

Encountering Paradigmatic Tensions and Shifts in Environmental Education

Tšepo Mokuku, National University of Lesotho, 'Mantoetse E. Jobo, Lesotho College of Education, Mochaeka Raselimo, National University of Lesotho, Tšeliso Mathafeng, National Curriculum Development Centre, & Karl Stark, Lesotho Environmental Education Support Project, Lesotho

Abstract

In response to environmental degradation, the Lesotho government, in collaboration with the Danish government, introduced an Environmental Education Support Project in schools in 2001. In order to optimise the achievement of the project goals the, Monitoring and Research Team was established to formatively evaluate the project as it unfolded. The principles of action research were to guide the monitoring process. The paper discusses the findings of the early phase of the monitoring process with reference to the project's epistemological commitment to initiate paradigmatic shift, in the context of conceptualizing environmental education and the associated learning theories and teaching approaches through workshops with relevant stakeholders in the school curricula development. It is illustrated that the workshops initiated cognitive tensions and shifts amongst the participants, and that their occurrence was indicative of the interrogation of the positivist paradigm underpinning the education system in Lesotho.

Résumé

En réponse à la dégradation environnementale, le gouvernement du Lesotho, en collaboration avec le gouvernement danois, a introduit un projet d'appui à l'éducation environnementale dans les écoles, en 2001. En vue d'optimiser les accomplissements des buts du projet, on a monté une équipe de recherche et d'observation pour faire une évaluation formative du projet au fur et à mesure qu'il se déroulait. Les principes de recherche active devaient guider le processus de contrôle. Le texte discute des observations de la phase initiale du processus de surveillance en référence à l'engagement épistémologique du projet qui est d'initier un changement paradigmatique et ce, dans le contexte de la conceptualisation de l'éducation environnementale, des théories d'apprentissage et des approches pédagogiques qui y sont associées, par des ateliers donnés par des partenaires compétents dans le développement des programmes d'études des écoles. On y montre que les ateliers ont initié des tensions et des changements cognitifs entre les participants et que leur occurrence reflétait les interrogations du paradigme positiviste soutenant le système d'éducation du Lesotho.

The Lesotho Environmental Education Support Project

The Lesotho Environmental Education Support Project started its operations in August 2001. The stakeholders of the project were all key institutions involved in school curriculum development process in Lesotho. They included the National Curriculum Development Centre, Teacher Education Institutions (the National University of Lesotho and the Lesotho College of Education), the Examinations Council of Lesotho, the Education Inspectorate, and Primary and Secondary schools. The project had a lifespan of three years and was expected to assist the National Curriculum Development Centre in its endeavours to integrate environmental education into the curriculum. The National Curriculum Development Centre is a central body for developing the national curriculum for schools. Given the available human and financial resources, it is expected to engage in the practical implementation of the integrated environmental education curriculum through “model schools.” The model schools are in return expected to disseminate their experience to neighbouring schools. The project later worked with 20 model schools, each of which is expected to work with 2 to 5 neighbouring schools. The latter are, in turn, expected to work with other neighbouring schools and so on through a cascading model, until all schools in the country are reached.

The original project document for the Lesotho Environmental Education Support Project had no provision for a monitoring and research component. During the project’s inception period, the project staff together with the host institution, the National Curriculum Development Centre identified the need to add a research component which could monitor and critically support the project during its life span. The environmental education conceptualization workshops began early in 2002, and the monitoring research soon followed in March 2002. The project is intended to undertake 10 school-based staff development workshops in each of the twenty model schools distributed throughout the country despite its mountainous topography, with two full time project staff facilitating. The authors of this paper are members of the Monitoring and Research Team comprising members from the stakeholder institutions.

The present paper is based on a preceding workshop aimed at introducing and conceptualizing environmental education with relevant school curriculum development stakeholders prior to engagement with schools. While we were identified as appropriate members for the Monitoring and Research Team, due to our key role in school curriculum development activities, we undertook the monitoring work alongside our regular time schedule of full-time work in our respective institutions.

