



Exploring Issues of Relevance and Quality in the Context of a University Programme

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Abstract

Quality and relevance in education are important considerations for university programme designs in today's competitive world. A relevant and quality education programme is likely to afford graduates the opportunity to fare well in the local, regional and international market and social environment. This paper draws insights from a mini research project that was conducted at the University of Botswana in Botswana, within a wider, collaborative research effort established amongst five universities in the Southern African Development Community which focused on the links between educational quality and relevance and environment and sustainability education. Other projects in this collaborative partnership focused on school and community links. This paper, however, explores issues of relevance and quality in the context of a university programme on environment and sustainability education. The data for the research was gathered through a questionnaire survey and focus group interviews. The results of the research provide insights into how a research-based course design process could enhance issues of relevance and quality in university education. An analysis of the research data generated in Botswana has revealed that the university programme investigated should emphasise the local context while taking into consideration that local context is shaped and informed by external contexts (national, sub-regional, regional and global). It is argued that this orientation could ensure that university graduates receive relevant and quality education.

Introduction

Universities are expected to produce graduates who can lead efforts to address development goals on various professional fronts in the context of sustainable development (UNEP, 2006). University programmes should therefore be tailored towards producing graduates who are ready to cope with uncertainties and poorly defined situations, and who are able to construct new realities from existing contexts and experiences. A relevant and quality university programme is one that would enable university scholars to examine the economic, social, political and environmental contexts in which the programme operates to ensure that graduates are equipped to address real needs and that their research is relevant and useable (UNEP, 2006). As part of the collaborative effort to enhance relevant and quality environment and sustainability education in southern African universities, the University of Botswana conducted a small-scale research project to find out what stakeholder perspectives were on quality and relevance issues in relation to a proposal to introduce a Masters in Education (MEd) Degree in Environment and

Sustainability Education at the university. This effectively represents a consultative curriculum design process informing the proposed degree.

The research project was in line with the University of Botswana's goal to 'promote collaboration and partnership' (ORD, 2007:2). It was also in pursuance of the University of Botswana's research strategy objectives 'to stimulate high impact multidisciplinary research' (ORD, 2007:2). The research data were generated through a questionnaire and focus group interviews involving academics and environmental practitioners in Botswana and within the Southern African Development Community (SADC). It emerged that collaboration on research of this nature can be both enriching and challenging to those engaged.

Conceptualising the Research: Theoretical Perspectives

The terms 'relevant' and 'quality' in education can be perceived differently by different scholars and researchers. Different contexts and purposes of education, as understood by individuals or groups of people, seem to be the determining factor in how these terms should be given voice (Maila, 2005). Maila argues that quality in education should not only be seen as quantifiable set standards, but must also be noted as *capabilities* (after Sen, 1999); that is, being able to act/perform and add value to one's or one's community's quality of life.

The former South African Minister of Education, Kader Asmal, in 2004, delivering a keynote address at the 2002 World Summit on Sustainable Development in Johannesburg, pointed to the global challenges faced by humanity, and reiterated the need for a relevant and quality education for the 21st century. He proposed that there is an urgent need to thrust the discourse of education into a new paradigm, and that we needed to do this in a substantive engagement with the challenges, 'so that we can formulate concrete actions, commitments and partnerships' (Asmal, 2004: 9). Asmal seems to suggest that an education that is relevant and of quality should enable people to face global challenges head-on, and must be based on concrete action-taking strategies that are thrust forward by committed individuals and collective(s) in a supportive engagement. According to Le Grange (2005), the concrete actions and commitments should not only be grounded on narcissistic reflexivity (personal reflexivity), but also on reformist reflexivity (the collective as agents of change for the good of all). Such substantive educational actions call for praxeological change.

