

# Understanding economic and management sciences teachers' conceptions of sustainable development

**Carina America**

*Sustainable development has become a key part of the global educational discourse. Education for sustainable development (ESD) specifically is pronounced as an imperative for different curricula and regarded as being critical for teacher education. This article is based on research that was conducted on economic and management sciences (EMS) teachers within a South African school context and their conceptualisation of sustainable development. A case study design was applied within an interpretivist paradigm. The purpose of the study was not to generalise the findings, but rather to acquire in-depth understanding and insight. The findings revealed that the EMS teachers' dominant conception is likened to notions of unrivalled economic growth with limited reference to the interrelatedness of the economy, society and the biophysical world or to the incorporation of "green" issues. This article concludes that it is crucial to incorporate ESD into business curricula at school level since sustainable development has become progressively important to nation states, the business sector, the higher education sector and diverse discourses and curricula. The need for a more integrated approach to ESD in the EMS discourse is recommended.*

**Keywords:** Economic and management sciences education, business education, sustainable development, education for sustainable development, environmental education

## Introduction

Sustainable development forms part of the discursive terrains of several subjects within the South African school context. This is the case in geography and science

---

**Carina America**  
Department of Curriculum Studies, Stellenbosch University  
E-mail: [camerica@sun.ac.za](mailto:camerica@sun.ac.za)  
Telephone: 021 808 3793

education, but it is relatively new to the economic and management sciences (EMS) school education domain. South Africa's position as a "modern" economy leading the continent technologically provided the justification for the inclusion of EMS in the General Education and Training (GET) band (Chisholm, 2005:198). EMS deals with the efficient and effective use of different types of private, public or collective resources in satisfying people's needs and wants, while reflecting critically on the impact of resource exploitation on the environment and on people (DoE, 2002b). The content foci for EMS in the senior phase (Grades 7 to 9)<sup>1</sup> are divided into four learning outcomes, namely the economic cycle and the perspective of the economic problem, sustainable growth and development, financial skills, and entrepreneurship principles.

The ultimate aim of EMS education is for learners to acquire the knowledge and skills to understand various roles: as citizens within an economic system, as consumers who are confronted with ever-changing consumption and production patterns, and as entrepreneurs and managers dealing with operations, capital and other resources. Embedded in this aim is Learning Outcome 2: Sustainable growth and development, which emanated from the South African historical context of apartheid and inequality; increased global competitiveness; and the need for sustainable growth, reconstruction and development in South Africa (DoE, 2002a). The business sector places a high premium on the imperatives of profit maximisation and increased competitiveness, resulting in wide-ranging impacts.

Business stakeholders increasingly recognise the need for corporate social responsibility (CSR) and for integrating sustainability in their value chain. However, current research suggests that such integration is not widely reflected in business education curricula (Albinsson, Perera & Sautter, 2011). It seems, therefore, that educators have much work to do with regard to sensitising students to the importance of CSR and integrating Education for Sustainable Development (ESD) or Education for Sustainability (EfS) in undergraduate business courses. Ongoing research is being undertaken with the aim of expanding the learning outcomes for sustainable development in higher education (Shephard, 2007; Stubbs & Cocklin, 2008; Stubbs & Schapper, 2011; Svanström, Lozano-Gracia & Rowe, 2008). My contention is that EMS education at *both* school and university level can be used as a vehicle to create an awareness of sustainable development and how it relates to society, the economy and the environment.

Reasons for knowing what teachers think and how they come to understand the world are pertinent. Jonsson (2004) asks whether there are qualitatively different ways of understanding sustainable development – if so, it is important to identify how these different ways can be described. The notion of teacher understanding, teacher conceptions or teachers' "sense-making" of curriculum content, curriculum policy and/or teaching practice has had wide-ranging responses in the literature (cf. Blignaut, 2008; Bolden, Harris & Newton, 2010; Morrow, 2007; Summers & Childs, 2007; Shulman, 1986; Walshe, 2008). In the same vein, Firth and Winter

(2007) argue that student teachers' understanding of sustainable development is potentially of great significance for developing teachers' capabilities and confidence in mainstreaming ESD or EfS in schools.

