

Integrating sustainability into Business Education teacher training

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Businesses are increasingly coming under scrutiny from stakeholders who expect them to report how they protect the environment, how they guarantee no human and labour violations in their value chain, and how they function on ethical business principles. Businesses are trying to adjust to these changing environments for the betterment of society and the planet while still concentrating on profit. The same awareness and inquiry would be expected from business education student teachers who teach business principles and business operations. This study, which was conducted at three universities, describes the perspectives and sustainability virtues of pre-service business education teachers who attended a workshop aimed at integrating sustainability in their teacher training curriculum. A qualitative framework was adopted using three methods: focus-group discussions, reflection based on a video recording and a critical analysis of the curriculum. Findings suggest that incremental shifts in critical self-awareness of business education pre-service teachers occurred. A business education and education for sustainability synthesis is recommended and provided as a conceptual framework in this study. This synthesis can be a useful place to start to elicit critical self-awareness when pre-service teachers have to deal with the complex mix of the five types of learning, namely disciplinary, situational, practical, fundamental and pedagogical learning.

Keywords: business education, curriculum design, curriculum development, business economics education, education for sustainability, environmental education, sustainability, sustainable development, teacher education, teacher training

Introduction

Business education (BE) in the South African school curriculum underwent significant changes with the national education restructuring at the end of apartheid (Umalusi, 2009). As the business sector changed over time with the onset of globalisation and technological innovations as well as the changing South African economic landscape, curriculum developers attempted to incorporate changes such as corporate social responsibility and Porter's five forces (DBE, 2011) into the curriculum. Locally certain economic frameworks such as the Reconstruction and Development Programme, Growth Employment and Redistribution as well as current labour legislation and regulations such as the Employment Equity Act and Broad-Based Black Economic Empowerment have also been included. In South Africa the King 111 Report (Institute of Directors Southern Africa, 2009) gives credence to corporate scrutiny, including reporting on environmental protection, human and labour violations in the value chain, and ethical business principles. It is therefore important to educate students about the impact of business activities and decisions, not only in terms of economic advancement, but also about the orientation of business towards environmental and societal stewardship.

The early neoclassical welfare economics advocated by Edgeworth, Sidgwick, Marchall and Pigou's was inspired by debate about ideology, resource allocation efficiency and economic policy for the greater good of the welfare of its citizens. Pigou's work of 1920 proposes that "free trade may help some people, and hurt some other people, but the gainers would be able to compensate the losers", based on the Pareto principle: the reallocation of resources in such a way that some individuals are made better off while no individuals are made worse off (Suzumura, 2005:335). The emergence of a global economy has propelled the integration and the movement of goods, services, capital, technology, labour and with eminent reliance on natural resources. Embedded in the ideology of trade liberalisation is the emergence of global players such as multinational corporations (MNCs) or transnational corporations (TNCs), increased production and consumption, sophisticated supplier networks and an upsurge in information and technology. Many MNCs are resource driven which results in various causal relationships which have both positive and negative influences on the economy, society and the environment. The liberalisation of trade can create extensive opportunities for economic growth and employment, however in developing countries it is particularly characterised by the "scramble for resources" (Emeseh, 2008:561) or "land grabs" (Lee, Preston, Kooroshy, Bailey & Lahn, 2012:106) through foreign direct investments (FDI) by MNCs.

The transparency of many resource-related investments in land, metals and oil in developing countries are questionable. Lee et al. (2012) point to African countries that have abundant natural resources, but are regarded as emerging producers and conspicuously absent from lists of major resource producers. Host communities often have no protection from resources which are overexploited, wasted and used inefficiently. The increase in consumer demand as a result in a variety of choice and competitiveness hinder efforts to increase efficiency to reduce environmental impact simply because it is not economically and financially viable. The focus is now on "dematerialization" (Lee et al., 2012:142) as a serious prospect of some sectors to deliver value in ways which are less dependent on resource inputs and raw materials. Furthermore, it is vital that resource exploration and production in ecologically sensitive areas should be preceded and accompanied by rigorous and transparent impact assessment. Small, but incremental changes can be made on a personal level, as illustrated by Lee et al. (2012:142) as a shift from a "one product, one owner" approach to a sharing or rental model (an example most common today is the car-sharing).