However, Ketlhoilwe (2007) cautions that varying degrees of structural factors may constrain or enable educators (educationists included) in operationalising the goal of their education praxis, and that these factors must either be eliminated or be mitigated to ensure the implementation of sustainable development. For example, Ketlhoilwe points out a number of such constraining educational factors, one of which is the complex terminology in the syllabi and textbooks (about Education for Sustainable Development). Asmal's point is similar to that made by Ketlhoilwe on the complexity of education for sustainable development language when he says, '... too often have our deliberations resulted in the addition of new terms to the existing lexicon of sustainable development. Constructing this new paradigm is not about coining new terms – seductive as they may be ... it is about action' (Asmal, 2004: 9). We therefore

need to caution that quality education may be compromised by a number of contextual factors such as complexity of a particular field, as discussed above. While we are alert to this problem, it does not change our perspective that relevant and quality education ought to embrace a praxeological stance, and consider content-in-practice. Such a conception of quality education is deliberative in its knowledge construction approaches in order to produce knowledge that is context-based and inclusive of other ways of knowledge production besides those that currently dominate as 'scholastic reason' (Bourdieu, 1997) in universities. Environmental and sustainability education programmes at higher education institutions contribute to good quality teaching and learning (Bornman, 2004). In practice, quality education in the context of a higher education programme would be oriented towards enhancing transformative learning (UNEP, 2006; Wals & Corcoran, 2006).

Transformative learning aims at transforming society. It helps to bring about the fundamental changes demanded by the challenges of sustainability (Wals & Corcoran, 2006). Students would be 'more actively involved in the challenges in our time, and re-considering what we teach, and why we teach, what research we do, and why we do research is likely to introduce some new possibilities for adapting practice – and for innovation' (UNEP, 2006:26). Learning in the context of an environmental and sustainability university programme should aim at transforming society. Teachers would be expected to play the role of change agents (Wals & Jickling, 2002), while learners are actively involved in the learning processes. Transformative learning involves greater reconstruction of meaning, achievement of greater flexibility and less rigidity of thought and more emergence as a result of learning (Sterling, 2004). It requires pedagogy that enables and provokes students to move across levels of epistemic competence facilitated by the higher education curriculum. Inclusion of environment and sustainability topics and issues in higher education calls for a '... shift from transmissive methodology towards transformative methodology and a fundamental rethink of the academic mission of institutions' (Sterling, 2004:64). This argument proposes that higher education should become more participative and dynamic and embrace active learning processes based more on generating knowledge and meaning in context, and on real-world/situated problem solving than is currently the case (Sterling, 2004). Quality education in the context of environment and sustainability in a higher education programme requires re-orientation of the curriculum (both epistemology and pedagogy), as well as research innovations.

Curriculum re-orientation involves addressing *epistemological* challenges such as localising curricular to include local issues and concerns. This would involve a review of content and teaching and learning strategies to ensure that students are assisted to contribute to sustainability. A review of the content creates an opportunity to integrate social, economic and ecological issues. Local issues and concerns for sustainability may include culture, indigenous knowledge, gender, poverty, economic systems and sustainable communities – issues which have broader national, sub-regional and global contents as well as local contents, creating an interesting epistemological environment that embraces the local/global nexus. Such an approach to content would furthermore need to include a range of viewpoints to help students develop an awareness of the complexities of socio-ecological issues as well as their own view points to develop an understanding of a range of possibilities, embracing both complexity and reflexivity. Such a

content review would necessarily also include knowledge, skills, perspectives and values related to environment and sustainability, which are important to current and future societies (UNESCO, 2002), embracing both a values base for knowledge generation and an intergenerational scope for thinking about content. In addition, a re-orientation of the curriculum would take the key themes that underpin education for sustainable development into account. These include: overcoming poverty, gender equity, health promotion, rural transformation, human rights, intercultural understanding and peace, sustainable production and consumption, cultural diversity, and information and communication technologies (UNESCO, 2005). These have since increased to include some acute challenges that face us today, such as: human security, HIV/AIDS, governance, natural resources, climate change, sustainable urbanisation, disaster prevention and mitigation, corporate responsibility and accountability, and the creation of a more benign market economy (UNESCO, 2006). Reorientation of the curriculum in a southern African context would furthermore need to consider the holistic nature of education for sustainable development and encompass histories and principles of environmental education, the Millennium Development Goals and UNESCO's Education for All.

