. course. Edgar and Shoni decided to use this participatory research opportunity to engage with a group of teachers already active in the region.

An environmental education teachers' forum has been established and has been active in the area for some time. This forum is supported by the provincial Department of Environmental Affairs and Tourism, whose environmental education officers provide support, resources, and communication facilities to the teachers. The forum is organised through a regional committee with a chairperson, vice chairperson, a public relations officer and six area committees, in turn broken into 27 circuit committees.

This extensive Teachers' Environmental Education Forum is involved in a number of activities including workshops, competitions and video shows at schools and environmental clubs. The Forum has also identified a number of specific projects and themes for the year. Shoni and Edgar are interviewing representa-tives from the forum. They have identified problems and a number of benefits including resources, access to information, managerial skills and moral support.

Through Shoni and Edgar's participation in the Links project and their work with the Forum, teachers from the six areas will be involved in investigating a local environmental issue as a focus for school-based curriculum development and INSET.

The complexity and diversity of environmental issues in the area were highlighted through a pictorial report-ing of the issue of waste management in the Thohoyandou area (one of the areas active in the Forum). Shoni and Edgar's photographs depicted unattended, overflowing waste bins, with open cooking taking place nearby. Discussion on the issue indicated health risks and economic issues related to poverty and competition for livelihoods. The pictures indicated the political dimension of environmental issues and highlighted some of the controversies surrounding waste management practices of the local council. Shoni and Edgar reflected that this was one of the many environmental issues facing the northern region of the Province. For example in the Mutale area, deforestation was seen to be the major issue which teachers would need to address through school-based curriculum development within the forum.

Case Study 4: Participatory learning programme development in Grassy Park

Chris Reddy is a lecturer and researcher at Stellenbosch University. He has a particular interest in curriculum research in environmental education, and chose to use the Links project as a professional

development opportunity to develop a case study on participatory curriculum development with a group of teachers in the Grassy Park area in Cape Town. He is working with eight schools which joined the programme voluntarily. The focus of his work is on introducing primary school teachers to environmental education processes within the Curriculum 2005 framework. The pictures in his case study reflect a process of issues-based curriculum development around the issue of water quality of a local river. He indicates that the river quality is affected by water hyacinth, canalised rivers, storm water problems and inadequate responses by the Transitional Local Council who are responding to symptoms of the issue, rather than causes. He indicates how this issue was linked to a broader issue, the pollution of the Zeekoeivlei.

Using this issue as a focus, Chris has started working with the teachers to develop a learning programme based on water pollution. This process of learning programme development has already progressed through a number of stages.   Through this process teachers are starting to take on the role of curriculum developers, and through the project, they are given opportunities for critical reflection on their practice. The process of collaborative, localised learning programme development forms a key focus of his work.

Chris hopes to address some of the tensions he is experiencing in the project related to his roles as researcher and facilitator in the process.   He sees participation in Activity 2 as an opportunity for professional development for himself as researcher and would like to explore the dimensions of being an 'insider researcher' and participant as a process which values self learning in research.

Case Study 5: Student participation in creating texts for learning at Rhodes University

Heila Lotz and Nicola Jenkin are both staff members of the Rhodes University Environmental Education Unit. They are working together to develop a five-session curriculum module for environmental education in the Higher Diploma in Education (HDE) course.   This is the first time that Nicola will be teaching the course. One of the tensions they are attempting to address centres on the need for a curriculum process which will involve the students and cover key environmental education concepts and educational policy changes in the short time period of one week. Heila and Nicola have decided to use the professional development opportunity provided by the

Links project to reflect on the development of this curriculum module within its particular situational constraints.

In planning the module, Heila and Nicola considered the national policy changes in both the educational and the environmental policy arena. This included the new focus on environmental education processes as a cross curricular phase organiser in all learning programmes. To focus these and other key concepts within the one week, the theme of waste management was chosen to contextualise the course. An excursion to a hazardous waste management site, a unlicensed landfill site and a nearby community affected by waste management disposal formed part of the course. The course assignment is to draw up a learning programme on waste management for any Curriculum 2005 phase and learning area.