In the same vein, commercial enterprises are exploring innovative ways to provide long-term service rather than sale of goods. The World Economic Forum (WEF) suggests that \$2 trillion (1.7% of Gross Domestic Product) of economic output would be at risk by 2030 if the major global economies fail to address the potential supply in steel and iron (Lee et al., 2012). New ways of production and resource use are therefore inevitable, which necessitates innovative ways of facilitating recovery, reuse and remanufacturing of goods and materials. Above all is the implication (and undermining) of scarcities and sustainable resource production in the supply chain, its dominance in the global arena, and moreover how these developments are shaping mindsets of educators and educational practitioners.

Today the economy increasingly affects the environment and society. Many MNCs dominate decision making, including that of many governments (Banerjee, 2008; Bond, 2006; Giddings, Hopwood & O'Brien, 2002). Giddings et al. (2002: 192) argue that the production and exchange of goods is a "social relationship, dependent on many non-monetary activities". Corporations are the primary agents of economic development; how they leverage ecological solutions in the face of economic and technological advancements is therefore crucial. The notion of sustainability has elicited wide-ranging attention. The literature commonly refers to sustainability as how corporations relate to their practices (production, waste disposition) and how it affects the natural and social environment, and therefore the availability of resources for future generations (Albinsson, Perera & Sautter, 2011:117). Much has been reported over the past two decades on the ecological modernisation paradigm, or on the expanded view of the 'triple bottom line', specifically balancing economic well-being, social justice and environmental resilience. This expansion encompasses the symbiotic relationship between natural, human, socially manufactured and financial capital (Scott & Gough, 2010; Stubbs & Cocklin, 2008).

The South African context and BE challenge

In South Africa the neoclassical or 'single bottom-line' worldview in the BE school context is particularly dominant since no structured education for sustainability (EfS) or sustainability education (SE) is incorporated in the BE curriculum. A sustainable development strategy has long been established in South Africa and is firmly entrenched in the New Growth Path (NGP) economic strategy. But, South Africa's sustainable development agenda is complex and multi-dimensional because persistent poverty, inequality, economic marginalisation and environmental degradation will continue to obstruct its development goals (Department: Environmental Affairs and Tourism, Republic of South Africa, 2008). To address some of these challenges, sustainability must be an integral consideration in all economic activity, in every sector and for the entire society (Department: Environmental Affairs and Tourism, Republic of South Africa, 2008). BE can be used as a vehicle to create an awareness of sustainability and how it relates to society, the economy and the environment. Foster (2011) puts forward the real question about how learning for sustainability matters and argues for the importance of 'virtues' as a model for ecological responsibility; that of genuine learning – critical self-awareness, exploratory-creative commitment and a robust tolerance for uncertainty.

Teachers have long been identified by the World Commission on Environment and Development as key role-players for

EfS and environmental education (WCED, 1987). The United Nations Educational Scientific and Cultural Organisation (UNESCO) also proposed a Decade Education for Sustainable Development (DESD) for the years 2005-2015 to link sustainable development into all forms of education through the integration of change in attitudes, behaviours, and values to ensure a more sustainable future in social, environmental and economic terms. The potential of education to play a pivotal role in the future realisation of the sustainability of the earth's resources, economic welfare and society's well-being is undisputed in that teachers' understandings of EfS are likely to affect how and what they teach.

The challenge is that despite progress in sustainability initiatives in higher education institutions locally and globally (Tilbury, 2011), in practice, sustainability has not been given a central focus in BE school curricula in South Africa to provide an opportunity for changing mindsets and behaviour. This challenge needs to be undertaken in a structured manner and one way of doing this is through BE teacher training. To accommodate a wider reader audience, I use an overarching term, BE, which refers to Economic and Management Sciences (EMS) Education – Grades 7 to 9 (senior phase in the school curriculum), and Business Studies, Accounting and Economics – Grades 10 to 12 (Further Education and Training (FET) phase in the school curriculum). Teachers can qualify as a senior or FET BE teacher. Pre-service teachers have to deal with the complex mix of the five types of learning, namely disciplinary, situational, practical, fundamental and pedagogical learning.