Some Features of the Educational Paradigm in Lesotho

The concepts of the “paradigm” and “paradigm shift” are associated with Thomas Kuhn, an American Philosopher, in the *Structure of Scientific*

Revolutions (1962). According to Kuhn a paradigm is a composite of indisputable assumptions based on concepts and theories guiding thought, research, and the shared worldview. He refers to “normal science” as an example of a “paradigm” in that it is “. . . firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundations for its further practice” (p. 10). Drawing on the political school of thought, he uses the concept of “revolution” to describe a shift from an “old” to a “new” paradigm:

Political revolutions are inaugurated by a growing sense, often restricted to a segment of political community, that existing institutions have ceased adequately to meet the problems posed by an environment that they have in part created. In much the same way, scientific revolutions are inaugurated by a growing sense, again often restricted to a narrow subdivision, of scientific community, that an existing paradigm has ceased to function adequately in the exploration of an aspect of nature to which that paradigm itself had previously led the way. (p. 10)

The origins of the existing education paradigm in Lesotho may be traced to the colonial education system, which was introduced in the 1800s. It is primarily a legacy of the British education system, which was informed by modernist ideas. Arguing from a European perspective, Surgrue (1997) explains Modernity as follows:

For a period of approximately three hundred years, from the time of the European Enlightenment until the middle of the present century, knowledge was primarily influenced by Rationalist thinking. Knowledge was thought to exist independently of individuals, it was out there, waiting to be discovered, it was objective and God-given. Therefore, there was one reality and with it came an arrogant certainty. The Enlightenment was hailed as tremendous breakthrough providing a real break with the medieval world which, according to Enlightenment figures was characterised by superstition, myth, magic and religion. The triumph of reason led to the development of science and this in turn fuelled the industrial revolution, colonisation etc. (p. 20)

This monolithic view of reality paved the way for the European expansion of Christian religious knowledge in 1833 and the colonial rule to Lesotho in 1868. After attaining political freedom in 1966, Lesotho turned to the former colonial power, Britain, for a model of curricula development. Consequently, the existing paradigm in education reflects Modernist features. These include approaches to curriculum development that are rational, linear and technical, thereby ignoring the context and multiple reality of schools and classrooms as experienced by teachers and students (Surgrue, 1997), teaching and learning organized on positivist framework (Robottom & Hart, 1993) and characterized by constructs such as the subject system, the examination system, attachment of value to pre-ordinate abstract knowledge and certification, disregarding skills and knowledge that people have acquired outside the formal

education—“diploma disease,” academic education system meant for white collar jobs (Mokhosi, 1982), exclusion of the participation of the broader society from the education system (e.g. from contributing their generated knowledge), continued exclusion of the local knowledge systems from the education system (Moletsane, 1982), and predominant implementation of the concepts and paradigms not locally generated. Apropos is the occurrence of teaching and learning in many schools, historically owned by the Christian religious institutions, in contexts that foster allegiance to the Christian world-view as the only viable religious paradigm. Freire, in the *Pedagogy of the Oppressed* (1970), argues that the oppressed tend to take on the concepts of the oppressor, meaning that they tend to take a “conformist” stance to a system that does not serve their interest, even to the point of supporting it themselves. This generates an emotional dependence in the oppressed. This may account for Lesotho’s continued uncritical dependence on the colonial educational system and the associated advantaging of a singular traditional European view of reality.

Considerations for a Paradigm Shift

Based on our analysis of the established educational paradigm as outlined above, the key features of the proposed project activities were tantamount to a paradigm shift; these included: the whole school development approach as a strategy for ensuring a contextual and collaborative approach to bringing about change; fostering of reflective practice among teachers and developing critical thinking and democratic competencies in teachers and learners (Hansen, Rohde, & Stark, 2001). Cognisant of the problems associated with imposition of the paradigm across cultures the Monitoring and Research Team attempted to create dialogue for interrogation and critique of the colonial inherited Modernist tradition as well as the “new” ideas of the project.