Scott and Gough (2004) argue that *pedagogically*, learning has to take place in a particular way, be learner-centred, draw together economic, environmental and social strands, and be applicable to a range of degrees of complexity. Quality education in the context of higher education will require pedagogies that consider the integrity of the ecological system, human health, learning and social skills, governance, justice, and positive values that contribute to and encapsulate sustainable society. Pedagogical discourse in the context of an environment and sustainability education programme would therefore revolve around promoting interdisciplinary learning, developing skills of analysis and problem solving, involving students in the learning process, and stimulating and facilitating understanding of action. It would also be based on changes in behaviour and attitudes (Scoullos & Malotidi, 2004). Scoullos and Malotidi (2004), however, neglect to focus on the changes required in structural conditions and enhanced forms of agency that allow for choice and deliberation. Such changes require critical, capability-centred and situated pedagogies (as discussed by Huckle & Sterling, 1996, Sen, 1999; Wals & Corcoran, 2006, amongst others). A combination of teaching and learning methods oriented towards agency, capabilities and social and structural changes are likely to achieve the learning objectives encompassed by education for sustainable development, as compared to a single strategy oriented towards sustaining the *status quo*. To strengthen and broaden teaching and learning approaches for relevant and quality education in the context of higher education programme on environment and sustainability education, epistemological and pedagogical discourses should be informed by research work.

UNESCO (2005) and Lotz-Sisitka *et al.* (2006) indicate that education for sustainable development in the United Nations Decade of Education for Sustainable Development (UNDESD) needs to be informed by research. Research could be participatory and action-based, emphasising systematic reflection by the researcher. This would include research into socio-economic and ecological problems in and within communities (Kethoilwe, 2008), or that which uncovers the educational processes and factors influencing the educational change process in response to environmental education and education for sustainable development

policy interventions and discourses (Ketlhoilwe, 2007). Such research may include ‘... the conceptual and practical links of environmental and sustainability education with other aspects of learning and with modes of development intervention (sectoral community mobilisation)’ (UNESCO, 2004:29). UNEP (2006) advocates research that addresses the complex and dynamic interactions between nature and society. ‘This requires building capacity in interdisciplinary and transdisciplinary research, understanding complex systems, dealing with irreducible uncertainty, and in the mobilisation and integration of diverse knowledge systems’ (UNEP, 2006:54–55). Research in the context of environment and sustainability in higher education programmes needs to be re-oriented to be more reflexive (UNEP, 2006, Lotz-Sisitka *et al.*, 2006) and to draw perspectives from different disciplinary areas.

Besides these epistemological, pedagogical and research-based dynamics, enhancing university environment and sustainability education programmes involves a number of other structural and sociological aspects, such as improvement of teaching facilities, ICT infrastructure and pedagogical issues, networking, partnerships and collaboration through regional and international organisations. An understanding of these dynamics influenced our research design, process and data interpretation, as outlined below.

Research Aim, Objectives and Methodology

Research aims and objectives

The research aim was to investigate stakeholder perspectives on quality and relevance issues deemed essential to be taken into account when introducing an MEd degree in Environment and Sustainability Education. The research objectives were:

- To generate data for the introduction of a SADC responsive Environment and Sustainability Education MEd programme at the University of Botswana.
- To develop an understanding of what contributes to educational quality and relevance in an MEd Degree in Environment and Sustainability Education.

Qualitative research design and methodology

The research design adopted was qualitative and was influenced by the socially critical approach informing the design of a more responsive (relevance and quality) and collaborative curriculum, which takes account of stakeholder perspectives and socio-cultural and structural factors influencing education (Huckle & Sterling, 1996).

We initially intended to use a survey design for the study using questionnaires for key stakeholders, which, according to Awokeni (2004), should describe the population, design sample and process of choosing of respondents. We also planned to supplement the questionnaires with focus group interviews, which Isangedighi (2005) describes as being economical; they also allow inferences to populations that could be too expensive to study as a whole. Data collected for this study was therefore obtained through using questionnaire survey techniques and focus group interviews. The analysis was informed by a reflexive orientation as the researchers are practitioners offering environmental education programmes at the University of Botswana and are expected to be core lecturers in the planned Master of Education (Environment and

Sustainability Education) programme. Analysis also drew on insights gained from the theoretical perspectives outlined above.

Research respondents

The target population of the study was stakeholders in environment and sustainability education in Botswana and other SADC neighbouring countries. These included students, lecturers, environmental practitioners, education officers and officers from the mining industry.

The selection of all participants was purposive since they either received personally delivered questionnaires sent to them or were personally visited and invited for a focus group interview. The sample of the study was therefore made up of 50 respondents. Table 1 shows a breakdown of the respondents.