The participants in the study were pre-service teachers from three universities in South Africa, who were studying towards their Bachelor of Education (BEd) degree and had chosen BE as their area of specialisation. At the three universities, there are no specialised EfS units as part of their teacher education training within the BE module. This article (which reflects the initial exploratory phase of a bigger research project) focuses on the connections the pre-service teachers made with regard to their own critical self-awareness of sustainability, the BE learning area and their current training as BE teachers. The results have the potential to open dialogue and implement focused teaching strategies for EfS in the BE teacher training programmes in South Africa. Also, a synthesis of BE knowledge and EfS concepts could be used as a resource for eliciting critical self-awareness and may facilitate an integrated approach to the learning of pre-service teachers.

Theoretical perspectives

The analysis in this article draws upon the literature on sustainability in business education contexts (Stubbs & Cocklin, 2008; MacVaugh & Norton, 2012; Albinsson et al., 2011) and EfS or sustainability education in particular (Bently, Fien & Neil, 2004; Foster, 2011; MacVaugh & Norton, 2012). Stubbs and Cocklin (2008:214) put forward a sustainability framework which relates basic concepts and assumptions within the eco-centric, ecological modernisation and neoclassical paradigms in organisational practice and behaviour. Their framework is also useful in developing critical and reflective thinking. Foster (2011) highlights the importance of critical self-awareness as one of the cornerstones of the learning virtues of sustainability. Such awareness develops from first-order learning which signifies an adaptive learning process. From there the second-order learning leads to examining assumptions and the third-order learning leads to a transformative perspective. These virtues can be introduced at school level in a "real sustainability curri-

culum” which would allow broadening of understanding, to imagine the possibilities and create the emergent future as one delves into the issues of sustainability (Foster, 2011:401). He further states that “we learn when experience brings us to augment or revise the resources of memory and conceptualisation on which we can then draw for negotiating new experience” (Foster, 2011:401). In BE teacher training this approach would highlight fundamental learning (subject matter knowledge), social and ecological concerns and business ethics.

In most cases business students are exposed to neoclassical economic thinking, which focuses on unlimited economic growth through increasing production and consumption via a free market system. This is predominantly because of the larger provision of classic economics and business frameworks available in BE programmes (MacVaugh & Norton, 2012). In the main, the business sector places a high premium on competitiveness, profit maximisation and shareholder wealth (Banerjee, 2008, Bond, 2006). According to the ecocentric worldview the purpose of business is to increase quality of life and enhance social equity (human and non-human species) with a strong focus on waste management, which is a preventive rather than a controlling approach applied after pollution and waste have been created (Shrivastava, 1995). In the ecological modernisation view businesses pursue social, economic and environmental goals for ethical and economic reasons (Stubbs & Cocklin, 2008). The latter view assumes that businesses need to make a profit to exist but do not exist just to make a profit.

The “going green” initiatives which subsequently emerged allow business leaders to adopt eco-sustainability practices to stay ahead of regulation, find opportunities for eco-efficiency, reduce risk, lead proactive stakeholder engagement, and maintain a good corporate image (Sekerka & Stimel, 2011:117). Sustainable consumption and production (SCP), which refers to the need to promote patterns of consumption and production that reduce environmental impact and resource intensity, is underpinned by principles of sustainable development, green economy and green growth. SCP is also one of the priorities of Agenda 21 and the World Business Council for Sustainable Development. Consumption drives manufacturing and resource extraction around the world. Whilst an appropriate definition for sustainable consumption has been challenging academics and policy makers for a number of years, conceptions have varied from “society needs to find more efficient ways to consume” (Bently et al., 2004:48) to “buy ‘clean’ emission efficient products” (Organisation for Economic Co-operation and Development (OECD), 2002:20). For others, sustainable consumption means that a “wholesale rethinking of affluent lifestyles and material consumption per se is required” (Douthwaite, 1992 & Schumacher, 1993 in Seyfang, 2006:383).

