



Mainstreaming Environment and Sustainability Issues in Institutions of Higher Education: The Case of the University of Botswana

Mphemelang Joseph Kethoilweⁱ

Department of Languages and Social Sciences Education, University of Botswana

Koketso Jeremiahⁱⁱⁱ

Department of Languages and Social Sciences Education, University of Botswana

Abstract

Environment and sustainability issues are contemporary in educational innovations in institutions of higher education particularly in their core business regarding teaching, research and community engagement. The introduction and implementation of the United Nations Decade of Education for Sustainable Development (UNDESD) (2005-2014) has added impetus to the contemporariness of environment and sustainability issues in education. This paper is based on the empirical data generated within a selection of University of Botswana departments and units to determine the extent to which sustainability issues and concerns are implemented. The paper provides the outcome of the audit exercise that indicated that some of the University of Botswana departments and units are not incorporating sustainability issues in their practices (be it in teaching, research, community engagement or management practices). The paper recommends a systematic approach to mainstream environment and sustainability issues across the faculties.

Keywords: Environmental Education, Education, Transformative Learning, Mainstreaming, Sustainable Development, Environment and Sustainability

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INTRODUCTION

The introduction and implementation of the United Nations Decade of Education for Sustainable Development (UNESCO 2005) in institutions of higher education is an educational innovation that may promote transformative learning for social change. The declaration of the United Nation Decade of Education for Sustainable Development is a challenge to institutions of higher education to engage in educational innovation that would encourage sustainable development. Innovation in higher education curriculum may be a viable vehicle to promote sustainable world economies and natural resources conservation for future generations. The University of Botswana curriculum, like in other intitutions of higher education worldwide is expected to respond to global environmental discourses. This research paper is based on a change project research carried out at the University of Botswana to determine efforts made by the university to incorporate environment and sustainability issues. The University of Botswana has come up with a number of policies and strategies that provide an opportunity to mainstream environment and sustainability

¹ Corresponding author

issues. The paper examines how the national and institutional contexts influence transformative learning by integrating environment and sustainability issues.

The Change Project

The change project focuses on higher education curriculum innovation to mainstream environment and sustainability issues. This encompasses strengthening the existing programmes, courses and praxis on environmental sustainability. The aim of the project was to collaboratively work with faculties and departments to strengthen what already existed and initiate mainstream of environment and sustainability concerns. The project progressed through systematic consultation and engagements with academic staff to generate data facilitate transformative learning and the mainstreaming of environment and sustainability issues into the university curriculum. The initial implementation plan was a university-wide approach which proved to be too cumbersome complicated by the researchers' teaching and community engagement workloads.

Description of the National Context of the Project

The University of Botswana's curriculum is not only responding to global and regional knowledge generation discourses but is informed by national policies. Environmental and sustainability discourses are integral parts of education and national development plans and policies. Environmental education has been recommended by the 1994 Revised National Policy on Education (Botswana Government, 1994) and the University of Botswana has been called upon to in-service and pre-service teachers on environmental education. It was encouraged to be exemplary to the rest of the community through environmental ethos (Botswana Government, 1993 and 1994). Sustainable development and education for sustainable development discourses have been introduced through curriculum documents such as the different subjects' syllabi and the *Environment Education Guidelines* (Ministry of Education, 2002).

The Botswana Government has also shown interest in environment and sustainability issues by making sustainable development a focus for *National Development Plans* (Botswana Government, 1991/7, 1997/2002 and 2003/09) and 2010/16). Other important policy documents are the *National Environmental Education Strategy and Action Plans 1 and 2* (Botswana Government, 1996 and 2007). University of Botswana's activities related to environment and sustainability are part of the current environmental education strategy and action plan (ibid). The strategy and action plan emphasize both environmental education and education for sustainable development. The above mentioned policies are some of the national policies that gave impetus to this Change Project at the University of Botswana.