## **Research problem**

There appears to be a scarcity of research in EMS education and specifically with regard to sustainable development within the South African school context. As discussed, the importance of sustainable development in EMS education needs exploration. The overarching issue relates to the way EMS teachers "make sense" of the role of business and their responsibility towards the sustained development of the country in the long term. Furthermore, we need to ascertain the understanding of EMS teachers regarding the scope, meaning and importance of sustainable development in EMS education; in other words, how critical EMS teachers are about advancing alternative interpretations of how business and government respond to issues of sustainability. The research questions can, therefore, be formulated as follows: How do EMS teachers "make sense" of sustainable development? Also, how do these understandings relate to their teaching practices and to ESD?

## **Research aim and objectives**

In this study, the main objective was to establish the teachers' conceptions of sustainable growth, sustainable development and what specifically needs to be sustained. A further aim was to ascertain the teachers' understanding of the EMS curriculum with regard to its Learning Outcome: sustainable growth and development. This article intends to provide some insight into EMS education with the aim of broadening conceptions of sustainable development within the school context. It is my contention that, with the required insight and integrated approach, EMS education can be used as a vehicle to create awareness of sustainable development and the symbiotic relationship between society, the economy and the environment.

## **Theoretical framework**

The literature suggests a growing consensus that sustainable development involves the interconnectedness of environmental, economic and social factors in meeting the needs of the present generation without compromising the sustainability of future generations (cf. Higgs, 2002; Marshall & Harry, 2005; Walshe, 2008; WCED, 1987). In recent years, there has been a growing recognition that natural resource depletion and climate change are accelerated by the imperatives of increased consumption, global competition and profit maximisation. Concerns have been raised about the impact that escalating production, promotion and distribution of commodities have on society (employment, health risks) and on the environment (carbon emissions, severe droughts, disruptive flooding and other environmental impacts). South Africa's vision for sustainable development encompasses the interdependence between

people, planet and prosperity, stated in the Framework for Sustainable Development as "... an economically prosperous and self-reliant nation state that safeguards its democracy by meeting the fundamental human needs of its people, by managing its limited ecological resources responsibly for current and future generations ..." (RSA, 2008:3).

There has also been growing awareness of our environmental conditions and a re-evaluation of our actions and orientation towards our natural world (cf. Bonnett, 2007; Higgs, 2002). This does not mean that EMS teachers should teach environmental education (EE). Bonnett (2007) advises against infusing EE into all subject areas, while Mokhele (2011) argues that EE is not supposed to be taught as a subject on its own, but rather be integrated into all learning areas. Such integration could expand the opportunity for EMS teachers to focus on incorporating economic and business principles and on how these principles influence society in the long term. Inevitably, communities bear the brunt of many environmental problems, some of which are created by the business sector in the first place. Bolden *et al.* (2010) are of the opinion that teachers' conceptions are valuable and that knowledge of their perspectives can be useful to teacher educators and educational practitioners. Knowledge of teacher conceptions could raise consciousness about a particular phenomenon which, in turn, could elicit further research. Teachers' epistemologies account, to a great extent, for how they mediate their teaching practice, and understanding thereof could be of great significance for developing teachers' capabilities and confidence in mainstreaming ESD in schools.

ESD underpins learning or gaining knowledge, which is necessary for developing new approaches to a sustainable quality of life for future generations. These new approaches involve various learning skills such as learning to ask critical questions, to clarify one's own values, to envision more positive and sustainable futures, to think systematically, to respond by means of applied learning, and to explore the dialectic between tradition and innovation (UNESCO, 2011:8). McKeown (2002:11) proposes that changes in the curriculum are necessary "to address the need for more sustainable production and consumption patterns". The challenge lies in identifying the kind of pedagogical tools needed for such integration as well as recognising its practical value for EMS education practice in South African schools.