It is even more appropriate, therefore, for the BE curriculum to embed an awareness of sustainable production and consumption patterns. Inevitably communities bear the brunt of many environmental problems, some of which are created by the business sector in the first place. Foster’s (2011) sustainability ‘virtues’ relate to the broad premise of EfS/SE: a changing mindset. The purpose of a sustainability framework is to expose students to different perspectives and worldviews, to broaden students’ interest in sustainability and ultimately change students’ thinking. MacVaugh and Norton (2012) and Albinsson et al. (2011) highlight the challenges of introducing EfS/SE with an active learning component in their business degree programmes.

Business education teacher training in South Africa

The two major routes to enter the field of business teacher education are via the four-year BEd programme. The other option is to complete a Bachelor’s degree in commerce where the focus is on subject matter content knowledge, and thereafter to complete the Post-graduate Certificate in Education (PGCE). The PGCE makes provision for specialisation in accounting, economics and/or business studies. The minimum requirements for teacher education encompass five types of learning:

- Disciplinary learning – disciplinary or subject matter knowledge;
- Situational learning – context, schools, districts, regions;
- Practical learning – teaching practice;
- Fundamental learning – second official language;
- Pedagogical learning – how to teach – curriculum, assessment, learners (Department of Higher Education and Training (DHET), 2011).

Whilst contextual realities (situational learning) form an integral part in curriculum design (Schudel, Le Roux, Lotz-Sisitka, Loubser, O’Donoghue & Shallcross, 2008), the focus in this research was on disciplinary, pedagogical and practical learning which are particularly important for the integration of EfS in BE. The key themes for BE disciplinary learning are business environments, entrepreneurship, the economy and financial literacy, including accounting and business functions. Students are also equipped with pedagogical learning, namely knowledge of curriculum policy, teaching strategies and preparation for teaching practice. Practical learning refers to the micro-teaching and school practice opportunities for pre-service teachers.

The South African school curriculum has undergone several restructuring processes over the last two decades; with subsequent adaptation of teacher training pedagogy and a review of specific subject matter content knowledge. It is useful to give a background to the current Curriculum and Assessment Policy (CAPS) for the senior phase (Grades 7 to 9) and FET phase (Grades 10 to 12). BE in the senior phase is compulsory and serves as a generic introduction to business principles and skills. However, EfS in BE remains vague, specifically at school level. If a BE teacher chooses the senior phase as specialisation, then the EMS curriculum will be covered; hence the practical learning of pre-service BE teachers will include the teaching of the topics and sub-topics listed in Table 1.

The FET phase has three specialisation options: business studies, accounting or economics. If a BE teacher chooses the FET phase as specialisation, then one or two of the three options will apply (see Table 2). The practical learning of pre-service BE-FET teachers will focus on the topics and sub-topics indicated in Table 2. The percentage indicates the weighting in terms of content to teach and assessments for the year.

Research design

In this article I attempt to describe the perspectives and critical self-awareness of pre-service BE teachers and the integration of sustainability in their teacher training curriculum.

Conceptual framework

In the study I chose a constructivist-interpretive paradigm which I adopted from Maree (2010:61) because it afforded the opportunity to delve deeper into the students’ understanding of sustainability and the BE learning area. The concept “sustainability” or “sustainable development” appears to be ubiquitous and its nature and interrelatedness may elicit varied inter-

Table 1 Business Education Topics for the senior phase (DBE, 2010)

ECONOMIC AND MANAGEMENT SCIENCES: TOPICS AND SUBTOPICS		
THE ECONOMY	FINANCIAL LITERACY	ENTREPRENEURSHIP
1. History of money	1. Savings	1. Entrepreneurship skills and knowledge
2. Needs and wants	2. Budgets	2. Businesses
3. Goods and services	3. Income and expenditure	3. Factors of production
4. Inequality and poverty	4. Accounting concepts	4. Forms of ownership
5. The production process	5. Accounting cycle	5. Sectors of economy
6. Government	6. Source documents	6. Levels and functions of management
7. The National Budget	7. Financial management and keeping records	7. Functions of a business
8. Standard of living		8. Business plan
9. Markets		
10. Economic systems		
11. The circular flow		
12. Price theory		
13. Trade unions		

