“Evaluating student perceptions on the development management curricula to promote green economy”

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Evaluating student perceptions on the development management curricula to promote green economy

Abstract

The purpose of the paper is to determine the students' perceptions on the development management curricula in relation to education in green economy, as no previous research has been conducted to evaluate the perceptions of the students enrolled for this course. The study seeks to answer the following question: To what extent were students exposed to the skills and competencies required for engaging in green economy and its effect on their home and work environment.The study used the quantitative approach where the students were given a questionnaire to complete. The findings indicated that the sustainable development attributes were adequately covered with strong focus on global issues, time management and systems theory and thinking. Personal attribute awareness gained during the course included leadership skills, critical thinking and decision making that could enhance the understanding of the economy and environmental management. The study also highlights the students' perceptions that they could make significant contributions towards the green economy both at work and home. The study recommends that the course be redesigned to include aspects of green economy, the assessment strategies be made more relevant at the program level to include the tenets of engaged scholarship. The study is important for curriculum developers and higher education policy developers to ensure that the course content is relevant to addressing economic relations in the area of environmental management.

Keywords: re-curriculum, student, perceptions, sustainable, development, higher education.
JEL Classification:I23, Q56.

Introduction

Globalization, technological advances, increasing population and the consequent depletion of natural resources demands that graduates are well prepared to engage in these complex challenges. In particular, graduates need to have the skills and competencies to understand the relations amongst scarce resources, consumption, opportunity costs and its effect on the environment. Universities of Technology in South Africa are currently pressurised by government, employers and students to ensure the graduates are adequately prepared to add value in the world of work, the selected profession and society. More importantly, as the population grows and the economy staggers, the government is constrained by limited resources to provide basic services and deliver on its developmental mandates. To become relevant, universities need to ensure their curricula respond to by developing globalized scholars with the requisite knowledge and skills to sustain a balance amongst society, environment and the economy for the current and future generations. This study, therefore, seeks to evaluate students' perceptions relating to the skills and competencies required for engaging in the green economy through the development management curricula.

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1. Education in sustainable development (ESD)

The world is progressing towards an unsustainable situation, where the population, pollution, income inequality and poverty is increasing, while, at the same time, the natural resources, food security and employment levels are diminishing. According to Lozano (2010, p. 637), universities have been major agents of social change, but remained traditional by offering specialized qualifications and examining by repetition leading to unbalanced, over-specialized and mono-disciplinary graduates. Universities now are forced to play a significant role in preparing their graduates as future leaders who possess the required competencies to engage with the societal, economic and environmental issues. As these conditions become more prominent and threaten the future economic viability of the masses, greater focus is being given to education for sustainable development, in particular, the green economy.

Focus on sustainability commenced in the early 1970's due to the concern that the deteriorating environment could adversely affect future prosperity and economic justice. The Tallories Declaration made in 1990 by a number of university presidents and vice-chancellors from around the world attempted to describe a sustainable university as one that engages in education, research, policy formulation and information exchange; establish programs to develop expertise and awareness; and set an example of being environmentally responsible in all its activities. Subsequent to the meetings

of the United Nations, non-governmental organizations and governments, the Agenda 21 international agreement was adopted by the 1992 Earth Summit that highlighted human population, consumption and technology are the driving forces of environmental change and stipulated that education is critical for promoting sustainable development (Agenda 21, 1994).

The United Nations Decade of Education for Sustainable Development (DESD) was, then, proposed at the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002 and subsequently agreed to by the United Nations General Assembly (UNESCO, 2002). The main goal of the United Nations Decade of Education for Sustainable Development (DESD, 2004-2015) was to embed the sustainable development values in all aspects of learning to initiate a change in behavior to create a more sustainable and just society for all. Subsequent to the United Nations Decade of Education for Sustainable Development there has been controversies relating to education for sustainable development due to the many perspectives used to explain sustainable development (Gonzalez-Gaudiano, 2005, p. 243).