In its analysis of the project orientation, the research team found it largely relevant to the post-colonial context, but that it could further be contextualized by considering the following features of the Basotho culture which have historically been marginalized from the formal Modernist-oriented education:

- Story-telling/oral tradition is an important element of the Lesotho culture and paradigm. Promoting story-telling among learners can enable them to freely express their thoughts and develop their ability to communicate effectively. This is particularly relevant in view of the text-book based and didactic teacher-centred practice of teaching in schools.
- Indigenous knowledge: this includes intuitive and spiritual knowledge systems. These knowledge systems need to be “rationalized” and be integrated into the education system; school knowledge is currently dominated by concepts and theories developed outside of the Lesotho context.

A post-colonial critique that initiates a critical dialogue that addresses the roots of environmental degradation could also draw useful concepts from post-modernism (Surgrue, 1997) and critical pedagogy (Freire, 1970). From the postmodernist perspective we recognize the significance of “awareness, acceptance and respect for a multiplicity of worldviews rather than one objective reality” and that “knowledge is subjective, man-made, tentative and contested” (Surgrue, 1997, p. 25). Through critical pedagogy, we acknowledge the importance of humility, mutual trust, collective effort, constant dialogue, and “revolutionary praxis” in transforming “oppressive” contexts that shape our consciousness and unsavoury realities. The “dialogical action” draws on the strength of people’s own culture as a creative act and vindicates the oppressed by providing an alternative vision of the world to the one imposed (Freire, 1970). These theories provide emancipatory tenets for cognitively and culturally subjugated post-colonial societies, and a sound basis for a meaningful dialogue on environmental degradation in this context.

Research Methodology

As part of the research process, the Monitoring and Research Team attended four environmental education conceptualization workshops and held reflective post-workshop meetings with project staff, with the aim of reflecting critically on project activities for improvement. It was agreed that the principles of participatory action research (McTaggart, 1997) should be used to guide the monitoring and research activities. These included *critical reflection* on practice, and as *participant observers* at workshops. We observed activities and engaged in reflective dialogue with the participants on the proceedings, and our role was to act as *critical friends* of the project who critiqued the project activities and approaches with the overall aim of improving the impact of the project. The Monitoring and Research Team members already had experiences with and knowledge of the method to varying degrees. It was agreed to share some literature in order to clarify the method further. An action research workshop facilitated by a resource person with a long experience with the method in the Lesotho educational context was also held during the course of the research. At this session, aspects of the research methodology applied by the team were intensively discussed. These included the characteristics of action research, the critical theory, and the Hermeneutic tradition (Riceur, 1981; Gadamer, 1989), distinction between facts and interpretation, evidence of data and its use for interpretation, reflection as well team members’ role as “critical friends” (Winter, 1989) of the project.

The Project had emphasized the need for the team to understand the basic concepts and values pursued by the Project as this would enable members to be “loyal” and “critical” friends of the project. Loyal in this case meant consistent evaluation and monitoring of the project on the basis of its

underpinning paradigm. However, the team had the obligation to critically reflect on the contextual (outside) relevance of the proposed project paradigm as it unfolded in practice. The key concepts guiding the project activities towards the attainment of transformed educational practice were: *action competency, life-long learning, reflective practice, critical thinking, and constructivism*.

The data discussed in the following sections is based on interviews and critical reflections on the four environmental education conceptualization workshops with the Primary and Secondary school Subject Panel Members and District Resource Teachers, the National Curriculum Development Centre staff and the Examinations Council of Lesotho staff. The project staff referred to as consultants in this paper facilitated the workshops. The District Resource Teachers are government-employed teachers who are based in the ten districts of the country and provide in-service support to teachers in schools on curricula innovations. The subject panel members are representatives of schools and other stakeholders and constitute a committee that develops the national curricula for use in schools. These panels are coordinated at the National Curriculum Development Centre.

The interviews were guided by questions formulated on issues emerging from the workshops which were participatory and attended by key stakeholders in the attempt to foster ownership (Fullan, 1991) of the project at the early stage.

Individual Monitoring and Research Team members participating in the workshops formulated interview questions that they perceived to be critical for gaining insights into the participants' understandings and perceptions in relation to environmental education conceptualization. The interviewed workshop participants were randomly selected for individual and focus group discussions. The project staff who facilitated workshops were also either interviewed individually or in pairs. These interviews constituted the primary source of data, and the minutes of the meetings we had with the Project staff were also a data source. The emerging perceptions on environmental education and the associated teaching and learning theories and approaches constituted the core of the process of environmental education conceptualization at workshops and guided the data selection.