Institutional Context

The University of Botswana operates through administrative structures guided by policies. A Change Project such as "*Curriculum Innovation to Mainstream Environment and Sustainability at the University of Botswana*" considered some of these policies to be accepted and implemented successfully. The University of Botswana has a Centre for Academic Development (CAD) which is responsible for promoting academic excellence and innovations in teaching, research and professional development. Two policies guide this division, the Academic Quality Management Policy (2003) and the Affiliations and Validation Policy (2003). Each Department in the faculty has a Departmental Quality Assurance Team which reviews departmental operations and comes up with recommendations of structures for quality assurance in their respective sections. This project considered these structures although individual departments are responsible for consulting the Centre for Academic Development once they decide to engage in major curriculum innovation to mainstream environment and sustainability issues.

The University of Botswana (UB) aims at promoting research to develop and generate knowledge on sustainable development. The 2005 and 2008 audit of the university programmes has indicated that almost all faculty programmes are doing something related to sustainable development. This Change Project to mainstream Environment and Sustainability issues into the University of Botswana curriculum is consistent with the UB mission and vision statement, the UB Research Strategy (2007), particularly strategic areas number three and twelve on *Environmental Studies and Natural Resources Management and Sustainable Development* (ibid) respectively.

The following policies support environment and sustainability efforts of the University of Botswana:

- Learning and Teaching Policy (2008)
- UB Research Strategy (2007)
- Academic Quality Management Policy (2003)
- Occupational Health and Safety Policy (2007)

The Change Project came at a time when UB is reviewing its entire curriculum. This is an opportune time to infuse and integrate sustainability issues and concerns in new and merged departments/units in the areas of curriculum, teaching, research and community service.

Institutional structure and key stakeholders in the change project

To influence change at UB is a mammoth task as there are laid out procedures and structures pertaining to programme and course introduction, review and revision. This has and is still affecting this Change Project. For minor curriculum innovation individual lecturers need not consult either the Department or Faculty Board. For a major innovation such as major course review, introduction of a new course or programme, Academic Quality Assurance Team, Department Board and Faculty Executive are consulted. Ultimately the Faculty Executive makes a recommendation to the University Council. This may take some months before an innovation could be approved. Evidence may be required from a benchmarking exercise and recommendation from potential employers and the Tertiary Education Council. However, this change project did not extend to programme or courses approval from different faculties or departments. Once lecturers have decided on minor or major curriculum innovation they would have to follow institutional procedures and structures to get innovations approved.

The situation prior to starting the project

Prior to the starting of the Change Project the researchers were not aware of the extent to which environment and sustainability issues were integrated in teaching, research and community service at the University. There was no collaboration between the Departments of Environmental Affairs, Wildlife and National Parks, Students, Environmental and Conservation Clubs and our Department particularly with regard to environment and sustainability concerns. On the formal curriculum side there were limited environment and sustainability components/topics across the UB faculties particularly in the Faculty of Education courses. In some instances, there was overlapping of courses on components of environment and sustainability. This situation is not completely eliminated as the courses review is an on-going process.

Conceptual framework

This project is based on *Transformative learning theory* developed by Mezirow ([1978, 1997]). Transformative learning is a form of adult education involving experiences that result in a deep, structural shift in thoughts and feelings, which then inform one's actions. The project is intended to influence change through experience, critical reflection, and rational discourse (Taylor, 1998) to mainstream environment and sustainability issues. It intends to alter ways of making meaning, understanding and relationships with other people, the environment and its natural resources. Transformative learning is approached through a conscious rational process to support social transformation that embodies equity for all people to promote sustainability.

Transformative learning involves *premise reflection* that leads to questioning the relevance of the environment and sustainability issues, the assumptions, beliefs, or values underlying the problem investigated. This process is distinct from problem-solving and can lead to transformative learning (Cranton, 1996). The change project encourages exploration of the concepts of environment and sustainability concerns to influence transformative learning among academic staff and students' community.