2. Defining sustainabilty and sustainable development

Sustainability is defined in many ways depending on the interest of the stakeholder, but generally includes that activities should protect societies rights, preserve the environment and promote economic equality for present and future generations (Clugston and Calder, 1999). Sustainability was initially defined as the working towards a common future and sustainable development "is development that meet the need of the present without comprising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987). Pigozzi (2010, p. 257) in considering the implementation of DESD, defines ESD has providing quality education that considers the past, present and future in the application and building of knowledge through collaborative engagements towards improved equality and a sustainability future for all.

3. Education for sustainable development (ESD)

Universities have a critical developmental role to prepare future leaders and change the behavior of its communities to promote sustainable development activities. Education in sustainable development aims to create awareness of the social, economic and environmental trends and provide opportunities to motivate students and the universities to develop innovative ways to manage sustainable development. According to UNESCO, ESD comprises 10 emerging fields that highlights the key issues in the modern world, namely, reduction of poverty; gender equality; promotion of health; environmental conservation and protection; rural transformation; human rights; intercultural understanding and peace; sustainable production and consumption; cultural diversity; and information and communication technology (Gonzalez-Gaudiano, 2005, p. 243). While all these fields cannot be included in a single course, they should be addressed in the program offering.

Universities have, therefore, been challenged to retain their traditional identities in relation to place, time; scholarly and student communities and also focus on the deconstruction of the subject, provide generic skills for the work place and life in general; learning through experience; web-based learning and the confirmation of the subject as the academic and organizational identity (Bridges, 2000, p. 38). Therefore, there is greater focus in preparing students to engage in sustainable development and universities which are slow to respond are placing their academics and students at risk not to be adequately prepared for dealing with sustainability challenges in the real world thus adversely affecting their employability. Higher education institutions (HEI) are required to regularly assess their teaching, learning and research activities and re-align these activities with the sustainable development agenda to encourage transformative learning processes that allows for lived experiences; debates and possible convergence of theory taught and practice. Of critical importance in this discourse is the strategic intent of HEI'S to become sustainable universities.

Dimensions for a sustainable university includes sustainable development issue in its vision and mission; incorporation of sustainable development concepts in all its academic disciplines; engaging and reflecting on its sustainable development practices on its campuses; academics with sustainable development knowledge and competencies should be hired and promoted; integrate sustainable development in institutional and student support services; and forms both local and international partnerships to promote sustainability (Association of University Leaders for a Sustainable Future, 1990). Conditions required for successful sustainable development initiatives include the credibility of sustainable champions; commitment by administrative leaders; alignment with the organizations ethos and culture; engagement of the university community; ability to obtain critical resources; and perceptions of the benefits to the beneficiaries (Clugston and Calder,

1999, p. 4). Gonzalez-Gaudiano (2005, p. 245) argues that ESD seems to be an elusive thematic group of issues with a tendency to configure new discourses as a developmental system having autonomous themes and therefore needs to be addressed in an integrated and holistic manner. Jones, Trier and Richards (2008, p. 342) recommend that ESD should be presented as a coping mechanism rather than aiming to solve the complex sustainable development issues to promote learning and capacity development for engaging with the unprecedented challenges. To this effect, higher education institutions should implement green curricula, green campuses and green research to enhance the students' learning about the relation of the economy and the environment.

4. Location of the study

The Department of Construction Management and Quantity Surveying (DCMQS) is one of several departments within the Faculty of Engineering and the Built Environment. The vision of the DCMQS is to be the preferred centre in Africa for career-orientated study, research and consultancy in construction management and quantity surveying, and to be a key stakeholder in the reconstruction and development of the KwaZulu-Natal Province and country. The mission of the DCMQS is to undertake internationally relevant teaching, study, research and consultancy that support the advancement of our students and the construction industry by providing a coherent, quality driven academic course of study which is relevant to the needs of employers in these disciplines and to society at large (www.dut.ac.za). The DCMQS is committed to the following values: pursuit of excellence, academic and intellectual freedom, creativity and innovation, mutual respect, cooperation and communication, community engagement, accountability and diversity (www.dut.ac.za).