Table 2 Business Education Topics for the Further Education and Training Phase (adapted from DBE 2011a, 2011b, 2011c)

BUSINESS EDUCATION: FET PHASE		
ECONOMICS	ACCOUNTING	BUSINESS STUDIES
Macroeconomics (25%)	Financial accounting (50-60%)	Business environments (25%)
Microeconomics (25%)	Managerial accounting (20-25%)	Business ventures (25%)
Economic pursuits (25%)	Managing resources (20-25%)	Business roles (25%)
Contemporary economic issues (25%)		Business operation (25%)

pretations of how students view certain concept(s) within BE. How “deep” the students may want to go, depend on their own understanding of the phenomena. The research design is a case study which according to Stake (1994) acknowledges the influence of constructivist-interpretivist thinking.

Data collection and procedure

Three workshops were conducted at three universities and the students who attended formed the sample for the study. Data were collected through the activities carried out at each workshop. The three data sources were individual student reflection based on a video recording of ‘The Story of Stuff’ (Leonard, 2007) that was viewed, focus-group discussions with prepared worksheets and questions based on the video, and a critical analysis of the CAPS curriculum. Thus all activities took place in the workshop.

Three universities in the Western Cape were purposefully selected because of the diverse student profile and the fact that they offer a BE programme. Although on-going research is being undertaken to expand the learning outcomes for EfS/SE in teacher education, the PGCE operates under slightly different conditions at the various institutions – it therefore falls outside the ambit of this paper. Also, the PGCE focuses on the FET-phase and the focus of this study was on the senior phase. The institutions remain anonymous for ethical reasons and are referred to as University A, B, and C. The total number of students taking part in the study at University A was 45, at University B it was 13 and at University C it was 22. The number of participants was limited because not as many student teachers choose BE as an option compared to science or language subjects. In South Africa, pre-service teachers are more likely to receive a state bursary if they select mathematics and science as their area of specialisation, which influences the selection of BE. Even though it is a small number of participants, one must consider that the objective of this case study

was to obtain an understanding rather than to generalise the findings to the broader population. The research was limited to the third-year BE students, because they would have had enough content knowledge at that stage and because the fourth-year students at two of the institutions were not available at the time of the study. All the participants were students who would eventually qualify to teach BE in the senior phase. This research can be regarded as small-scale and exploratory; its purpose is not to generalise, but rather for in-depth understanding and insights.

I spent one day at each institution and the sessions took the form of a workshop with breaks in between sessions. Worksheets were prepared in advance. I facilitated the sessions and the BE lecturers of the respective institutions were also present. Students were asked to reflect on questions in writing, which Patton (2002) suggests is a creative substitute to interviewing, since it provided an ideal opportunity for participants to reflect on and consolidate their views.

Given the probing nature of the study, the students were not briefed about the content of the video beforehand since I felt that it may influence their views. All of the student teachers were familiar with the production cycle and the activities in the value chain. First, the 20-minute video web-based animation video, ‘The story of Stuff’, narrated by Annie Leonard, was shown to the students. This video has found its way into various classrooms and lecture halls worldwide (cf. Albinsson et al., 2011). Leonard (2007) explains how human consumption affects the earth and, in it, the stages in which materials are processed from beginning to end. This video is not without controversy and has elicited diverse views, more specifically in the social network arena (cf. Kaufman, 2009).

Second, the students were asked to write down their views of the supply chain from extraction to disposal. These concepts are part of the BE curriculum and also obtainable from a variety of sources including ‘The Story of Stuff’ online resources. Once

the common responses were established, I decided to focus on the alternative responses of students, the 'outliers', after the students had watched the video. I specifically decided not to merely give back the definitions of each concept. In this way, I could delve more deeply into the depth and breadth of the analysis by the categorising of key issues to establish whether there was corroboration (or not) within the BE and SE literature.