Data were analysed with a particular focus on exploration of contradictions, tensions, and dilemmas, in the conceptions of the workshop participants, which we regarded as indicators of conceptual shifts. This process was seen as an interrogation of the established paradigm, as mirrored in the conceptual framework of the participants. As such we monitored the project in terms of its epistemological commitment to initiate *paradigm shift* in the education system.

Findings

This section discusses the findings on environmental education conceptualization workshops focusing on emerging environmental education perceptions, learning theories, and teaching approaches.

The Concept of Environmental Education

At the District Resource Teachers' workshop the participants acknowledged the need for the alleviation of environmental problems through a *collaborative effort* among schools. Some District Resource Teachers were interviewed on their understanding of environmental education subsequent to the workshops. They associated environmental education with "working with communities to solicit support." One teacher thought that environmental education was like "... the messiah who has come to save." The first conception suggests that the workshop developed teachers' recognition of the complexity of the environmental problems in Lesotho and the need for the schools to tackle them collectively with the communities, and the association of environmental education with the biblical Messiah suggests that the conceptualization sessions also developed a high morale and optimism in environmental education as the answer for Lesotho's environmental problems. While the use of this religious concept (as a metaphor for environmental education) has positive connotations, it could also denote that the conceptualization process fostered a "fundamentalist" reductionist perspective of environmental education as a panacea for Lesotho's environmental problems, which may not be a helpful perspective in view of the complex socio-political and structurally rooted nature of many environmental education problems, the solutions of which lie beyond the realms of the school contexts. The perspective could also have been a consequence of the influence of the dominant Christian paradigm and had little to do with the orientation of the workshops. On the other hand, one participant's view that environmental education "... is not new, it exists in the syllabus," and that it was about "awareness of protecting the environment" alludes to the possibility of environmental education being viewed as "run-of-the-mill" concept, and evinces possible pessimism about what the concept had to offer.

At one workshop for District Resource Teachers, a number of participants (35% of the 20 District Resource Teacher participants) said that environmental education was not explained adequately and at another for Subject Panel members, a participant wondered, "... if people who do not know anything about environment have been able to grasp anything" and further said, "I was also expecting to be given information on what environmental education really is" The same participant further commented:

The approach is different; we are used to being given a lot of information where we are told of stuff and [given] a pile of handouts, so that in the evening we are reading in order to understand what is in the handouts.

This view is inline with the education consultant's opinion that their explanation of environment and environmental education had been brief:

... you can talk for hours about what should be taken into this area, environment, environmental education, so we made a rather brief ... speech for the start and ... we have written a paper which was distributed to all participants which they could read, when they have time

Based on these perspectives it can be argued that the approach to environmental education conceptualization workshop was not consistent with the teachers' experiences of workshops. This approach might have created some cognitive tensions in teachers. The environmental education conceptualization workshop was generally inductive and open-ended and involved a lot of activities, discussions, reflections, formulation of new knowledge, and provision of a few handouts. The approach was intended to be an empowering process that enabled teachers to create knowledge and thus shift from the traditional modernist paradigm of being receptive and heavily reliant on predetermined knowledge written in text for acquisition.

Another participant stated that it seemed the organizers already had an idea of how to teach environmental education when teachers thought this would be an open-ended discussion. This view illustrates the dilemmas facilitators often face when engaging the participants in "genuine" open-ended discussions, while at the same time have they "assumed right" answers. Open-ended discussions could also create insecurity in the case where the facilitator cannot take the challenge of ideas coming from the participants for fear of the possibility of the participants leading discussions to outcomes that were not initially intended for by a facilitator.

Learning Theories and Teaching Approaches in Environmental Education

The education consultants highlighted two learning theories and several key approaches to teaching environmental education at the environmental education conceptualization workshops. These were the *behaviourist and constructivist theories* and the following teaching approaches: *teaching about, in, and for environment, cross curricula approach, and continuous assessment*. These theories and concepts constituted key guiding ideas for the project (Hansen, Rohde, & Stark, 2001).