The Brundtland Commission's seminal definition of sustainable development as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987:43) formed the conceptual framework of this study. This broad definition has elicited numerous interpretations (Bonnett, 2007; Higgs, 2002; Marshall & Harry, 2005; Walshe, 2008) of the meaning and scope of sustainable development, for example, why sustainable development is necessary; for whom the development is intended; the emergence of any interconnections; and the challenges with regard to teachers' understanding of sustainable development. While this definition is generally understood as "development that will last" (Atkinson *et al.*, cited in Briassoulis, 2001:411), the

meaning of “development” is vague and has become associated with sustainable growth, economic growth and/or market policy (Daly, 1991:6). According to Daly (1992:1), the term “sustainable growth” should be rejected. This view is contrary to those held by many economists who use “growth” as an indicator of economic prosperity. Daly (1992:6) argues that:

*When something grows, it gets bigger. When something develops, it gets different. The Earth's ecosystem develops (evolves), but it does not grow. Its subsystem, the economy, must eventually stop growing, but it can continue to develop and change indefinitely.*

Schumacher (cited in Stubbs & Cocklin, 2008:208) purports that it is impossible to have infinite growth in a finite environment. In contrast, Holliday (2001) contends that growth is necessary for further development and to prevent environmental ruin. Bonnett's (2007:710) critique of the WCED's well-known and highly influential definition is that this definition is one of extreme ambiguity. He questions, for example, “precisely what is to be sustained, at what level, and over what time span? Precisely whose needs are to be met, how are they to be prioritised, and according to what criteria?” This kind of questioning is central to this article to provide insights into EMS teachers' understanding of sustainable development and to explore whether an integrated approach to ESD in the EMS discourse is warranted. Marshall and Harry (2005:186) suggest that the WCED's definition introduced the cornerstone concept of sustainability – the linkages between social, environmental, and economic conditions, as well as a future-focused lens signifying a long-term objective that requires concerted efforts.

## **Research methodology**

The research that informed this article was based on the interpretive research paradigm to explore teachers' thinking with regard to the meaning and scope of sustainable development. The study was conducted within the public school system and was a sub-study of a larger research project that investigated the relevance of sustainable development in EMS education. A purposive sample was selected of seven EMS teachers located at different schools within a specific geographical area. The teachers were located at different schools within the Western Cape and were purposefully selected because of their varying levels of teaching experience in EMS education, the different contexts and background of the school, the level of resources at the school, and their student profile. Patton (2002:244) argues that there are no rules for sample size in a qualitative inquiry. The purpose of the research, therefore, was not to generalise the findings to the entire population of EMS teachers, but rather to gain in-depth understanding and insight. All the EMS teachers in this study are qualified commerce teachers and also teach accounting, business studies and/or economics in the FET band (Grades 10, 11 and 12).

The data analysis was couched within a case study as a design strategy; the “case” being the sample of EMS teachers. Stake (1994:236-247) purports that the

purpose of a case study is not to represent the world, but to represent the case. I had an intrinsic interest in the case, its uniqueness, particular context, issues and story. I decided to conduct in-depth interviews to collect the data and to apply content analysis to the interviews. The guidelines for qualitative content analysis provided by Henning, Van Rensburg and Smit (2010:104) were followed. The EMS curriculum formed an integral part of the study and was carefully perused. The responses during the interviews were categorised according to a coding matrix which was based on the literature reviewed (cf. Bonnett, 2007; Jonsson, 2004; Scott & Gough, 2004; Summers & Childs, 2007; Walshe, 2008). The teachers were requested to respond from their own frame of reference, that is not merely reflecting the stance of the EMS head of department (HOD), school, or the Department of Education. This was important since my own observation and communication with EMS teachers at some schools confirmed that the HOD structured the content and recourse material and did the planning of what would be taught, as well as how the lessons would be taught.