To enable the student group to participate in the development and interpretation of this module, they have been asked to take a range of photographs reflecting waste management processes and issues in a number of Grahamstown schools. These photographs will be used to initiate critical discussion and debate about these issues in the course. The pictures would be used as focus for learning programme activity development including school waste auditing.

Case Study 6: Exploring environmental concepts and activities in a PRESET teacher education programme at Stellenbosch University

Lesley le Grange, a lecturer and researcher at the University of Stellenbosch, is developing a case study on exploring new approaches to science education within the new policy framework. Ongoing debates about environmental education in school curricula provide the background for his focus on integrating environmental education concepts and processes within the Natural Sciences learning area. To support this work, he has participated in the development of materials which can be used in PRESET and INSET contexts to introduce environmental concepts and processes to the Natural Sciences learning area. The concept of sustainability is one such example and one module has been developed around the theme of 'Science and Sustainability'. He aims to involve HDE students at the University in developing school-based activities for inclusion in additional materials in the series.

Through this PRESET programme Lesley is exploring different approaches to learning programme development and has introduced some of the concepts of

Curriculum 2005 to the students through the use of activities in the materials. At the same time he has been working with different teaching methods and processes such as concept maps and workshops with the students.

Some of the contextual constraints in the programme include limited time for working with students and the institutional culture of learning which is examination-driven and product-oriented. He has decided to research the professional development of the students during his course and has initiated a process of journal writing, interviews and regular critical reflections.

PART 3: THE PROJECT-IN-ACTION: EMERGING ISSUES

Our intention in this section is to proffer an early perspective on several issues that seem to be emerging from this professional development activity. The two-year project is at an early stage, and our understanding of these issues may well change over the next several months as the case study work introduced above continues to develop.

Environment as text: the complexity of environmental issues

In environmental education, the starting point is unavoidably 'the environment', however we might understand that concept. In environmental education, some educators have come to regard the environment as 'text' - as a source of curriculum activities and content (Staples, 1997). One construction of environmental education is that it is the educative exploration of environmental issues - that the study of environmental issues forms the focus, activity and content of environmental education curriculum (Greenall Gough & Robottom, 1993). The 'environment as text' notion has important implications for professional development in environmental education, partly because of the inescapable diversity and contextual complexity of environmental issues, and partly because environmental issues cannot simply be read like conventional discursive text - environmental issues must be experienced to be fully understood. Khantse and Tsabuki's description of the socio-cultural implications of localised interpretation of the AIDS issue in the Thlabane area (Case Study 2) indicates the futility of working exclusively with globalised interpretations which often frame pre-determined or pre-packaged issue-based educational programmes. This case study draws our attention to the reality that local dimensions of environmental issues are often particular and different from abstracted and generalised global dimensions.

The descriptions above also indicate that contextuality in environmental education does not only refer to a description of context as setting or location, but also reflects the texture and diversity of social and educational life and the socio-historical and socio-ecological complexity of environments. Importantly, it also includes the often strongly held emotions that people involved in such issues usually evince. While environmental issues are clearly social constructs - like all issues they consist in and are defined by differences of opinion, belief and practices among human beings - they nonetheless have impacts on people's lives that are real enough. Several of the environmental issues reported in the workshop involve situations of risk, where the livelihoods (and often the lives) of people are at stake.

In dealing with the environment as text, one is unavoidably dealing with socio-environmental contexts that are highly idiosyncratic, distinctive and particular. In the examples provided by Khensani's case study (Case Study 1) of the environmental issues near Shingwedzi College, this diversity is clearly demonstrated. He makes the point that while, for example, the waste management and poverty issues near Shingwedzi College and in Thohoyandou (which are geographically separated by a distance of only 40 kilometres) may on the surface seem similar, these issues have different socio-historical roots and differing impacts which ought to be considered in environmental education curricula and programmes. Through the use of photographs and reporting on the diversity and interrelatedness of the different environmental issues which affect the lives of people living near Shingwedzi College, Khensani was able to explore the notion that environmental issues are often multi-dimensional in one space or location, often not 'visible' or conspicuous, but only perceived as risk(s). The example of the long-term impact of the mining activity on the underground water resources, and the impacts of poor waste management practices on water quality in an area which has no alternative water sources for domestic use, illustrates this point clearly. For professional development in environmental education to be useful, it needs to recognise the complexity of the environmental issues that form the substrate for its curriculum activities.