The DCMQS offers the Bachelor of Technology Degree on a part-time basis with many of the adult students being employed in the construction, quantity surveying and project management field both in the public and private sector.The courses offered in the program include building entrepreneurship, construction economics, construction law and procedures, construction management, development management, maintenance management, market evaluation, quantity surveying and real estate management. These courses relate closely with the environment, economy and society mainly through the procurement and use of resources, affecting the environment through the various construction projects and influencing the economy by providing employment, demand for goods and services and alleviating poverty. Therefore, it is critical to evaluate the students' perceptions relating to the green economy and sustainable development program offerings.

The subject, Development Management IV, is intended to equip the student with the ability to comprehend social and economic principles governing component of the development process; make the student understand project management and its influence to enhance effective and efficient developments; familiarize the students with issues associated with government's developmental policies, programs and projects; and provide the student with a monitoring and evaluation framework to ensure economy, equity, efficiency and effectiveness in developments. The learning outcomes of the course includes the following:

- Comprehend different social and economic principles governing the development and the development process.
- Understand project management and its influence to enhance effective and efficient developments.
- Evaluate issues associated with government's developmental policies, programs and projects.
- Develop an understanding of integrative monitoring and evaluation frameworks to ensure economy, equity, efficiency and effectiveness in developments.

The above learning objectives require the student to think critically and systematically when evaluating the various social and economic principles affecting the government's policies, programs and projects for local economic and social development. In addition, the student has to understand how the outcomes of infrastructure developments affect the economy and equity in society. Implied in theses outcomes are the efficient and effective use of resources through the focus on effectiveness and efficiencies and the preservation of individual and collective rights of communities, participation and the preservation of the environment emanating from the Bill of Rights (Constitution of the Republic of South Africa 108 of 1996). The learning outcomes are, therefore, embedded in the critical analysis of the economic relations and environmental management through sustainable development, projects and monitoring and evaluation.

5. Teaching and learning

For ESD to be successful, the appropriate pedagogies need to be selected. The teaching and learning approaches could include competitions

Scott (2013), case studies, software tools, lectures, active learning, targeted homework assignments and term projects Bielefeldt (2013); e-learning (Barth and Burandt (2013); problem and project based learning Brundiers and Wiek (2011); unconferencing Wolf et al. (2011); and community based action research project Rojas et al. (2011). Jones, Trier and Richards (2008, p. 342) citing Marinova and McGrath (2004) highlight that the teaching process is just as important as the content of the subject and recommend a transdisciplinary approach to teaching that includes: learning to know; learning to do; learning to live together; and learning to be. This holistic approach encouraging deep learning is appropriate due to the country's history of apartheid and the majority of students registered at Durban University of Technology come from the previously disadvantaged black communities.

Universities engage with the formal, informal and hidden curriculum that needs to be aligned with the students and staffs' competencies and experiences on campus. The formal curriculum entails the program offerings that should include sustainable development. While there may not be evidence of specific sustainable development contents in the subject offerings, it does not mean that sustainable development is not taught. The informal curriculum includes students extra-curricular engagements, while the hidden curriculum relates to the operations of the university. For ESD to be successful, the university has to show evidence that it complies with the principles of sustainable development in all its operations. This would enhance both the students and staff's motivation and engagement in ESD.

Four approaches to incorporate sustainable development into curricula is to provide some coverage of environmental issues and materials in an existing module or course; offer a specific sustainable development (SD) course; SD is embedded in discipline specific courses and made applicable to that specific course; and offer SD as a specialisation in faculties. In each of the above approaches, the influence of the economy on the environmental management needs to be evaluated. The level of progress can be assessed as major progress being made in embedding SD in undergraduate and postgraduate programs; limited progress has been made; and difficulties have been experienced in making credible connections in courses and degrees (Lozano, 2010, p. 638). Therefore, there is a need for curriculum developers to regularly evaluate the progress of SD in every course within the program offered.

6. Theoretical framework

6.1. Transformative learning. According to Dirkx (1998, p. 1), there are four theoretical perspectives in the fields of transformative learning, namely, consciousness-raising (Freire, 1970); critical reflection (Mezirow, 1991); development (Daloz, 1986); and individuation (Boyd, 1991). The four perspectives do not clearly outline a pedagogy for adult learning, but commonly emphasize the actualization of the learner and society through liberation and freedom which is constrained by the presence of coercive forces within our personal and socio-cultural contexts. Dirkx (1991, p. 8) argues that transformative learning aims at identifying these constraints and freeing ourselves through reflection, dialogue, critique, discernment, imagination and action. One of the percusor to this process is that the individual needs to know him/herself within their specific contexts and acknowledge that transformative learning does not have a distinct beginning nor an end.