Table 1. Breakdown of original list of research participants

Institution	No. of Respondents	Research Technique	Comments
Education centres	14	Interviews and sent questionnaires	Those who did not return the completed questionnaire were contacted for follow-up interviews
Colleges of education	14	Interviews and sent questionnaires	Those who did not return the completed questionnaire were contacted for follow-up interviews
Primary schools	4	Interviews	Only interviews were conducted
Secondary schools	6	Interviews	Only interviews were conducted
Ministry of Education	2	Sent questionnaires	Questionnaires sent were returned in time
Parastatals, Department of Wildlife and National Parks (DWNP), Orapa Game Park	7	Sent questionnaires and interviews	A questionnaire and an interview were used
Universities	7	Sent questionnaires	All questionnaires sent were returned in time
NGOs	2	Sent questionnaires and interview	A questionnaire and an interview were used

Some methodological challenges

The challenges associated with using these research techniques are not uncommon. One of the challenges was the process of having to hand-deliver and electronically post the research questionnaire. As is often the case with questionnaire research, we had a low response from the selected respondents, and despite repeated follow-ups, we did not obtain an improvement in the rate of return. We then developed a research schedule to conduct the focus group interviews to

complement and extend the 25% of questionnaires that were returned. Due to time constraints we resorted to using the focus group discussion method as our primary research method, because it proved to be effective when it was initiated. This we attributed to respondents being more involved in the research process, since they were invited to participate in the research within a limited time on a person-to-person level instead of being sent the questionnaire to complete on their own.

The focus group discussions were however also challenging as some of the respondents were in distant places. Areas such as Maun, Kasane, Tsabong, Orapa and Gantsi are far (up to 1 000km) from our base in Gaborone. We therefore tended to rush in and rush out because of distance and time constraints. However, we managed to visit areas that we initially did not include in our travel schedule, such as Jwaneng and Orapa. These areas were visited to interview conservation and safety officers working at the diamond mines. We were also able to take advantage of environmental educators workshops that were organised in these mining areas to reach out to some respondents. The inclusion of these respondents in the study extended our sample to 56 people who contributed data to the study.

Findings of the Study

The results of the research investigation are reported according to epistemological, pedagogical and research challenges in the context of a relevant and quality environmental and sustainability education at a university level. These themes have been constructed from the main questions of the questionnaire items and responses, drawing from the theoretical orientation to the epistemological, pedagogical and research-based challenges in education for sustainable development described at the start of this paper.

Local value of the programme

The research data revealed that all respondents agreed that it was important for the University of Botswana to start an MEd programme specialising in environment and sustainability education. Reasons advanced for starting such a postgraduate programme were varied but complementary. They include both epistemological and pedagogical concerns, contextual issues and advantages, and lack of appropriate skills (in the nation) that the respondents thought the introduction of the programme would address. One respondent commented that 'environmental education informs the nation about environmental issues and problems that exist around them. It is expensive to study a postgraduate programme outside the country. To have it locally will cut the costs'.

The respondents commented that the introduction of an MEd programme in environment and sustainability education would open learning opportunities for educators and those in the non-formal sector to pursue environmental and sustainability education. They revealed that the programme would support the University of Botswana's initiatives to become a centre of excellence in Africa and beyond. Some respondents claimed that instead of local people leaving to study outside the country, they would be provided with the opportunity to study locally. This would ensure that the students receive relevant education and would reduce costs

of sending people outside the country to pursue postgraduate degrees. They claimed that by initiating the postgraduate programme in environment and sustainability education the University of Botswana would be conforming to an international standard of education in which environmental and sustainability education is seen as integral to all forms of learning. One respondent observed: 'Environmental and sustainability education informs the students about environmental issues and problems that exist around them and beyond. It is about sustaining resources for current and future generations.'

Epistemological issues

With regards to epistemological concerns, about 35 respondents said an advanced (postgraduate) programme should provide students with in-depth knowledge on environmental education, which would avoid the problem of shallow understanding. In support of this observation, one of them said the programme would 'equip students with detailed knowledge and skills to effectively teach and facilitate learning on environmental education and sustainability'. Another respondent commented that,

... for the University of Botswana to become a hub of education for excellence it needs to conform to the international standards of education in which education for sustainable development should be part of its agenda. The fact that Botswana is the second driest country [after] Namibia south of the Sahara Desert, means that it needs to acquaint itself with issues like climate change that are facing the region and the country at large at post graduate level. Therefore, the University of Botswana needs to educate the community on issues that have become part of life (drought, poverty, etc.) currently in the region.