I decided to ask the following questions: “What is your conception of sustainable growth?” and “What is your conception of sustainable development?” to establish whether parallels could be drawn between the interpretation of growth and development in general and in relation to the curriculum. The next question was “What is it that needs to be sustained?” Even though the “what” questions might appear to be superficial, they are not as overt, and underlie what Jonsson (2004) refers to as the complexity of understanding that could be either vertical or horizontal complexity. Vertical complex understanding refers to profound, detailed and insightful understanding of one or several aspects, for example, a nuanced understanding of the impact on the economy caused by increased production and profit maximisation at the expense of resource exploitation. Horizontal complexity refers to the many shifts of perspective and different aspects that are frequently being connected and related to one another, for example, the ability to express the connections between society, economy, pollution and resource needs. Jonsson (2004) further suggests that any surface agreement on sustainable development soon breaks down when one asks *what* it is that needs to be sustained. Teachers were also asked to state their views regarding the EMS curriculum and specifically the Learning Outcome that deals with sustainable growth and development. Teachers were given leeway to express their views of how they came to understand these constructs and their impact on their teaching practice. The latter question was similar to the one that Catling (2001:365) posed when students were asked to explain to a stranger what geography was about. The interview process and open-ended nature of the questions allowed for deeper introspection and broader critical reflection about the conceptualisation of sustainable development in general *and* with regard to the EMS discourse.

## **Findings and discussion**

Findings related to perceptions of sustainable growth and development, the EMS curriculum, challenges and the economy–society–environment triad are presented below.

### **Sustainable growth and development**

Teachers' responses to the questions regarding sustainable growth and development revealed conceptions that are contradictory to what might be expected. The idea of the "future" has been identified as an important aspect in the sustainability literature (cf. Walshe, 2008:538; WCED, 1987:43), but it elicited an immaterial response in this study. Sustainable development is essentially seen as a long-term endeavour, and one where the pursuance of short-term gains at the expense of a long-term strategy should be avoided. However, in this study, the participants did not make much reference to a time span of sustainable development. With regard to a geographical scale, they mostly expressed the view that sustainable development is something that affects the country or the community. The teachers' direct focus for sustainable growth and development was on South Africa as a country, thereby illustrating that sustainable development is a national issue. "Sustainable growth" and "sustainable development" were often used interchangeably, as shown by the following excerpts from two teachers' responses:

*Development is basically the same as growth. (Teacher A)*

*It is very closely related; in fact sometimes those two are very much interchanged very easily. It depends on which textbook you consult. (Teacher E)*

The responses of the teachers regarding what needs to be sustained were organised around the themes of increasing entrepreneurs, infrastructure, and human and natural resources. An example of comments about what needs to be sustained is presented below:

*A healthy climate for foreign investment and increased productivity. (Teacher B)*

*In the South African context, the manufacturing sector ... (Teacher E)*

### **Economic and management sciences curriculum**

When asked about the EMS curriculum, all the teachers regarded redress as an important focus of sustainable development, which might signal that teachers from a post-apartheid society have a different emphasis on how they make sense of sustainable development. In general, the teachers felt that the learners should be made aware of the inequalities of the past, and that they (the teachers) were pleased that the Reconstruction and Development Programme (RDP) and the national budget are included in the curriculum. One of the teachers responded as follows:

*They (the learners) are also being told that there is the RDP, which means that the government really tried to fix what was wrong in the past. It is something that should get more time and attention. (Teacher D)*

Even though the teachers regarded the RDP as being important, none of them referred to any successful RDP projects that had made a difference to the quality of life of individuals or specific communities, or even on a national scale. Reconstruction or redistribution of wealth is one of the themes represented in the economic sustainability sphere (cf. Connelly, 2007) and regarded as a balanced approach to infrastructure provision (Bond, 2002) but, in the South African context, “redress” is firmly rooted in apartheid history and, in many instances, it implies personal restitution. There could be several reasons why the teachers considered redress as an important aspect of sustainable development (America, 2012). Firstly, it formed part of the prescribed content in the EMS curriculum at the time of the study; secondly, the South African apartheid past is still firmly embedded in the psyche of many South Africans; thirdly, redress continues to be a central focus in economic development frameworks proposed by the government, for example, RDP, growth, employment and redistribution (GEAR), and now the New Growth Path; fourthly, its implementation by the government is perceived as lacking and, therefore, seems to be a recurrent objective; and lastly, redress is perceived to be the solution to development problems such as poverty, joblessness and inequality. The teachers hold the view that social and economic development is the responsibility of government, and for government to achieve this it needs to increase its competitiveness in the global arena. This explains the teachers’ emphasis on the economic imperatives to sustainable development: illustrating how teachers themselves buy into the neoliberal agenda.