Therefore, transformative learning is an attempt to think critically on the experiences during adulthood to better understand the world by reflecting on ones values, purposes, feelings and meanings and is grounded in human communication (Taylor, 2008, p. 5). To change the levels of thinking, frames of references that are inclusive; differentiating; permeable; critically reflective; and integrative of experiences are used (Taylor, 2008, p. 6) citing Mezirow (1996). Alternative concepts related to transformative learning includes spirituality, positionality, emancipatory and neurobiology. For the educator, it is, therefore, important to establish the context of learners and then develop a process with the learners rather than the development of a teaching and learning strategy for transformation to occur. In the case of the current cohort of Development Management IV students, the majority emanate from the black previously disadvantaged population group and their high school education having been received from the poorly resourced rural schools.

6.2. Engaged scholarship. Boyer (1996) proposed that academia must become a more vigorous partner in the search for answers to the urgent social, civic, economic and moral problems and universities should not merely be perceived as a place where students obtain qualifications and academic get employed, while the overall work of the academia does not seem relevant to the world's pressing problems. To overcome these challenges he proposed that universities become committed to the scholarship of engagement. The model constitutes four typologies of scholarship, namely, discovery,

integration, application and teaching (Boyer, 1996). Discovery scholarship relates to the traditional research to build new knowledge through publishing in peer-reviewed forums and producing creative work within the established fields of the participants.

Integration scholarship referred to the use of knowledge across disciplines by emphasising the interconnectedness amongst different disciplines. For example, by writing a textbook on economic relations and the environmental management to be used by multiple disciplines. Application scholarship involves helping society and professions in addressing real life problems. Being a consultant, assuming leadership roles environmental management could promote application scholarship. Teaching scholarship focusses on sharing knowledge and requires the evaluation of teaching practices to achieve optimal learning by undertaking classroom research, mentoring graduate students, developing and testing instructional material and designing and implementing program level assessment system in relation to the economy, society and the environment.

7. Conceptual framework

7.1. Systems thinking aiding student centeredness. Systems thinking could help the adoption of sustainable development encouraging academics to abandon the silo mentality and introduce cross-cutting themes in research, teaching and learning. The teaching process should not ignore the interrelations and interdependencies of the social, economic and environmental issues. Micangeli (2014, p. 3494) proposes a "learn to appraise" method for teaching. The first phase entails listening to the students and when possible listening to the environment, people and the territory while the second phase includes using the collected data to maximize the benefits for all by using their talents. During the first phase, the students were sent a questionnaire to measure their learning preferences, self-efficacy and sensitivity to the sustainability and green economy themes. After the analysis of the data, students were allocated projects that best suited their interest and learning styles. This approach aids the facilitators to develop interactive and group learning strategies in universities based on the systems approach and student centeredness.

Teaching, learning and assessment strategies are critical to the success of the lecturer, students and ultimately the institution. Lecturers' motivation and teaching style would affect how and what the students learn from the lectures, tutorials and assessments. The Guidelines for Teaching and Learning at DUT include creating a student-centered teaching and learning environment built around the notion of "learning to learn"; apply a diversity of teaching strategies in delivering academic programs or modules; conduct ongoing research on both the content and teaching methodologies of various disciplines to inform teaching strategies; integrate professional development of lecturers and tutors; and prepare students as critical citizens by developing lifelong learners. This study is premised on developing lifelong learners and critical citizenship, through student centeredness.

Student centeredness allows for flexibility in accommodating the students' motivation, aptitudes, learning styles and providing choices in the teaching and learning process. In this way, the student becomes centre of the learning process and demands that the lecturer uses a multi-approach to teaching and assessments. The use of information communication technologies, social media and blended classes could enhance the degree of student centeredness. The effectiveness of the student centeredness approach should be reflected by the extent to which the students achieve the graduate attributes. Every DUT graduate should possess the following attributes, namely, be critical and creative thinkers who work independently and collaboratively; knowledgeable practitioners; effective communicators, culturally, environmentally and socially aware within the global and local context and be active and reflective thinkers (DUT, 2014, p. 5).