Third, the students were given another worksheet which they had to complete individually. They were requested to indicate whether they had found the video convincing and whether they thought differently about consumption after viewing it.

Lastly, students were divided into focus groups of 4-5 members and each group was given a copy of the BE senior phase curriculum. They were asked to discuss whether SE is being dealt with in their teacher education curriculum and whether they thought SE is relevant at school level. They were also asked to suggest practical steps to introduce SE in BE. I observed the discussions and facilitated questions from the students for clarification.

Data analysis

Data were analysed using content analysis which was applied following the framework of Grbich (2007). The method allowed for depth and breadth analysis by means of an arrangement of key issues for establishing corroboration with the EfS/SE and BE literature.

Summary and discussion of the results

Based on the results of the study, this section deals with a discussion of how sustainability matters, a reflection of the BE curriculum and a recommendation for a BE/EfS synthesis.

How sustainability matters

Because of the exploratory nature of the study and the methodology applied there is always the risk of learning many things at superficial levels about and in the pursuit of sustainable development goals (Foster, 2011). In some instances the superficiality surfaced, especially at the beginning when the students had to reflect on the activities in the supply chain after watching the video. The analysis revealed that in all three cases most students described the supply chain from extraction to disposal of the production cycle by saying what it means or giving examples of what it means, for example, "the process of converting raw material and natural resources into consumable products". They did not have a critical sense of its impact on business, society, the manufacturing process itself, and the environment, especially after watching the video. The students mostly reflected from a neoclassical worldview, which implies that there is a need for broadening the BE curriculum to incorporate a focus on the ecocentric business and the ecological modernisation business as suggested by Stubbs and Cocklin (2008). The critical (self-)awareness which Foster (2011) alludes to was infrequent with responses such as:

Factories contributes to pollution...we're unaware that it is making us sick.

Too much junk are being manufactured and then the manner in which to get rid of it can be harmful to the environment.

When you buy a product, for example a juice and you are finished drinking you throw away the plastic bottle.

Where the earth are being destroyed to extract raw material.

Most of the students felt that they would be more inclined to

think about their consumption habits after watching the video. They made suggestions about being more aware of recycling and felt that consumers are being exploited:

It has affected the way I think in a sense that it is true that the products we consume do not last for such a long time and the market changes products and come out with new things over and over.

Yes, it makes me see the effects of waste much clearer.

Don't just buy because of the trends.

Buy local products. Buy products which make my country's economy stronger.

Second-order learning surfaced when students start examining assumptions, although it was not the overwhelming response. One student felt that the video was too light-hearted for such a serious topic, whilst another was critical about whose responsibility sustainability is. Some comments were:

Yes, it is convincing, but her tape is too light-hearted. Even without the video one can see how consumption is destroying our environment.

Some of us are aware of the government's 'hand' in it and we lost hope, if we all unite we can change it.

It made me think that we often buy things we do not need and we are thereby continuing this cycle.

Don't consume without thinking. Donate what you don't need instead of disposing and causing more toxins.

The literature on sustainable consumption and sustainable lifestyles is concerned with extensive rethinking of affluent lifestyles and excessive material consumption. The inference is often that affluence blinds sustainability in cases where students who come from middle- to high income households who do not have to face the challenges of day-to-day survival and poverty, may become insensitive to sustainability issues, for example, variety of choices as a consumer, how waste is managed, awareness of labelling of products etc. On a personal level, students' thinking and reflecting from a position of privilege will less likely be in terms of scarcity of resources or as illustrated by Lee et al. (2012:142) as a shift away from a "one product, one owner" approach to a vision of reshaping resource use in their households/communities. In this study however, there seemed to be a desire to know that there is more to her point of view (referring to Leonard, 2007) and that the knowledge about what SE represents is not substantiated fully by what they had seen. For example, one participant commented, "Yes, I have had these thoughts before but the tasks seem too enormous for me to handle alone." Foster (2011) claims that the nature of learning and its proper virtues tell us how sustainability must be conceived and how we must pursue it. In addition, the disposition is to be alert to what is going on in any seemingly first-order learning, and to recognise the point where one must pass beyond this level. The latter is the third-order learning which leads to a transformative perspective. Most of the students felt they would rather reflect on their consumption habits and how businesses conduct themselves. They referred to recycling and the exploitation of consumers by businesses that are driven by greed. This is consistent with Albinsson and others' (2011:121) study on the critique of 'The Story of Stuff', which elicited an "expanded perspective" from the students in terms of what constitutes "good ways and bad ways" to conduct business. As discussed earlier, the global economic agenda has its main priorities in a capitalist system, where many indirect costs are considered negligible. These indirect costs include the exploitation or overuse of resources to the detriment of the society and the environment. It is important that when students are exposed to