Of the 51 respondents, 45 of them said that a postgraduate programme would enhance quality and relevant education to the present needs of Botswana and other nations beyond its borders. One of the respondents said that:

... environmental education can contribute significantly to a deepening understanding and enriching of learning processes because of its contextual nature. It does focus on relevance in local contexts, but also supports students to explore relevance at national and global levels.

Another respondent said:

Environmental education is a field of study which has no boundaries and has relevance to every living [organism] on earth and I feel that knowledge, attitudes and skills sharing will be more coordinated and useful if nations are taken on the same wave length.

However, one of the respondents warned that:

... the programme should not copy. What we take from others must be contextual. Environmental issues are focus issues of the world arena.

This caution seems to suggest that we need to contextualise actions in the environment in relation to their global context. The following comment made by one of the respondents seems to capture the different observations made by other respondents to this theme:

It is frequently stated that UB is not addressing the problem of educating and training people for real and present needs in various fields in Botswana; however, I've yet to see this to be identified as a present need ... Some day some will realise that this type of education is needed here as well as in neighbouring countries and indeed beyond them. At present should someone desire to get an MEd in this field they have to go abroad to do it.

The respondents also provided insight into themes that ought to be considered in the MEd in Environment and Sustainability Education. Respondents were asked to choose from three alternatives to indicate what they thought ought to be the main focus of the programme from an epistemological point of view. The choices were: (A) sound knowledge of national and global trends and agreements, (B) national and global sustainability and environmental issues, and (C) national and global imperatives regarding developments. In selecting from these options, 35 respondents chose A and B, 10 chose A and C, and 5 chose B and C. Respondents seemed to think that both national and international trends, agreements, protocols and development aspects related to environment and sustainability were critical for inclusion in the MEd programme in Environment and Sustainability Education at the University of Botswana. One respondent argued that to enhance quality and relevance in the context of a university programme, it should be noted that environment and sustainability issues are transboundary. They affect people beyond and across boundaries. Therefore, a postgraduate university programme should address the present needs of Botswana and other nations beyond its borders, and beyond traditional boundaries (including knowledge, time-space and material boundaries).

Pedagogical issues

There were limited responses generated from the respondents regarding appropriate pedagogies for environmental and sustainability education in the context of a relevant and quality university programme. However, some respondents claim that teachers are not effective in their teaching of environmental education, and the programme would therefore need to pay attention to ways of equipping such teachers with relevant and quality methodology knowledge and skills that would make them effective in their teaching and learning work. Most respondents emphasised that for the programme to be relevant and be of quality in education, it should have a qualitative approach to life for people to interact better with the environment – implying a *situated learning pedagogy* for the programme. They did, however, think that it would depend on teaching and learning philosophy of the university and what a university programme would offer in terms of general knowledge generation, skills, research and its outlook in terms of depth and analysis of issues. They also said that it should not be boxed within the local context in isolation. This implied that situated learning should not be the only pedagogical strategy, and that it should be complemented by other strategies for learning, which could broaden knowledge beyond the local (for example, through research or use of information communication technologies). As

one respondent stated, '... it is therefore envisaged that a postgraduate university programme would enhance and shape environmental and sustainability education processes'. This comment indicated an expectation of pedagogical innovation which could contribute to the field of environmental and sustainability education. The respondents observed that a university programme needed to be research-oriented to enable students to interact with complex situations in the context of relevance and quality in environment and sustainability education, thus proposing a research-based learning approach for the curriculum.

Research issues

Since respondents raised a number of issues which could be researched in environment and sustainability education with the goal of enhancing quality and relevant education (i.e. through the research-based learning pedagogical approach mentioned above), these are categorised into epistemological, pedagogical concerns, and contextual issues. This range of research aspects points to a curriculum that is oriented towards knowledge-building, methodological enhancement and situated learning.