8. Empirical literature

Jones et al. (2008, p. 344) in a study of embedding ESD in a geosciences subject found both internal and external factors that obstructed the successful implementation of ESD. The former related to the individual's mind set and personal information while the later related to the institutions organizational structure and culture. The authors further suggested that the university win the minds and hearts of staff rather than to pay lip service. There was a concern that the professional accreditation bodies would not support the ESD initiatives. Another factor highlighted by academics was the lack of time to embed and teach SD in the subject. Micangeli et al. (2014, p. 3485) citing Sibanda (2013) found that in a study at University of KwaZulu-Natal, although students were aware of climate change issues, they did not follow green practices due to the convenience of using printed material, the high cost of electronic equipment and resistance to change to new methods of completing their tasks. The learning process for students would

be slow and difficult due to the new concepts, sustainable development being a "wicked problem"; requiring students to think critically and possess problem solving techniques; and students having different cognitive and learning styles (Micangeli, 2014, p. 3487)

Shiels, Filho, do Paco and Brandli (2015, p. 123) study on university-community engagement focusses on two main areas, namely, development of educational programs and management of projects to promote sustainable development. The engagement of students is important, as the communities provide the context and platform for students to relate theory with practice. In managing community projects, student involvement is critical to develop the soft skills student need when they enter the work environment. However, there is a lack of research on the process of how universities establish and sustain community partnerships which could constrain capacity building efforts (Hall, 2010; Hart et al., 2009).

Information Communications and Technologies as an instrument for ESD creates tension on the very structure of society due to the opposing views on the role of ICT. One view point is that ICT dehumanises modern society and promotes capitalism while others view ICT as an opportunity to overcome historic imbalances in knowledge creation and sharing; reduces inequality and homogenises differences. Gonzalez-Gaudiano (2005, p. 247) citing Vattimo (1990) comments that mass media influences the formation of the post-modern society, making it more complex and chaotic out of which hopes of emancipation are born.

9. Research methodology

9.1. Purpose and objectives. The purpose of the paper is to determine the students' perceptions relating to education on sustainable development in the Development Management IV course. The objectives of the study were to:

- Investigate students' perceptions relating to the sustainable development attributes covered in the Development Management IV course.
- Evaluate students' experiences relating to the personal awareness gained from the Development Management IV course.
- Assess the students' involvement in sustainable development activities at home, work and in the community.

9.2. Research design. The study uses the positivist paradigm since the student should have developed specific outputs if the inputs, namely, course content; teaching, learning and assessment strategies; and institutional support services and operations enhanced his/her sustainable development learning experiences. Based on the above premise, the quantitative approach was used with the questionnaire being the survey instrument. The questionnaire had both open and closed questions with the latter utilizing the Likert scale to elicit different rankings from the respondents.

The questionnaire was used as the survey instrument and consisted of five sections. Section A included the biographical details of the respondents; Section B related to sustainable attributes addressed in the course; Section C referred to the personal awareness gained from the course; Section D investigated the effect of the course at work and home and finally Section E pursued self-directed, incidental and socialisation learning strategies. Ethical clearance to undertake the research was obtained from the Durban University of Technology Institutional Research Ethics Committee and confidentiality and anonymity was ensured by not recording or reporting any personal details of the respondents.

Target population and sample were the current cohort of 105 part-time Bachelor of Technology registered students for Development Management IV course in 2016. The questionnaires were given to all the students by the lecturer during the lectures and the lecturer answered any queries from students relating to the questions. Once the questionnaire was completed, it was collected by the lecturer. Sixty-seven questionnaires were completed and submitted to the lecturer. The data were captured and analyzed using the SPSS software program.

9.3. Delimitations and limitations of the study. This study was conducted only using the current cohort of students registered for Development Management IV. The findings from this research cannot be generalized to other courses within the program and to the remaining departments within the Faculty of Engineering and Built Environment due to the different course purpose and learning outcomes. Irregular attendance to lectures by students may have affected the response rate and adversely limit their knowledge and understanding of the issues covered during the lectures.