Behaviourism and Constructivism

The education consultants introduced the District Resource Teachers to two teaching and learning theories, the behaviourist and constructivist

theories. The following four levels of knowledge were also associated with the teaching and learning theories:

- Action knowledge,
- Judgement knowledge,
- Explanation knowledge, and
- Data knowledge.

The emphasis was on the importance of action knowledge. During the discussion, participants thought that the four levels of knowledge were already applied in schools depending on the subjects taught, learners' levels of knowledge and their experiences. Some participants argued that the teaching in schools was mainly paper-and-pencil examination-oriented and, therefore, not action knowledge based. The national syllabuses are currently constructed on the principles of Blooms taxonomy which places little emphasis on action knowledge. This implies that the attempt to initiate change in ways that promote action competency rooted in action knowledge in schools (Hansen, Rohde, & Stark, 2001), as conceptualized by the project team, might encounter problems as teachers could continue to teach inline with examinations.

Reflecting on the workshop for panel members, the consultant expressed a view that he did not believe that participants could “argue” and “develop explanations” on behaviourism and constructivism since they (the consultants) did not elaborate on the learning theories due to the “dense program,” and because of their intention to explain the concept without going “into depth.” This was inline with the observations of some interviewed District Resource Teachers which indicated that the facilitators hurried through their presentation. In the evaluation interview with secondary school panel members, one teacher associated the constructivism with *handicraft* since it is a practical subject, suggesting that the theory might have been limited to practical subjects and physical construction of concrete materials rather than knowledge construction.

The above account illustrates evidence of dilemmas that occurred in the process of critical discussions on the theories of teaching and learning. In trying to initiate change, in the limited time frame, the process became more prescriptive than open-ended and participatory. In trying to ensure a broad-based change and outputs, ambitious goals are set and quality compromised in the haste to achieve them in the limited time frame. It seems appropriate that the set goals, in similar projects, be considered as guiding principles instead of the yardsticks by which the performance of the project is measured. This would reduce pressure on project co-ordinators to rush through activities in order to achieve pre-determined outputs. The pace and direction of projects should instead be determined by the contexts in which the projects are implemented.

Teaching About, In, and For Environment

Another key concept introduced at the workshops was “teaching about, in, and for environment,” after Fien (1993). On the evaluation of the discussions, one participant explained that “teaching about environment” meant “even if (learners) remove litter or reclaim an eroded land, they do not do it because they want to, but rather they just do it ... because they are told to do so,” and that “learning about and in the environment means that they are exploring the environment to find out about what is there” This teacher framed the explanation on the normal practice in the schools where teachers typically instruct learners to clean up the surroundings, and questioned the imposition of “adult logic” (Numata, 2003) on children.

Concerning “learning for environment” the interviewees who participated at one workshop emphasised the importance of taking action to solve environmental problems. One stated that: “It is important that the school in modern society gain action competence to make a difference.” The teacher also associated the concept with lifelong learning, respecting nature and protecting it, teaching people “why” they have to protect the environment. Another participant “described learning for environment” as a “a new approach.” The participant stated:

Teaching for environment could be the starting point where learners can do something where there are *conflicting interests*. How can we expect learners to be able to solve problems when they get out of schools *if they never did while at school*. We have to go a little *bit further from what we normally do in science or geography*. It is not only to be informed about environment or what we see, but also what we do. We expect citizens of this country to be active, to have a say.

This illustrates that the conceptualization process engaged the participants with a broad view of environmental issues as concerned with competing interest, and not as merely biophysical phenomena, and challenged them to shift from the traditional paradigm, wherein the teaching of science related disciplines constitutes environmental learning.

There were also reductionist views that were not inline with the perspectives as explained by the education consultants. One interviewee explained that teaching in the environment involved “teaching it [environmental education] as a subject.” This statement reflects a positivist disciplinary-based view of knowledge that could, if applied in class context, limit the possibilities that environmental education presents to respond to environmental degradation. A further limiting view of environmental education emerged in a focus group interview following a workshop, where teachers explained that teaching for the environment meant “keeping the environment clean.” This suggests that environmental cleanliness could have been an important issue in their contexts, as typical of many school environments we have experienced. In this context matters of environmental-cleanliness may be interpreted

as a mere indicator of the failure of the modernist curricula to respond to the local environments. The perception of environmental education as a broad socially critical process of engaging learners in biophysical, socio-economic, and political systems (O'Donoghue & Janse van Rensburg, 1995) provides a basis for a deep conceptualization of environmental problems and concerns of significance in post-colonial contexts, and for re-constitution of more contextually responsive school curricula.