Epistemological concerns raised by 40 of the respondents focused on lack of knowledge in issues such as water and air pollution, waste management and disposal (especially clinical waste disposal), the nexus between environment and development, policy formulation and implementation on the quality of environment, global warming, imbalances in trade – the North-South divide, HIV/AIDS, and the environment. Some of the respondents also mentioned socio-economic, political and ecological demands, cultural diversity, economic empowerment, food security issues, poverty, conflicts and local knowledge.

About 20 respondents raised pedagogical issues relating to education in environment and sustainability. The issues raised related to how we learn in environment and sustainability education, how best the nation could be educated in environment and sustainability and how globalisation and environment could be explored through SADC's Regional Environmental Education Programme and the UNDESD.

Respondents also indicated that the programme could explore a range of contextual issues such as the peace parks conservation programme, trans-frontier conservation areas (TFCAs), trans-boundary natural resources management (TBNRM), environmental impact assessment (EIAs) as a tool to ensure sustainable development, health problems and their dimensional causes and solutions, human rights and justice issues and sustainable use of natural resources. One respondent suggested that the students in the MEd programme should be involved in a situation and needs analysis to assist them in prioritising contextually relevant themes and issues for classroom discourse and research.

Besides these, other pertinent environmental and sustainability education research-based topics suggested by the respondents included environmental trends, genetically modified food, industry and environment, curriculum development, gender issues, knowledge and knowledge generation, ethics and environment, research, technology and environmental sustainability, civic education, and population explosion. The research revealed that a more responsive and transformative programme would even include current socio-economic issues such as recurring electricity cuts in some countries in southern Africa. Such a programme would

sensitise students to the importance of understanding and addressing environmental problems such as poverty.

As indicated by this wide and varied list, these issues and concerns provide rich choice for academic engagement with students and the community, reflecting relevance and the quality of a university MEd programme. It also reflects a need for course developers to cluster and organise a range of issues into a coherent framework for students so as to avoid epistemological confusion.

Sharing research information and outcomes

Respondents also had suggestions on how the knowledge to be generated through the research-based learning processes in the MEd Degree in Environment and Sustainability Education could be shared more widely for the benefit of the educational and other communities in Botswana. They proposed that information generated through the university research programme could be shared generally through seminars, journal publications or as book chapters. This research explored ways of sharing the findings to establish or strengthen relevance and quality of the University of Botswana research programme. The research revealed that findings could be shared through newspaper articles and feedback sessions with participants (respondents). However, the following ways of disseminating information were also mentioned by the respondents: public lectures and presentations, websites, papers at conferences, publishing findings internally and externally, depositing research reports in the library, and being present at National Teachers' Education and Training conferences and other education forums. This multi-pronged and diverse strategy for sharing knowledge emerging out of the programme would contribute to the relevance and the quality of the programme, since it would invite feedback and knowledge exchange.

Discussion of Results

Notwithstanding the fact that the mini research only focused on a small sample, the ensuing thematic discussion of the results shows that the research generated sufficient reasons to understand issues of relevant and quality education in the context of the proposed MEd Degree in Environmental and Sustainability at the University of Botswana.

Although respondents agreed that it was necessary to start a MEd programme specialising in environmental education emphasising sustainability education, their justification for this varied from contextual, epistemological, pedagogical reasons, to lack of appropriate skills in addressing environment and sustainability matters. Some of the contextual reasons advanced by the respondents were that the envisaged environmental and sustainability education programme would enhance and complement the current University of Botswana's MEd programme, and would help develop individuals to be environmentally conscious and to be good caretakers of the environment. This related to understandings of the university's role in society, in which the university is seen to have a social obligation to provide advanced learning opportunities in environmental and sustainability education (see UNEP, 2006) in response to the myriad of issues and themes identified by the research respondents. This reflected a belief that the state of the

environment nationally (in Botswana) and worldwide was sufficient justification for the need to provide the intended programme. The findings further reflected an expectation of education – that it should be viewed as a vehicle for social transformation. UNEP (2006) explains that environmental education has long been viewed as having a role to play in social transformations. Environmental education and education for sustainable development, in particular, envisions a world where everyone has the opportunity to benefit from quality education and learn values, behaviours and lifestyles required for a sustainable future (UNESCO, 2005).