### **Challenges**

The most common challenge reported in this study was that teaching sustainable growth and sustainable development is a complex matter and not easy to understand or to teach. The vagueness of concepts was evident in the manner in which some teachers articulated their responses, as shown below:

*It is a very difficult and challenging outcome to explain to the learners. Even as a teacher it is a challenging concept. (Teacher B)*

The literature on sustainable development reaffirms its complexity and ambiguity (cf. Bonnett, 2007; Connelly, 2007; Scott & Gough, 2004; WCED, 1987).

### **Economy–society–environment triad**

It is important to note that the depiction of the “interconnectedness” or “symbiotic relationship” of the economy–society–environment triad emerged from the data; in other words, teachers were not informed beforehand of the three subsystems or how and whether they are connected. The importance that the teachers attached to the triad is summarised in the next paragraphs.

The economy was the most dominant focus of the teachers in the interviews. The sustainability debate has been criticised for its strong orientation towards economic advancement (Rauch, 2002). However, not all teachers could make the connection to the interdependence of economy–society–environment within the limits of

the ecosystem and how business operations influence a sustainable future. The economic factors related to sustainable growth and sustainable development were mostly expressed in terms of profit maximisation, foreign investment, increased productivity and job creation, amongst other factors. Some of the comments were:

*The first thing is to get money in the country through investments, where foreign companies want to open new businesses or they want to invest. The second thing is creating jobs and maybe through foreign investment this could happen. I would say sustainable development is all about developing resources. (Teacher G)*

*Sustainable growth [is] where new opportunities and avenues and expansion are explored and the business grows in terms of its profits. I think it is closely related, sustainable growth and sustainable development, very much interchanged. (Teacher E)*

References to society were also evident. In identifying the various features of sustainable growth, there was no reference to the influence of sustained economic growth on the environment or its direct impact on society. This is important in the light of socio-economic factors such as poverty, unemployment, quality of life and inequality which are impeding South Africa's sustained growth. The teachers had strong views on socio-political aspects and they emphasised the role of government, which was not surprising, since South Africa is a highly politicised country, and economic growth and development issues inevitably filter down to socio-political issues. For example:

*The gap between rich and poor is still too big. I would have liked to tell you that growth is taking place, but we are not reaching our goals. (Teacher G)*

*How can you expect people to develop when they are living in these conditions? The focus is more on infrastructure and development, what the government sets in place. And this will be programmes or projects focusing on the people itself, development that's how I see it. That is how I teach it. (Teacher F)*

There were no references to the impact on the environment with regard to sustainable growth; when asked to explain sustainable development, only two respondents' comments were related to the environment. One of these is provided below:

*If we cut off trees, we need to put it back in nature; there must be something for our descendants. (Teacher F)*

It is interesting that teacher G, an experienced commerce teacher, knew that the environment is being compromised, as shown by the comment: "We are running out of natural resources", although the teacher, even after I probed, was not able to say exactly why: "I wouldn't be able to tell you why we are running out."

The triple-bottom-line orientation, that is the 3-Ps (people, planet, profit), could easily be integrated in the EMS classroom when teaching financial, human-social, and environmental resources and its symbiotic relationship over the long term. Furthermore, albeit in an introductory manner at school level, these linkages could be prioritised in the EMS classroom, focusing on the role of the business sector and

the economic system to function for the greater good of society, now and in the future.

## **Conclusion**

While the connection that teachers made between economic issues and social issues was evident, the environmental impacts generally remained elusive. The relevance of environmental issues for EMS education specifically is that the business sector might be directly or indirectly related to issues such as climate change, increasing carbon emissions, environmental ruin, and health risks in the workplace.

The outcome of this study reveals that EMS teachers' dominant conception is equivalent to notions of unrivalled economic growth coupled with an impaired understanding of the interrelatedness of economy, society and the biophysical world, or to the incorporation of "green" issues. UNESCO advocates the training of teachers as a key strategy in achieving a sustainable society. This does not only refer to the training of new teachers, but should also be directed to the updating of knowledge and skills of in-service teachers. Similarly, the UNDESD (United Nations Decade of Education for Sustainable Development: 2005–2014) has directed attention to the integration of sustainable development in all educational settings. Creating an awareness of ESD is, therefore, vital, specifically when the value-creation processes of business operations are dealt with in the EMS classroom.