Cross-curricula Approach

A cross-curricula approach was introduced at workshops as a process that involved *integration* and *infusion* of environmental education into the curricula. These concepts have been widely used in environmental education discourse (Janse van Rensburg, 1998; Papadimitrio, 1996). The project staff explained that in non-biophysical disciplines such as languages and mathematics where learners develop skills of listening, reading, writing, and speaking, comprehension, and measurement, environmental education could be *infused*, whereas in predominantly biophysical disciplines, referred to as *carrier-subjects*, such as biology, agriculture and geography, environmental education could be *integrated*. Based on this nomenclature, however, the linking of topics in the discipline such as biology with a biophysical environmental theme such as “water pollution” is described as “integration,” yet the inclusion of a non-biophysical environmental education concept such as “democracy,” also part of the project content, could better be described as “infusion” in the same subject. As such, the nomenclature of infusion and integration as used in the literature (Janse van Rensburg, 1998; Papadimitrio, 1996) and in the present project, is not only conceptually inconsistent but also reflects a dualistic distinction between biophysical and non-biophysical disciplines, which could reinforce a limiting and limited disciplinary worldview in tackling complex environmental issues. From this perspective, the nomenclature was paradigmatically inconsistent with the newly proposed paradigm. The next school-based project activities could interrogate this nomenclature further in the context of teaching and learning in collaboration with teachers.

At one workshop for panel members, interviewed teachers stated that it was not difficult to infuse environmental education into the existing syllabus. However, we noted evidence of teachers experiencing difficulty infusing unfamiliar environmental concepts into disciplines. For example, in the activity where cross-curricula environmental themes were infused into disciplines, a history teacher who was unfamiliar with the meaning of the concept of “biodiversity” was unable to relate the concept to the subject. The same teacher had difficulty infusing the theme of “water” into the subject. This observation suggests that environmental education demands that teachers grapple with a number of complex and unfamiliar concepts traditionally in the domain of “other” disciplines, and to master and co-construct new

concepts, far transcending their familiar disciplinary boundaries. In this regard the education consultants observed that primary school teachers worked more easily on the exercise on cross-curricula teaching than secondary school teachers, and they attributed this to the primary school teachers' familiarity with multidisciplinary teaching.

Assessment in Environmental Education

The consultants proposed and argued for continuous assessment as an appropriate approach of assessment for environmental education. Currently, the Examinations Council of Lesotho centrally controls examinations, and its core functions include the setting and administration of national examinations. At the District Resource Teachers workshop, continuous assessment was associated with concepts such as diverse assessment forms, including assessment of practical skills that cannot be tested by pen and paper. It was noted that the Examinations Council of Lesotho had not yet responded to a call in section 1.4.2. of the 1992 "Basic Education for All" for the implementation of continuous assessment.

The workshops initiated critical discussions that exposed assessment anomalies in the presently established educational paradigm. The following issues on continuous assessment emerged during the discussion at the District Resource Teachers workshops:

- Continuous assessment may not be reliable because teachers are likely to inflate scores. This concern probably arose from the general perception emanating from the present paradigm in which passing final examinations alone means success in education and from the assumption that teachers would be incapable of administering continuous assessment.
- There was need for the National Curriculum Development Centre and the Examinations Council of Lesotho to collaborate closely to ensure compatibility between classroom teaching and assessment. These institutions have historically existed separately with a hierarchical relationship assumed to exist between them.
- Examining environmental education in subjects where it was going to be infused was described as likely to create problems. The assessment of existing subjects usually involves testing the learners' competencies in the subject-specific skills and content outlined in the syllabus. Therefore, the assessment of infused environmental education concepts might have been seen as a problem because the syllabi do not reflect environmental education outcomes. The syllabus attachments, currently being developed, are expected to guide teachers on how environmental education would be assessed in such subjects.