The findings also suggest that relevant and quality environmental and sustainability education can contribute significantly to a deepening understanding and enriching of learning processes because of its contextual nature. A caveat to this, was, however, that for such education to be relevant and of quality, it should also support students to look at relevance at national and global levels. This is because environmental education is about real-life issues and experiences. Environmental issues and problems do not recognise national, regional or even international boundaries and they have both local and global dimensions (UNEP, 2006).

Epistemological challenges

The epistemological (knowledge) and skills issues were perceived by respondents as key to the programme envisaged. They thought that the programme would not only provide opportunities to advance environmental and sustainability education, but that it would provide for in-depth knowledge of these fields of knowledge, and that through this it would equip students with detailed knowledge and skills to effectively participate in transforming society for a sustainable future. The courses offered at undergraduate level only provide basic skills and knowledge on environmental education. More complex and diverse knowledge is needed at a postgraduate level. The means of achieving this was through a researched-based learning process involving research that could identify gaps in existing environmental and sustainability education and provide students and scholars with opportunities to further the boundaries of knowledge in environmental and sustainability education. As argued by UNEP (2006), Wals and Corcoran (2006) and others, university programmes ought to develop human resources capable of integrating social and economic equity, environment and development issues in creating new, transformed societal contexts. Such programmes should also promote the development of lifelong learning skills based on problem- and project-oriented approaches, which UNEP (2006) and Wals and Corcoran (2006) see as processes of transformative learning. Issues such as gender equity within the areas in which the university operates should be examined to ensure relevance and quality of the programme; as argued by UNESCO (2005), who proposes the integration of gender issues into the education for sustainable development agenda. Taking gender issues seriously in a curriculum context also requires a broadening of epistemologies, as argued by feminist and other researchers (UNEP, 2006).

The findings reveal that an MEd in Environmental and Sustainability Education at the University of Botswana should be informed by national and international environmental issues. That is, the programme should cover national and international epistemological and pedagogical thinking in the environmental education field, as well as emerging issues, challenges, development and problems on environmental and sustainability education. This

creates an open framework for epistemology in the programme, since such relations are ever-changing and emergent, currently within a globalisation-driven neo-liberal model of development which is subject to change, as outlined by the sustainable development agenda. There is need to include national and global environmental agreements in the programme because issues and problems affect the entire world. There is therefore a need for Botswana to collaborate with other countries (regionally and internationally) to be environmentally sensitive. Botswana belongs to the global community. There is no way we can work or do things that affect others without consequences. Issues that affect the environment are global, but they have particular localised effects; as in the case of the projected impacts on Botswana as a result of climate change, since it is an already dry country with scarcity of water resources. It is therefore critical that MEd students undertaking the Environment and Sustainability Education degree have an in-depth knowledge of environmental issues and problems, and that they understand these issues within a local/global, open-ended and transdisciplinary, transboundary epistemological framework. The findings confirm some of the recommendation themes that the programme could include that underpin education for sustainable development, such as power relations, gender equity, health risks and vulnerability, cultural diversity, climate change and information technology, as outlined by UNESCO (2005) and UNEP (2006). The research has revealed that students enrolled in the programme should be open to learning from the global community to contextualise their learning and actions, and to inform their practices and programmes. This counts for course developers too. The challenge is to effectively integrate local issues in environment and sustainability education higher education programmes within a global, open-ended, transboundary framework. This requires consideration of knowledge, skills, perspectives and values related to sustainability (UNESCO, 2002).

Pedagogical challenges

Pedagogically, the findings suggest that a relevant and quality programme would advance education policy dictates regarding the infusion of environmental and sustainability issues in teaching and learning (i.e. integrated approaches). Research, of which this paper is a product, has revealed that environmental and sustainability education is a must today because the entire future of this world rests upon it. A postgraduate university programme would provide students with opportunities to carry out projects that are relevant and contextually focused, promoting situated learning. Sterling (2004) argues for a shift from transmissive to transformative pedagogy. This notion has been confirmed by some of the research respondents, as outlined in the discussion on pedagogy above. It is observed that transformative pedagogical discourse would enhance a more participative, dynamic and active learning methodology. This is related to Huckle and Sterling's (1996) argument that education must be transformative for it to be transforming. Other pedagogical approaches could be problem-oriented teaching and learning as well as research-based learning involving investigation of environmental issues and concerns and educational aspects and problems, as indicated in the findings reported above. As mentioned in the theoretical perspectives section of this paper, Scott and Gough, (2004) support a learner-centred pedagogy drawing together economic, environmental and social strands applicable to a range of degrees of complexity. The findings of this research indicate that respondents