the curriculum content of BE, the challenges and concerns of resource use and scarcities in the global economy are integrated in their teaching and learning.

Reflection of the business education curriculum

The majority of the participants from all three cases felt EfS/SE is very relevant in BE, but is not covered as part of their teacher training, as shown in these excerpts:

No, it would be a great advantage to have a facet where SE can be implemented in our curriculum.

Yes, it encourages being responsible citizens. SE is not isolated in one area but in all areas. Also helps learners to learn social responsibility.

Yes, it is a relevant topic...because people have unlimited needs and wants with limited resources.

It is evident that the specific focus on EfS/SE in the curriculum is not a priority and that no training in this area is given. UNESCO (2011) advocates the training of teachers as a key strategy in achieving a sustainable society. This does not refer only to the training of new teachers, but should also be directed to the updating of knowledge and skills of in-service teachers. The DESD 2005-2014 alluded to earlier, is initiated by the United Nations (UN) to create global awareness in transforming education policy, investment and practice. In EMS education the foundation of business concepts is laid and it is essential for student teachers to find interesting ways to introduce active learning in the classroom. The practical application of EfS in the BE teacher education curriculum is necessary for the pedagogical learning component. Students suggested active learning, for example environmentally friendly projects in the business classroom was put forward in all three cases, but varied in the manner in which they conceptualised this notion. For some, such as the participants from University B, it represented awareness of recycling or having a market day for the learners at school. On market day, a day to promote the entrepreneurial skills of learners, they should reflect on the types of products they sell (non-toxic). Other suggestions included using the Internet and collages to create awareness, making EfS part of every lesson and using practical examples. Others felt that the video could be an icebreaker to create awareness of SE. Another suggestion was to undertake excursions to factories to give learners an opportunity to observe the production process and gain more information about the manufacturer's carbon footprint. A particularly interesting comment was that students wanted an interrogation of the notion of consumption:

...setting up debates of the advantages and disadvantages of the current look of the consumption cycle.

Teach learners about lifestyle choices and the impact of the production process on people and its environment.

As the participants delved deeper into their own understanding of sustainability, they progressed from an initial neoclassical worldview with their first individual written submissions of the supply chain to an ecocentric worldview with the group discussions and analysis of the BE curriculum. Their critical self-awareness, even though not entirely transformative, was evident from their greater consciousness of their own consumption habits. Currently, the complex mix of the fundamental, pedagogical and practical learning is not included in the current BE teacher education training for EfS. Table 3 provides a BE/EfS synthesis with 'example' concepts for pre-service teachers and should be seen in conjunction with Table 1 provided earlier.

In Table 3, the three different worldviews (neoclassical,

ecocentric and ecological modernisation) relate to the perspectives the teacher must be aware of when dealing with a key topic, such as the economy, financial literacy or entrepreneurship. The specific 'example' concept can be integrated and expanded on depending on the fundamental knowledge, pedagogical knowledge or practical knowledge dealt with at any given time. The fundamental knowledge should include sustainability as an idea which is integral to business operations and human behaviour. For example, when business functions or factors of production are being dealt with in class, the example of Shell Corporation and their fracking operations in the Karoo, South Africa (Cropley, 2013) could be used to elicit critical thinking and debate. Also, the award-winning documentary 'The Cove' (Psihoyos, 2009), which deals with the exploitation of dolphins in Taiji, Japan as a result of the neoclassical worldview, could be shown to the pre-service teachers for discussion and critique. In this way the students can reflect on the impact of business decisions and activities on society and the environment and how specific concepts (in Table 3), such as 'resource exploitation' and 'government policies', feed into a particular worldview and subsequent business behaviour. The active learning component as suggested by MacVaugh & Norton (2012) can also be integrated with the pedagogical and practical knowledge.