The teachers' understandings reflect the view that South Africa's increased global competitiveness and ultimate profit-driven motives are central to the realisation of economic prosperity and sustainability. The emphasis should be on development that can be sustained over the long term, while ensuring that a balance between the economy, society and the environment is promoted.

What value could teachers' conceptions bring to learners? Teacher understandings could open possibilities to re-evaluate how the EMS curriculum promotes or inhibits contemporary issues. In other words, how can teachers encourage learners to be critical of the world around them? Teachers could, through ESD, convey a set of values that could be reflected in their teaching. While contextual challenges, for example, school ethos, timetable overload, learner profiles, and support from curriculum advisors, have an impact on teaching practice, a step towards an enhanced awareness of sustainable development could be to encourage teachers to reflect on curriculum content and their teaching practice. For example, the focus could shift towards education for transformation, and not merely education for the reproduction of knowledge.

EMS education provides the ideal platform to integrate sustainability issues into topics of business principles and economic developments, for example, the current global economic crisis and how South Africa, as a global player, responds to national issues that affect sustainable economic development. Furthermore, South

Africa has been involved in the international arena in sustainable development summits such as the Johannesburg Summit in 2002 and hosting the global climate change conference (COP17), as well as locally, with the adoption of sustainable development imperatives in various organs of the state. Or, critical reflection of the Millennium Development Goals or integrating certain aspects of the UN's call for a Decade of Education for Sustainable Development in the curriculum. These issues could be applied in the EMS classroom and highlighted when learners are taught how businesses work and how they (businesses) should conduct themselves. While they are taught about the input and output of production processes, learners are also made conscious of the impact thereof, and the reasons why they should be attentive consumers and responsible citizens. In this way, knowledge is constructed actively by the teachers and will, therefore, shape their conception of sustainable development. The constructivist notion of how the teacher "comes to know" is a process of adaptation based on and constantly modified by the experiences of the teachers. This could present opportunities for teachers to further interrogate the curriculum and decide for themselves how they could integrate the imperatives for sustainable development in the EMS classroom. The objective is to advance learning about the effects of human activity on the quality of people's lives and the future of life on the planet.

Deliberate efforts and initiatives are needed to foster sustainable development through learning. Teacher experiences, as well as new understandings of the world, could guide their actions in new directions in the classroom.

## References

- Albinsson PA, Perera BY & Sautter P 2011. Integrating sustainability into the business curriculum through e-learning. *MERLOT Journal of Online Learning and Teaching*, 7(1): 117-127.
- America CG 2012. *Rethinking sustainable development as a learning outcome in the Economic and Management Sciences curriculum: Some insights from South Africa*. In K Darwis & K Yukio (Eds), *Towards a sustainable ecology*. Indonesia: UB Press.
- Blignaut S 2008. Teachers' sense-making and enactment of curriculum policy. *Journal of Education*, 43: 101-126.
- Bond P 2002. *Unsustainable South Africa. Environment, development and social protest*. London: Merlin Press.
- Bolden DS, Harries TV & Newton DP 2010. Pre-service teachers' conceptions of creativity in mathematics. *Educational Studies in Mathematics*, 73: 143-157.
- Bonnett M 2007. Environmental education and the issue of nature. *Journal of Curriculum Studies*, 39(6): 707-721.
- Briassoulis H 2001. Policy and practice: Sustainable development and its indicators: Through a (planner's) glass darkly. *Journal of Environmental Planning and Management*, 44(3): 109-427.