10. Research findings and discussions

Approximately 48% of the students are between the age of 20 to 25 years, while 33% are between 25 to 30 years. Males constitute 60%, while females make up 40 percent of the sample. The race composition is Blacks 72%, Asians 18%, Whites 6% and Coloureds 3%. Seventy eight percent of the respondents had between 0 to 5 years working

experience, while 15% had greater than five years and less than ten years working experience.

Majority of the respondents are young Black male adults with less than five years work experience. Firstly, the young age group reflects more opportunities for future knowledge acquisition in sustainable development and in greening the economy through capacity development. Secondly, females are well represented in a male dominated field of construction management and quantity surveying. Finally, the race representations fairly reflect the demographics of the region in which Durban University of Technology operates.

10.1. Sustainable development attribute covered in the course. Students were requested to indicate the coverage of the following issues in the Development Management IV course by responding to the five category Likert Scale, namely, very good, good, fair, poor and not covered. For the purposes of this study, the very good and good categories were grouped and reflected in the figure below.

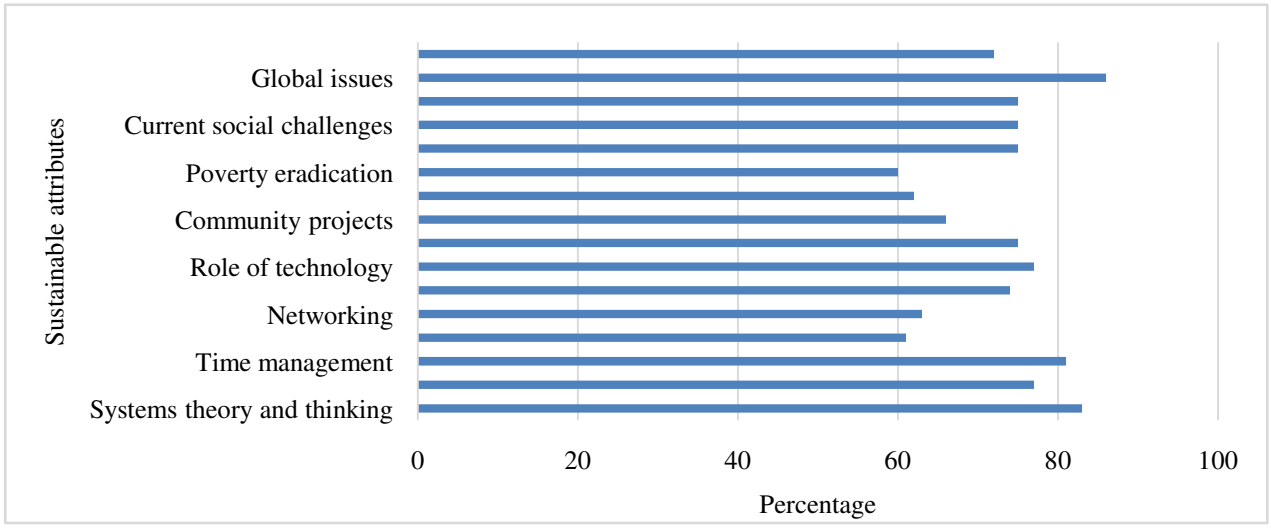

Fig. 1. Sustainable attributes addressed in the course

In terms of global issues (86%), time management (81%) and systems theory and thinking (83%) students found that it was well covered. This could be attributed to the strong focus on current events relating systems theory, wicked problems and project management issues and discussions in the lectures. Generally, for the remaining attributes 60 percent of the students indicated it was well covered.

10.2. Personal attribute awareness gained from the course. Students were requested to indicate the coverage of the personal attribute awareness gained from the Development Management IV course by responding to the five category Likert scale, namely, very good, good, fair, poor and not covered. For the purposes of this study, the very good and good categories were grouped and reflected in the figure below.