Respecting curriculum diversity in environmental education

In the above case studies and descriptions we have indicated some of the implications of responding to the idea of environment as text in professional development processes. Environmental education has been

widely recognised as a response to the environmental crisis (IUCN, UNEP & WWF, 1991; UNCED, 1992) and many examples exist of environmental education processes which attempt to respond to environmental issues and risks through educational programmes, curricula or pedagogical processes (Janse van Rensburg, 1998). The case studies being developed in this project provide some insights into developing environmental education processes which attempt to respond to the particularity and contextuality of environmental issues. The case studies also illustrate that while environmental issues are complex and require contextual interpretation, the educational processes which are developed in response to this complexity are also themselves diverse and problematic. In addition to the complexity of the subject matters (environmental issues) of environmental education, environmental educators have to deal with a number of curriculum development and pedagogical issues arising in different teaching and learning environments. In Lesley's case study (Case Study 6) for example, he describes the need to change the institutional culture of teaching and learning, and is exploring different concepts and methods in response to these pedagogical issues. He is also exploring epistemological issues relating to changes in the sciences and the implications these may have for environmental education processes within the sciences learning area. In Chris Reddy's INSET teacher education case study (Case Study 4), he is grappling with a number of process issues which range from localised learning programme development with teachers to issues of redress and empowerment for teachers who were previously denied any responsibility for curriculum development. The establishment of participatory processes, relationships and defining of roles in INSET work are emerging as key features of his work.

In Heila and Nicola's case study (Case Study 5) they are confronting a range of curriculum development issues dealing mainly with the need to establish participatory curriculum processes with students within time constraints. These processes need to be congruent with orientations to outcomes based education and environmental education which recognise complexity, contextuality and need for change in curricula and pedagogy. In Edgar and Shoni's case study (Case Study 3) they are faced with the issue of supporting a wide range of teachers in the region to develop locally relevant environmental education programmes. To address this need, they are investigating the role of teacher networks and collaborative partnerships while paying attention to the development of programmes which take account of the contextuality of 'environment as text'.

These examples show that environmental education processes are socially constructed within professional development settings which in themselves are diverse, idiosyncratic and particularised. These teaching and learning contexts tend to have unique socio-historical origins. Through the developing case studies and the research-based professional development processes in this environmental education project, we are able to explore ways in which such processes may enable participants to enhance their understanding of the complexity of their own work.

Thus we have sought to establish the doubly complex nature of the field: environmental issues (the subject matter of environmental education) are complex; and environmental education issues (those of a pedagogical and curriculum nature) are diverse, idiosyncratic and particularised.

Workshops as a model of open, reflexive research processes in professional development

Workshops are increasingly being used as a forum for engaging participation in research processes (Hart, Robottom & Taylor, 1994; Klein, 1997; Lotz, 1996). As such, workshops provide opportunities for interaction, reflexive and collaborative engagement around substantive issues and opportunities for recurrent review of such issues. Initial critical reflection on workshops as research strategy in this participatory research process indicates a number of methodological and process issues which will be monitored within the development of the project as it unfolds.

If workshops, as participatory research strategies, are to be responsive to the diversity and complexity of the issues at hand (described in the above case studies) workshop processes need to be open-ended and essentially emergent within the context of the project. The tension between the need for structure on the one hand (influenced by time, space and project outcome constraints), and open and reflexive workshop processes on the other, begins to challenge the traditional conception of 'workshop facilitation' and the role of workshop facilitators in participatory research. The notion and method of 'facilitation' in open, reflexive participatory research processes raises both ethical and power related issues (Lotz, 1996). Some questions for ongoing consideration in the life of this project may therefore include: What role do/should the workshop facilitators play in guiding the process and what are the methodological implications of this? What are the overlapping dimensions or 'boundary dwelling' features (Stronach & McLure, 1997) of workshop participation and of facilitation in this participatory

research method? In this project, for example, one of the workshop co-ordinators is a project participant involved in developing a case study.