At the secondary school panel members' workshop, *Development Studies* panel member representatives expressed pessimism that the implementation of

continuous assessment might encounter problems. The Development Studies teachers had previously tried in vain to have the subject assessed as a practical subject. The workshop, however, crystalized the limitations and contradictions within the established positivist framework and the following critical views were raised in favour of continuous assessment during whole group discussions:

- that it is was an anomaly that students who won science exhibitions would not be rewarded for their performance in the final examinations in science; and
- that some students performed well during the year, but when they fail the final examinations they were regarded as having failed (in education) altogether.

The participants at the assessment workshop also noted that the present assessment system in Lesotho was informed by behaviourism, which was considered as a narrow view to assessment as it was oblivious of what the child actually knew. It was proposed that there be a shift to higher order questions informed by the constructivist theory and that the education system be decentralised. One participant, however, expressed concern about a drastic shift to higher order questions resulting in the high rate of failure for which the Examinations Council of Lesotho would be responsible. A concept of “fail” was also critiqued for labelling children who cannot meet academic requirements on pencil-and-paper examinations as failures.

From the viewpoint of environmental education, continuous assessment was articulated at workshops as a basis for assessing and developing action competencies among learners. A shift to a school-based system where teachers assess their own learners would enable a comprehensive and broad-based assessment of the practical elements of teaching and learning. This would accommodate the success of learners with strength in practical skills, holistic teaching and learning approaches, and possibly limit the prevailing high failure and drop-out rates. The consultants observed that the primary school teachers seemed to be relatively unfamiliar with the concept of “continuous assessment.” The meaning of this concept was also contested at the assessment workshop and it was noted that there was a need to develop a common understanding of the concept, and for teachers to be familiarised with it. At the assessment workshop, the participants took an initiative to develop a “three-year Development Plan for Continuous Assessment for Lesotho,” to guide institutions in initiating this mode of assessment.

The Monitoring and Research Team observed, at a reflection meeting held July 22nd, 2002, that the aims and visions concerning continuous assessment were challenging the actual teaching practice, the examination system as well as the current teacher competencies. The present general practice of examinations in Lesotho is to pass or fail learners on the basis of their performance in the final examinations that are centrally controlled; and in the attempt to

formulate examination questions that are relevant across all contexts, the Examinations Council of Lesotho sets generalized examinations which compromise the examination of specific contexts and issues of concern to different learners.

The proposed shift in examinations associated with environmental education, therefore, presented a challenge to the presently established examination system and other pedagogic practices.

Conclusions and Recommendations

The study reflects issues associated with the process of a theoretical conceptualization of environmental education in the context of workshops. The workshops were a prelude to the school-based environmental education staff development workshops, constituting the second phase of the project. The foregoing account highlights contradictions and tensions as indicators of paradigmatic interrogation of a predominantly positivist education system in the context of introducing environmental education in school curricula.

While this study does not reflect a broad-based engagement of the teachers and learners with the established education system, at this stage it provided an opportunity to interrogate the established paradigm. From this viewpoint, it is recognized that pre-determined concepts such as action competency, continuous assessment, teaching about, in and for environment, and reflective practices embedded in the process of conceptualizing environmental education in the first phase of the project became useful tools for grappling with the meaning of environmental education in the Lesotho context. However, pre-determined concepts have a potential for narrowing perspectives and exploration of possibilities and could close out the contextually emerging perspectives and knowledge, hence their use in classroom contexts would require a cautious and critical application process. This would constitute engagement with critical pedagogy, an emancipatory process in a predominantly prescriptive education system.

In this first phase of the project, the quality of the process of clarifying environmental education was compromised in the haste to achieve the goals of the workshop. The pace and direction of project activities need, instead, to be determined by contexts in which the projects are implemented. This approach would also allow for incorporation of indigenous knowledge that forms part of the school context; and this would constitute a fundamental dimension of educational transformation in this post-colonial context. It is anticipated that the next phase of the project, on *whole-school-development*, would provide more opportunity for contextually-focused processes. Such a contextually-driven process would require courage and trust amongst all those participating in the project. The second factor that had a bearing on environmental education conceptualization process was the

facilitators' held perceptions of environmental education, in that it interfered with their intentions to engage the participants in an open-ended process of constructing the meaning of the concept.