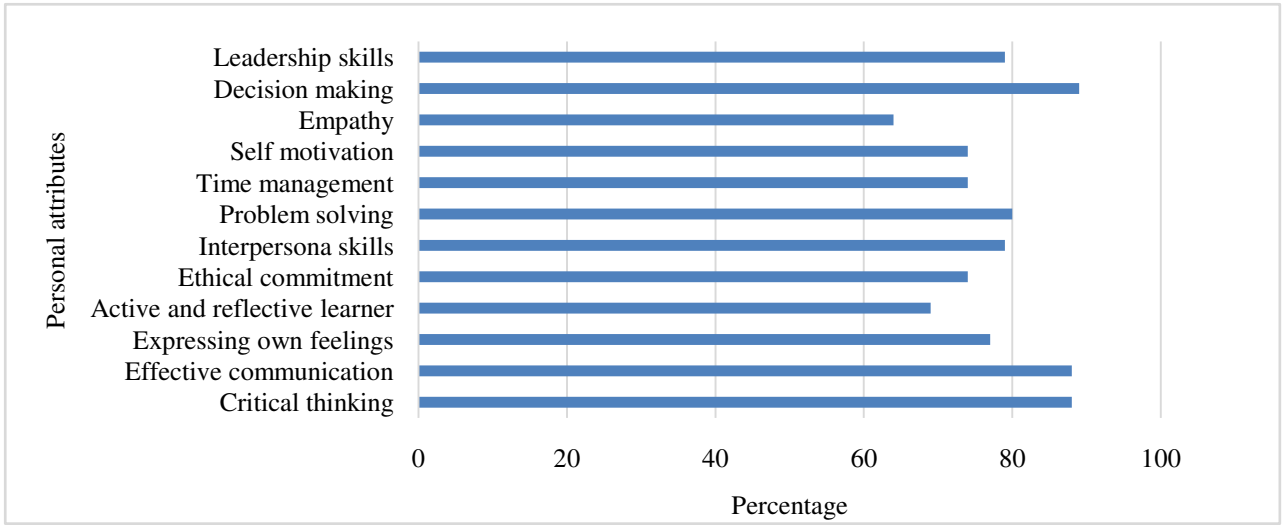

Fig. 2. Personal attribute awareness gained from the course

Majority of the students have acknowledged that awareness in the above attributes have been good. In particular, decision making (89%), effective communication (88%), critical thinking (88%) and problem solving (80%) has achieved the largest awareness. As working adults decision making, effective communication and problem solving skills are important for the daily operations of construction managers and quantity surveyors. Students have been exposed to critical thinking in class discussions, case studies and daily events which could have had a major impact on the students.

Empathy (64%) and active and reflective learner (69%) seems to have created the least awareness. As indicated earlier, majority of the students come from the Black community that has been previously disadvantaged by poor secondary school education and these attributes could take longer to develop.

10.3. Students effect on green issues at home and work. Students were requested to respond to the degree of difference they could make at home and work by selecting one of the following five categories in the Likert scale, namely, huge difference, little difference, no difference and unsure as yet. For the purposes of the study, the huge difference and little difference were grouped together and is shown in Figure 3.