METHODOLOGY

This qualitative research project was strengthened by quantitative data (See Table 2) to make an informed analysis of the extent to which environment and sustainability issues are mainstreamed in the university curriculum. Data were generated through the administration of the Unit-Based Sustainability Assessment Tool (USAT), individual interviews and documents analysis. Data generation techniques included consultation with the Dean of Education through Heads of Department (HODs) who provided information and assured the researchers of their support. The research targeted individual Heads of Departments and Lecturers to administer the USAT (a questionnaire) (See Table 1). Some HODs and Lecturers completed the instrument on their own while others were assisted by the researchers as they claimed the instrument was complex to comprehend. The complexity of the instrument was attributed to the environment and sustainability terminologies and concepts used that the respondents were unfamiliar with. The respondents who were interviewed did not have any language problems since they had the opportunity to ask for clarification in case of unfamiliar concepts.

Table 1 Respondents by gender, position and qualifications

Gender	Status/Position				Highest Qualifications	
	Lecturer	Senior lecturer	Asso. Professor	Professor	M	D
Male: 21	6	11	2	2	3	18
Female: 5	1	1	0	3		5

Key: L: Lecturer, SL: Senior Lecturer, AP: Associate Professor, P: Professor, M: Masters Degree, D: Doctorate

USAT was sent through internal mail and hand-delivered to about twenty departments, units, students' body associations/societies and clubs and the UB administration Units. The response was very low from across respondents' categories (See Table 1). The departments that responded were namely: The Departments of Languages and Social Sciences Education, Marketing, Mathematics and Science Education, Architecture and Planning, and Environmental Health. Through consultation with the Dean of Education and Heads of Departments it was agreed to limit the change project to five departments that had responded in the first phase hoping that the outcome of this project would help them make informed curriculum innovation decisions in future to mainstream environment and sustainability issues.

The administration of the Unit based assessment tool was followed by interviews with Heads of Departments and individual Lecturers. The interviews narrowed data generation to academic departments as it was now clear that a university wide approach has some challenges and needs to be done in small steps until a satisfactory coverage is achieved.

To strengthen the USAT results, individual and unit meetings were held with staff from the seven faculties in August and September 2008. Following these meetings on Mainstreaming Sustainability in courses some Lecturers mostly in education departments showed interest. These were from the Departments of Primary Education and Educational Foundations.

Further validation of data was through documents analysis. The researchers did an audit for environment and sustainability issues by examining courses offered by departments that participated in the project (See Table 2). The documents analysed were mainly departmental academic calendars containing course descriptions and synopses. The focus was on specific courses and topics within courses on or related to environmental and sustainability issues. Documents analysis led to some modification of data generated through USAT and interviews as evidence of environment and sustainability related issues were found in the courses' contents. The plan is to continue including other departments until most of the university programmes are involved. That means restricting the project to teaching, research and community service.

The Findings

The results of the USAT used in this paper are based on the five University of Botswana departments of Education, Business, Health Sciences, Engineering and Technology who completed and returned the questionnaire and those who honoured the interview. The results are presented in Table 3. Some of the results are a modification of the initial ratings by the Heads of Departments after documents analysis and follow-up interviews had been carried out (or conducted).

Table 2: UB Departmental Sustainability Performance

Code	Marketing	Architect and plan	Enviro health	DMSE	DLSSE	Total	% Rating	Average
C1	1	4	4	X	1	10	50	2
C2	1	3	4	X	2	10	50	2
C3	1	4	4	X	3	12	42	2.4
C4	1	4	4	X	3	12	42	2.4
C5	x	4	4	X	X	8	50	1.6
T6	4	3	4	3	3	17	29	3.4
T7	3	3	4	3	X	13	39	2.6
T8	3	3	4	3	2	15	33	3
T9	3	2	0	4	2	11	46	2.2
T10	2	2	4	3	2	13	39	2.6
R11	2	2	4	0	2	10	50	2
R12	1	2	4	0	1	8	62.5	1.6
R13	3	2	4	X	3	12	42	2.4
R14	3	1	3	0	3	10	50	2
R15	X	2	4	0	X	6	83	1.2
E16	1	2	4	0	2	9	56	1.8
E17	1	2	3	0	2	8	62.5	1.6
S18	X	2	4	X	X	6	83	1.2
S19	3	2	4	X	3	12	42	2.4
S20	1	2	4	X	1	8	62.5	1.6
Total	34	51	74	16	35			2
% Rating	42.5	81.25	92.5	20	43.75			
Average	2	2.55	3.7	1.45	2.19			