A further difficulty in conducting participatory research workshops is the tension between the reality of time and space limitations, and the need for iterative processes of analysis and reporting on a number of diverse contexts. For example, the subjectivity of summary reporting of discussions needs to be acknowledged and explored through collaborative analysis and critique of successive drafts. Negotiation of accounts is an important component in ensuring validity and rigour, but it is also time consuming. A common response to this tension is to 'commodify' professional development processes, for example the practice of providing allegedly generalisable pre-packaged solutions to the problems of changing educational practice, at times offered within participatory processes. Confronting these and other methodological and process-based tensions within the life of the project, in ways which avoid modernist and social engineering solutions, will provide ongoing challenges to the reflexive, participatory and contextualised nature of this activity within the Links project.

The role of case study in professional development in environmental education

There is a *prima facie* case for the use of case studies in professional development in environmental education. As we have demonstrated in this article, environmental issues are highly contextual. Since these are the subject matters of much of environmental education, the professional development issues associated with this form of curriculum are also highly contextual. Case study as a research process respects the particular and celebrates the idiosyncratic; its epistemology is subjectivist rather than objectivist (Robottom & Hart, 1993) and it is interested in the distinctive elements of a situation that give it meaning (Walker, 1980). Its biographical orientation allows for the often diverse contextualised constructions of meaning and significance in environmental issues.

The approaches which are emerging in the current Links project can be seen to form part of an increasing body of research attempting to explore different orientations to and research-based processes of professional development in environmental education. Many of these initiatives indicate that there are different ways of developing, utilising and viewing case study in/as research-based professional development. For example, case studies have been used as a source of vicarious experience upon which to base discussions

about the environmental education work of others, and as exemplars of reflective practice in the field (Andrew & Robottom, 1995a,b). In other examples, case studies have been used as a method for researching particular substantive issues, and as a means of articulating these for further debate at other forums (Mabunda, 1998; Robottom, Malone & Walker, 1998). In South Africa, assignment-based case studies (limited in scale and extent) have been used as a means of encouraging reflexive professional development through descriptions of workplace-based programme or materials development in an environmental education course for adult learners (Janse van Rensburg & Lotz, 1997). What is clear from these and other approaches to research-based professional development in environmental education (for example, Fien, 1993; Posch, 1994) is that there are differences in status and purpose ascribed to the use of case studies and other materials produced in these approaches.

In Activity 2 of the Links project, case studies are central for two reasons. Initially, the development of case studies by participants themselves exercises the skills of participatory research as an approach to self-reflective professional development. Subsequently, these same case studies may be useful in supporting professional development activities for other teachers and teacher educators in environmental education in South Africa. At this stage of the project, the case studies being generated indicate the potential of adding to understandings about the role that the process of actually developing case studies can play in research capacity building in a professional development context in South Africa. This relates closely to current work being undertaken in the research dimension of the Environmental Education Curriculum Initiative (HSRC/EECI, 1998).

CONCLUSION

The work described in this article relates to Activity 2 of the Australia-South Africa Institutional Links project "Educating for Socio-Ecological Change". The focus of Activity 2 is research-based processes of professional development in environmental education. We have described some of the initial processes and issues associated with a three-day workshop conducted in the Northern Province - the first major professional development event in this two-year project, which involves six South African and two Australian tertiary institutions.We have argued for participatory research-based approaches to professional development, in which participants in the project respond to the necessarily contextual nature of environmental issues and environmental education issues by

engaging in the generation of case studies of their own environmental and professional contexts - case studies that preserve and build on the diversity and complexity of context as a starting point for curriculum development in this field. We raised some of the tensions associated with the conduct of workshops aiming at inclusive, participatory processes, and continue to address the role of case study in professional development in environmental education. This article therefore represents some first steps in an ongoing exploration of the implications of 'environment as text' in professional development.

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