- Catling S 2001. English primary school children's definitions of Geography. *International Research in Geographical and Environmental Education*, 10(4): 363-378.
- Chisholm L 2005. The making of South Africa's National Curriculum Statement. *Journal of Curriculum Studies*, 37(2): 193-208.
- Connelly S 2007. Mapping sustainable development as a contested concept. *Local Environment*, 12(3): 259-278.
- Daly H 1991. Operational principles for sustainable development. *Earth Ethics*, 6-7.
- Daly H 1992. Sustainable development is possible only if we forgo growth. *Earth Island Journal*, 7(2): 12.
- DoE (Department of Education) 2002a. *Policy Overview: Revised National Curriculum Statement Grades R-9 (Schools)*. Pretoria, South Africa: DoE.
- DoE (Department of Education) 2002b. C2005. *Revised National Curriculum Statement Grades R-9 (Schools): Policy. Economic and Management Sciences*. Pretoria, South Africa: DoE.
- Firth R & Winter C 2007. Constructing education for sustainable development: The secondary geography curriculum and initial teacher training. *Environmental Education Research*, 13(5): 599-619.
- Henning E, Van Rensburg W & Smit B 2010. *Finding your way in qualitative research*. Pretoria: Van Schaik.
- Higgs P 2002. Education for sustainable development and the virtue of education. *Acta Academica*, 34(3): 138-153.
- Holliday C 2001. Best practice – Sustainable growth, the DuPont way. *Harvard Business Review*, September.
- Jonsson G 2004. Student teachers' understanding and concept formation of sustainable development. In P Wickenberg, H Axelsson, L Fritzen, G Hellden & J Ohman. *Learning to change our world*. Sweden: Lund University.
- Marshall RS & Harry SP 2005. Introducing a new business course: "Global business and sustainability". *International Journal of Sustainability in Higher Education*, 6(2): 179-196.
- McKeown R 2002. *Education for sustainable development toolkit*. Energy, Environmental and Resources Center. University of Tennessee, USA. <http://www.esdtoolkit.org> Accessed 31 March 2010.
- Mokhele M L 2011. Integrated environmental teaching in South Africa: An impossible dream? *Perspectives in Education*, 29(4): 78-86.
- Morrow W 2007. *Learning to teach in South Africa*. Cape Town, South Africa: Human Sciences Research Council (HSRC) Press.
- Rauch F 2002. The potential of education for sustainable development for reform in schools. *Environmental Education Research*, 8: 43-51.
- RSA (Republic of South Africa) 2008. The national framework for sustainable development in South Africa. Department: Environmental Affairs and Tourism. South Africa.
- Scott W & Gough S 2004. *Key issues in sustainable development and learning*. New York: Routledge Falmer.

- Shephard K 2007. Higher education for sustainability: Seeking affective learning outcomes. *International Journal of Sustainability in Higher Education*, 9(1): 87-98.
- Shulman LS 1986. Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2): 4-14.
- Stake, R.E. 1994. Case Studies. In N.K. Denzin and Y.S. Lincoln. (Eds.). *Handbook of qualitative research*. SAGE Publications, Thousand Oaks, London.
- Stubbs W & Cocklin C 2008. Teaching sustainability to business students: Shifting mindsets. *International Journal of Sustainability in Higher Education*, 9(3): 206-221.
- Stubbs W & Schapper J 2011. Two approaches to curriculum development for educating sustainability and CSR. *International Journal of Sustainability in Higher Education*, 12(3): 259-268.
- Summers M & Childs A 2007. Student science teachers' conceptions of sustainable development: An empirical study of three postgraduate training cohorts. *Research in Science & Technological Education*, 25(3): 307-327.
- Svanström M, Lozano-Gracia FJ & Rowe D 2008. Learning outcomes for sustainable development in higher education. *International Journal in Higher education*, 9(3): 339-351.
- UNESCO 2011. *Education for sustainable development – An expert review of processes and learning*. DESD Monitoring and Evaluation. Paris, France.
- Walshe N 2008. Understanding students' conceptions of sustainability. *Environmental Education Research*, 14(5): 537-558.
- WCED (World Commission on Environment and Development) 1987. *Our common future*. Oxford: Oxford University Press.

## **(Endnotes)**

1. This study was done based on the National Curriculum Statement (NCS) which will be replaced by the new Curriculum and Assessment Policy statement (CAPS) for the senior phase beginning 2014.