Conclusion

This article described the perspectives and critical self-awareness of sustainability of pre-service BE teachers at three institutions. How the business sector and MNCs do their operations are central to how teachers should stay abreast of economic developments, consumption and production and the challenges presented to the sustainability debate. More so, there is the responsibility that teachers have to create awareness to young consumers. Findings reflect that integration of sustainability in BE teacher training is elusive. Drawing on the three sustainability perspectives, initially the neoclassical worldview featured more prominently when students had to reflect on the supply chain, possibly because of the manner in which they learnt the content and even after watching the video, still viewed the process as "business as usual" (Stubbs & Cocklin, 2008: 217). A great deal of discussion occurred in the focus-group meetings when students reflected on the curriculum, which broadened their perspectives. Eventually they came up with practical active learning applications to introduce EfS in the curriculum. Incremental shifts in critical self-awareness occurred, but not in the third-order learning where there is a transformative perspective. I acknowledge this may not be possible with a one-off experience such as this project. Because of the time-frame, the other learning virtues, namely exploratory-creative commitment and robust tolerance for uncertainty were not overwhelming and may be useful to explore as a follow-up project over a specified time-span.

A synthesis of BE fundamental knowledge and EfS concepts can be a useful place to start to elicit critical self-awareness when pre-service teachers have to deal with the complex mix of the five types of learning, namely disciplinary, situational, practical, fundamental and pedagogical learning. An example would be to introduce concepts which students have to reflect on when they deal with pedagogical, situational and fundamental learning. Students should have the conceptual understanding of their fundamental knowledge where critical self-awareness can be elicited. This study shows that there are pockets of first-order and second-order learning which may lead

Table 3 Example concepts in a BE-EfS synthesis

BUSINESS EDUCATION AND SUSTAINABILITY EDUCATION		
Neoclassical worldview Ecocentric worldview Ecological modernisation worldview		
THE ECONOMY	FINANCIAL LITERACY	ENTREPRENEURSHIP
Sustainable consumption and production, resource use, resource exploitation, resource scarcity, green economy, overuse of resources, poverty, environmental problems, environmental protection, recycling, renewable resources, preservation of resources, government policies, global competition, ecological footprints, population increase, economic power, living standards factors, future generations, clean energy, carbon tax, carbon emissions.	Triple bottom line reporting – planet, people, profit; government policies, social responsibility; and corporate sustainability, ethics, compliance, King III report.	Government policies; social responsibility, ethics, sustainable innovation; cleaner production; wealth creation and equity, sustainable consumption; waste management; energy efficiency - rethink, refuse, reduce, reuse, recycle.
Fundamental knowledge	Pedagogical knowledge	Practical knowledge

to a transformative perspective (third-order learning) which culminates in critical self-awareness (Foster, 2011). If a new dimension to BE teacher training is to be proposed, crucial aspects of the school curriculum cannot be ignored; neither can students' pedagogical and practical learning – which makes provision for active learning initiatives as proposed by MacVaugh & Norton (2012). MacVaugh & Norton (2012) argue that, when combined with accessible and reliable sources or core sustainability research, active learning techniques can eventually move learners away from dependence on educators and towards a personal responsibility approach; for example, learners can access their footprint and report on steps they can take to reduce it. In this way young learners such as those in the senior phase can become self-aware and be conscious of the consequences of their own behaviour, which could then become habit-forming (transformative).

Acknowledgement

I thank the Centre for Teaching and Learning at Stellenbosch University for financial support, which made this research project possible.

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