Key for codes: C1-5 = Curriculum, T6-10 =Teaching, R1-15 = Research, E16-17= Examinations, S18-20 = Service

In terms of percentage ratings, it shows that the Department of Environmental Health is leading (92%) in integrating environmental and sustainability issues into the curriculum. This is supported by high scores in the five (5) areas, that is, in curriculum, teaching approaches, research, service and scholarship, examination of sustainability topics and staff expertise. The Department of Architecture and Planning follows with a percentage rating of 81.25%. For this department, the highest scores were observed in curriculum content followed by teaching approach. The scores decline in research, service and scholarship activities, examinations of sustainability topics, staff expertise and willingness to participate in sustainability activities. It was noted that staff participation was through membership in Non Governmental Organisations and research.

The third department in percentage rating is the Department of Languages and Social Sciences Education, with an average rating of 2.19 points (43.75%). The results indicate almost a balance of scores throughout the areas of curriculum, teaching approaches, research, service and scholarship activities, examinations, and staff expertise. The fourth department is Marketing in the Faculty of Business with 42.5% from an average score rating of 2 points. Its performance is weak in the curriculum area, but has some fluctuating scores in other areas ranging between 0 and 4 points. It performs better in teaching approaches and research. This is an area where teachers could be innovative and infuse or integrate sustainability issues.

The last department in percentage rating is that of Mathematics and Science Education (DMSE) with an overall rating of 20%. This is a department that would be challenging to deal with as members of the department are said to be unwilling to integrate sustainability issues claiming that they are 'not' relevant to their subjects. However, document analysis indicates that two of the units (or courses) in the department, namely, Science and Biology education courses offer opportunities for the integration of sustainability issues. That would affect curriculum, teaching and research/service scores and rating. The Unit Based Sustainability Assessment results indicate that DMSE is very weak in curriculum, in research/service and scholarship in terms of integrating environment and sustainability issues, but about average in teaching approaches.

Documents analysed revealed more evidence of possibilities of mainstreaming environment and sustainability issues in different courses (See Table 3 below).

Table 3: UB Environment and Sustainability Integration in Courses

FACULTY	DEPARTMENT	TOTAL NO. OF COURSES	COURSES WITH ESD
BUSINESS	Accountancy & Finance	26 (Undergraduate)	7
	Management	16 (Undergraduate)	5
EDUCATION	Adult Education	51 (Undergraduate)	11
		18 (Graduate)	3
	Educational Technology	5 (Undergraduate)	1
	Educational Foundations	5 (Undergraduate: Special Education)	1
HEALTH SCIENCES	Home Economics	9 (PGDE)	3
	Nursing	59 (Undergraduate)	6
		49 (Undergraduate)	4
FET	Architecture & Planning	53 (Graduate)	4
	Civil Engineering	34 (Undergraduate)	10
	Electrical Engineering	67 (Undergraduate)	7
		54 (Undergraduate)	8

It emerged from curriculum audit that there was a need to review and revise the university courses to avoid repetition of some topics on environment and sustainability concerns within environmental education courses. Pedagogical and epistemological overlaps were identified in environmental education courses in the departments of Languages and Social Sciences Education and Primary education. More overlaps emerged in Social Studies Education which is offered by both these named departments. This revelation led to the revision and merging of some courses to eliminate overlaps. It also led to strengthening some courses by integrating environment and sustainability issues.

The project also influenced the development of a proposal to introduce a post graduate programme to mainstream environment and sustainability issues in the Department of Languages and Social Sciences Education. It emerged that this development would enable the department to show-case the mainstreaming of environment and sustainability issues. Although the key stakeholders in the change project were Lecturers and HODs, recently students have reacted by inviting the researchers to a seminar to explain environmental conservation and sustainability issues and their role in conservation of natural resources. In this seminar officers from the Departments of Environmental Affairs and Wildlife and National Parks and school clubs representatives were invited. This has created an opportunity for collaboration with students' organisations to sustain their enthusiasm to engage in environment and sustainability related activities.