support a similar pedagogical orientation, as shown by the range of issues they identified as focus for a research-based learning pedagogical orientation. As Scoullous and Malotidi (2004) argue, this will be pedagogical approaches that promote interdisciplinary learning. UNESCO (2004) and UNEP (2006) argue that through interdisciplinary and multi-disciplinary approaches a university programme is likely to provide an understanding of complex systems and uncertainties (UNEP, 2006; UNESCO, 2004), thus providing an appropriate pedagogical orientation for the open-ended and uncertain nature of the different issues identified by the respondents that need incorporation into the MEd programme.

Research challenges

The research findings indicate that relevance and quality in education could be enhanced through the research agenda of a university programme, and through a research-based learning approach to the curriculum. This research has revealed that research projects focusing on educational issues oriented to the resolution of socio-ecological issues and concerns such as water and air pollution, waste management and disposal, global warming (and climate change), the impact of the North-South divide on environment, HIV/AIDS, and the environment could also contribute to relevance and quality in education. As noted above, the respondents raised a number of other issues that could form a rich fabric for a research-based learning curriculum in the MEd programme. The range of issues identified by the respondents for the research-based learning curriculum are similar to those recommended by UNESCO (2005) and UNESCO (2006), but UNESCO does not provide a coherent organising framework for presenting the links between these issues. Epistemological issues such as using research knowledge and information to inform transformative practice and change could also contribute to quality education. This would include exploring contextual concerns such as socio-ecological issues in relation to broader questions of structure and agency (as indicated by the social-critical education orientations mentioned above [e.g. Fien, 1999] or agency and capabilities [e.g. Sen 1999]). By developing these wider conceptual frameworks for researching contextual socio-ecological issues, the research agenda would also explore pedagogical issues in both formal and informal education to enhance relevance and quality in MEd programme in ways that are transformative, as proposed by Sterling (2004), UNEP (2006) and Wals and Corcoran (2006).

A balanced programme with coursework or research on both environment and education content is essential for quality education in the context of environment and sustainability education MEd programme. Issues and themes relating to environmental content could be linked to sustainability concerns and merged into educational discourses and research-based learning processes. As argued above, such themes and issues explored should contribute to social transformation in the context of sustainable development, and will also include explorations of transformative research methodologies in the critical tradition (e.g. Ketlhoilwe, 2007; Lupele, 2007) that can underpin the research-based learning and pedagogical and epistemologically transformative curriculum proposed by the respondents in this study. Perhaps this will also help students in the MEd programme to avoid some of the problems associated with questionnaire-based research that we experienced at the start of this study.

Conclusion

In conclusion, the mini research study revealed that there is a need to introduce an MEd Degree programme in Environmental and Sustainability Education at postgraduate level at the University of Botswana. The respondents indicated that teaching and learning processes on this programme should be oriented towards transformative, reflexive and independent learning through the use of a research-based learning approach to enhance relevance and quality in university education. The programme should promote reflexive and transformative education processes facilitated by self-reflective curriculum designers and lecturers who are prepared to take account of stakeholder views and interests in the curriculum design. As indicated by the respondents in this study, a university programme aimed at promoting social transformation should not only be interdisciplinary, but should also empower students to deal with complex situations and uncertainties within an open-ended epistemological framework that takes the local/global/transboundary knowledge context into account. A relevant and quality environment and sustainability education university programme should promote learner-centred, transformative pedagogies that are both situated so that they empower students to link socio-ecological issues and development in local context, and exploratory to consider these issues more widely within a futures and intergenerational framework. Such a degree programme should graduate people who are not only able to deal with uncertainties, but who are also able to, within local and global context, accommodate different perspectives. The research-based learning curriculum should enable the students not only to use information technology in the generation and acquisition of knowledge, but also to use different media to disseminate research outcomes, and methodologies that are transformative in their nature and intent (e.g. critical methodologies). For the university to achieve a high level of academic excellence and greater impact on the national economy and society's well-being and to optimise its benefits for the community, its research programme should be responsive in such a way that it promotes regional and international collaboration on environmental and sustainability issues to promote relevant and quality education.

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