As the Monitoring and Research Team, we recognize the need for a broad-based exploration of a new paradigm. Such a process should be a collaborative work involving teachers in order to avoid creating new alienating orthodoxies; the next school-based phase of the provides this opportunity. It is further anticipated that such a shift could require many years of solid research and commitment that transcend the life span of the present project.

Notes on Contributors

Tšepo Mokuku was born and resides in Lesotho, where he lectures in Science Education to student teachers at the National University of Lesotho. He conducts consultancy work in science and environmental education. His research interests are curriculum development and community-based natural resource management. Tšepo holds an M.Ed. in Science Education from Wits University and a Ph.D. in Environmental Education from Rhodes University, South Africa.

'Mantoetse E. Jobo is a lecturer at the Lesotho College of Education. She is a specialist in agricultural and environmental education.

Mohaeka Raselimo is a lecturer at the National University of Lesotho. He is a specialist in geography education and he works in the Department of Languages and Social Education.

Tšeliso Mathafeng works at the National Curriculum Development Centre in Lesotho. She is a specialist in English curriculum development.

Karl Stark is originally from Denmark with environmental education experience in various African countries. In this work, he was a chief technical advisor for the Lesotho Environmental Education Project.

References

- Fien, J. (1993). *Education for the environment: Critical curriculum theorising and environmental education*. Geelong: Deakin University.
- Freire, P. (1970). *Pedagogy of the oppressed*. New York: Continuum.
- Fullan, M.G. (1991). *The new meaning of educational change*. London: Cassell.
- Gadamer, H.G. (1989). *Truth and method*. New York: Crossroads Press.
- Hansen, J., Rohde, K., & Stark, K. (2001). New generation for environmental education. In T. Mokuku, L. Bitso, & A. Lana (Eds.), *Proceedings of the 19th Environmental Education Association of Southern Africa Conference (EEASA)* (pp. 108-117). Maseru: EEASA.
- Janse van Rensburg, E. (1998). *Enabling environmental education as cross curricula concern in outcomes-based learning programmes*. Discussion Document. South Africa: Department of Education, Rhodes University.
- Kuhn, T.S. (1962). *The structure of scientific revolution*. Chicago: University of Chicago Press.
- Mokhosi, E.B. (1982). Modernisation and the development of education in Lesotho. In F. Shorn & A. Blair (Eds.), *Perspectives on curriculum and instruction: Teaching in Lesotho* (pp. 54-66). A UNESCO Publication.
- Moletsane, R.I.M. (1982). Indigenous education in schools. In F. Shorn & A. Blair (Eds.), *Perspectives on curriculum and instruction: Teaching in Lesotho* (pp. 223-232). A UNESCO Publication.
- McTaggart, R. (1997). Guiding principles for action research. In R. McTaggart (Ed.), *Participatory action research: International context and consequences* (pp. 25-43). Albany: State University of New York Press.
- Numata, H. (2003). What children have lost by the modernisation of education: A comparison of experience in Western Europe and Eastern Asia. *International Review of Education*, 49(1-2), 241-264.
- O'Donoghue, R. & Janse van Rensburg, E. (1995). *Environments and methods*. Howick: Share-Net.
- Papadimitrio, V. (1996). Environmental education within a science course in the initial education for primary teachers. *Environmental Education Research*, 2(1), 17-25.
- Ricœur, P. (1981). *Hermeneutics and the human sciences*. New York: Cambridge University Press.
- Robottom, I. & Hart, P. (1993). *Paradigms and the Ideology of environmental education research. Research in environmental Education: Engaging the debate*. Geelong: Deakin University Press.
- Surgue, C. (1997). Change in context: Back to the future. *Lesotho Journal of Teacher Education*, 1(1), 18-36.
- UNESCO. (1980). *Environmental education in the light of Tbilisi Conference*. Paris: United Nations.
- Winter, R. (1989). *Learning from experience: Principles and practice in action research*. London: The Falmer Press.