DISCUSSION: *THE MAIN OUTCOMES*

ESD considerations in the project

The project provides an opportunity to strengthen institutional and operational capacity for a consistent and systematic mainstreaming of environment and sustainability concerns programmes, teaching, research and community service activities. It is in line with and complements the University of Botswana's research strategy, particularly in areas such as culture, environmental studies and natural resources management, gender, HIV/AIDS, indigenous knowledge systems, policy studies, poverty alleviation and sustainable development. These areas, which are aspects of the university curricula discourses, are also connected to the three sustainable development pillars, namely: environment, society and economy. They link very well with departments' programmes and course titles (e.g. Department of Environmental Science, Social Sciences Faculty and Economics Department).

Through its academic policies the University of Botswana is committed and has responded to the challenges of academic excellence in the country and beyond in the quest for knowledge. This quest for knowledge seeks to address various national concerns by developing the capacity to carry out research through the development of both graduate and postgraduate programmes. The University of Botswana's teaching, research and community services activities address sustainability concerns. This project and many other documents would further guide the university on the focus it should take to meet the challenges of our times. These challenges are academic excellence and innovations in teaching, research and professional development. The challenges are both socio-ecological and economic development oriented affecting socio-political change. Public education on environment and sustainability issues remains a challenge to the university. Through professional service to the community, research and publications and use of different media, sustainability of the environment and its natural resources could be enhanced. There are still issues of poverty, vulnerability and risks within Botswana society that could be addressed through a change project by the university. Equally important is a need to address, through a change project, gender related issues, resources distribution imbalances and land related issues.

Educational considerations that informed the project

The University of Botswana aims at promoting research to develop and generate knowledge on sustainable development. This project will go a long way in strengthening teaching, research and service to the community which are core activities of the UB. The project would strengthen many of our teaching and learning activities to focus on environment and education for sustainable development in a bid to provide quality and relevant education to our university graduates. On collaborative basis the project would promote departmental and institutional networking/partnerships and encourage local collaboration and/or partnerships to enable the university academic staff members to be more proactive in addressing ESD principles.

The Department of Languages and Social Sciences Education, through its Environmental Education Unit has been very active in its internal and outreach activities particularly in pre-service and in-service teacher training activities. This Change Project may bring on board other units and staff to strengthen what has been going on in terms of teaching, research and community service. This may happen through reflection on teaching, research and community service in the context of environment and sustainable development. All the university academic programmes have small or major scale research projects. It is hoped that through these projects more research related to environment and sustainability would emerge. Continuation of this change may lead to transformative learning and ensure quality and relevance of University of Botswana curricula.

There are both institutional and external challenges regarding integration of environment and sustainability issues. The project provides an opportunity for strengthening the integration of sustainability issues across faculties and management practices. The project already has academic management support in the Faculty of Education and hence this positive development has prospects for the implementation of environment and sustainability concerns.

The outcome of this research include a proposal to introduce a Master of Education (EE) programme that would assist in showcasing how to mainstream environment and sustainability issues in the curriculum (Ketlhoilwe and Maila, 2008). The researchers felt this would be one component of the project that could be easily implemented unlike a university wide campaign to mainstream environment and sustainability concerns which is muddled by resistance. This proposed programme would be collaboratively taught by lecturers from different disciplines and departments to showcase infusion/integration of sustainability issues in teaching, research and community service. These would not be an imposed collaboration but an informed approach based on the Unit Based Sustainability Assessment results (See Tables 2 and 3).