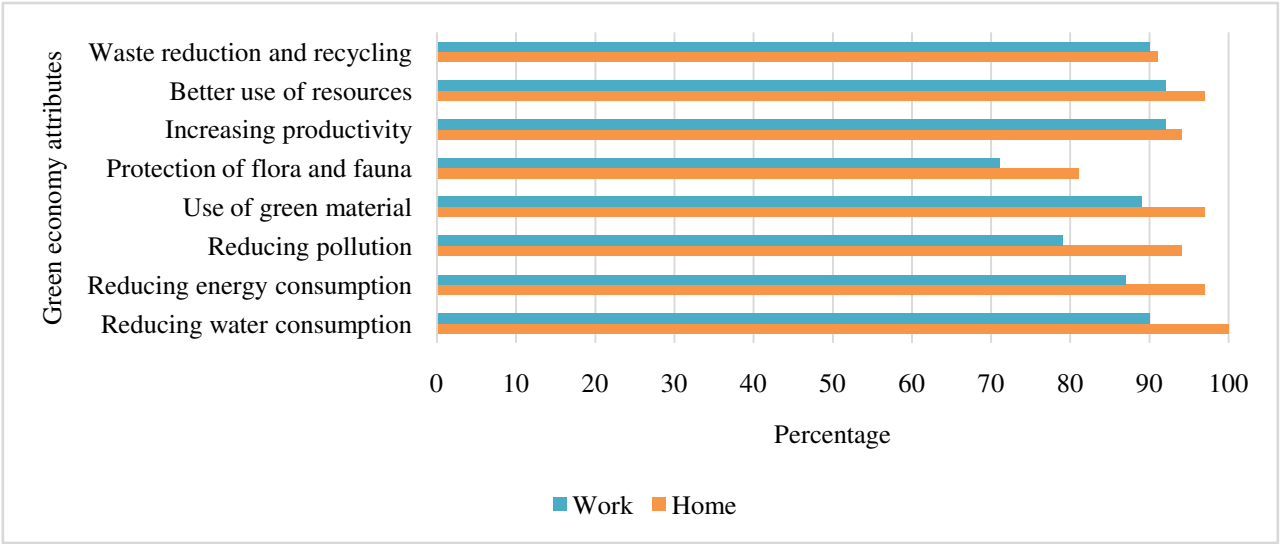

Fig. 3. Making a difference in the green economy attributes

Majority of the students indicated that they could make a difference both at work and home by engaging in the green economy issues of waste reduction and recycling, protection of the environment, reducing pollution and energy consumption and water consumption. Greater influence could be made at home than at work as the organization may not have a green economy policy or the students do not have the necessary delegated authority to make the necessary changes at work. Despite the significant role students could play in greening the economy, very little green economy content is presented in the course.

Responses to the following open questions have been collectively discussed. Have you undertaken any actions towards sustainable development? What experiences you had that identify that you have learnt something in relation to sustainable development? In what ways have your attitudes, values and behaviors changed towards sustainable development?

Students reported that they took action by reading and researching sustainable development issues, although no details were presented. The saving of water, electricity and finances were also effected as it seems that all students are involved in these issues on a daily basis. Community was assisted with water related issues and youth were taught how to recycle waste. Some students recognized that they need to save resources for the future generation and the community needs to be more involved. Students began to engage in sustainable development discussions by encouraging their peers to change their habits and have become more aware of the sustainable development issues. Some respondents indicated their desire to become more involved in sustainable development issues.

Responses to the question "what are your concerns with regards to sustainable development?" are reported below.

Concern was raised that "people think that others should take action rather than themselves", "societies think sustainable development is an academic issue and they have no role in it" and "people take action only to better themselves". The above comments highlight a need to develop an

awareness campaign in communities relating to their roles in sustainable development. There were comments that every citizen should take action and there is a need for South African citizens to work together.

The above issues indicate that the Development Management IV course has created an awareness regarding sustainable development and green economy issues. There is also a need to educate both the students and communities on their roles in sustainable development and the initiatives take to enhance the green economy. Greater awareness and knowledge could have been gained if Durban University of Technology developed a formal sustainable development policy and become committed to become a sustainable university (Clugston and Calder, 1999).

Recommendations

Therefore, it is recommended that the course content be reviewed to include issues relating to the green economy, in particular, the relationship amongst the economic variables and environmental management. While students indicated that community projects were adequately covered, there is a need for engaged scholarship, where students are required to solve real life problems in the construction and quantity surveying sector. There is no evidence of the assessments being interdisciplinary or multi-disciplinary and it is recommended that assessments be developed at the program level to incorporate inter- and multi-disciplinary assessments. The study has, therefore, been significant in that it highlighted the need to review the course content, learning outcomes and assessment strategies.

Future research should ascertain the base-line knowledge of students in the various sustainable development and green economy constructs to derive greater insights into the outcomes of the course relating to self-directed learning, incidental learning and socialization. Another issue for consideration is the evaluation of the nature and extent of transformation the students experienced during the delivery of the course.

Conclusions

Generally, students felt that the sustainable development attributes and personal attribute awareness were adequately covered in the course. The course has to some extent created an awareness that they could engage in the green economy/sustainable development issues in society. Most significant finding is that students perceive they could make a difference in developing the green economy both at home and work although the course dos not adequately cover these issues.

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