The project has stimulated interest in education for sustainable development among some staff members and students. This could be sustained through collaborative research to continue working with those interested in environment and sustainability research projects. Individual contacts and discussions have proved that there is lack of understanding of environment and sustainability issues among lecturers and hence an uninformed resistance. It emerged from the data generated through interviews, USAT and documents analysis that some HODs were not aware of what was going on in some units as far as sustainability performance is concerned. As a result, they either rated their departments high or low in mainstreaming environment and sustainability concerns. This may have been influenced by subject specialization by HODs. Finally, it is emerging from the project that transformative learning is a long process. Given the university curriculum innovation procedures and staff specialisations the researchers recommend a sustained systematic approach to influence transformative learning to promote the mainstreaming of environment and

sustainability issues into the curriculum and community engagement. This would contribute to the implementation of the United Nations Decade of Education for Sustainable Development goals.

CONCLUSION

The on-going project reported in this paper aims at attempting to influence change by mainstreaming environment and sustainability concerns across the University of Botswana's (UB) faculties, programmes and courses. It is informed by both national and institutional policy contexts. It emerged from the project outcome that there is a potential for collaborative teaching, research and service at UB to enhance sustainability performance. Although a number of UB academic departments are not participating, the 2005 environmental and sustainability audit revealed that almost all departments were doing something related to sustainable development. An audit during the project implementation (See Table 3) has revealed that all faculties were engaged in environment and sustainability related activities. The departments involved in this project showed commitment to sustainability performance. It came out clearly that a change is not always easily welcomed even in an academic institution such as the University of Botswana. Management sticks to policies that are sometimes rigid and constraining. Academic staff members are closed in little boxes called 'areas of expertise and disciplines'. They seem to be informed more by their training and research interests. Although they do research on regular basis they are not open to being researched. They are not prepared to be trained in a 'strange area' such as environment and sustainability issues. Some claim they are already doing it so there is no need to be engaged. It proved that an interview is more appreciated than responding to a questionnaire. It also emerged that people accept change slowly. So it is likely that this change project would take more months to be appreciated by many and hence we recommend a systematic and sustained approach until a satisfactory level of transformation is accomplished. Finally, we also learnt that some projects such as this curriculum innovation project may not need any funding as it is internal and could be done online where and when possible.

Implications for research and practice

The University of Botswana should take deliberate steps to strengthen the integration of environmental and sustainability issues in curricula for departments which have already integrated them. The respective departments should be commended for having taken the right direction in integrating those issues. Furthermore, the said departments should be encouraged to put the environment and sustainability issues integrated in their curricula into practice through research projects in the wide community in the countryside in areas deemed appropriate. Those departments that are lagging behind in integrating environmental and sustainability issues in their curricula should be encouraged to take some steps towards integration and eventually put into practice such issues in the form of practical research projects.

As the departments at the University of Botswana achieve full integration of environmental and sustainability issues in their curricula with subsequent practice of these issues, they should then engage in research to generate more knowledge and insights which will in turn improve on environmental and sustainability practice. Research on these issues could be collaborative, if not, interdisciplinary because of the possible collaborative nature of the academic departments of the University of Botswana. A monitoring and evaluation mechanism of the University of Botswana's Research Strategy could be put in place to support the departments' efforts to integrate environmental and sustainability issues in their curricula.

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ⁱ Dr. Mphemelang Joseph Ketlhoilwe is a Lecturer in Environmental education within the Department of Languages and Social Sciences Education at the University of Botswana. His PhD research was on the genesis and interpretation of environmental education policy in Botswana. Dr. Ketlhoilwe's professional interests include education policy research, environmental education, education for sustainable development in higher education, teacher education and natural resources management for social change. He can be reached on Tel: (267) 3555097; Fax: (267) 3185096; E-mail: ketlhomj@mopipi.ub.bw

ⁱⁱ Dr. Keketso Jeremiah is a Lecturer in Social Studies Education within the Department of Languages and Social Sciences Education at the University of Botswana. His PhD research was on students' understanding of social harmony, the national philosophy of Botswana. Dr Jeremiah's professional interests include civic education, controversial issues, affirmative action policies and programmes, gender issues, environmental and sustainability issues, and human rights issues. He can be reached on Tel: (267) 3552972; Fax: (267) 3185096; E-mail: jeremiahk@mopipi.ub.bw