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IESALC
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ESS Educación Superior y Sociedad

31

Higher Education in the Caribbean

Instituto Internacional de Unesco para la Educación
Superior en América Latina y el Caribe (IESALC), 2019-II
Educación Superior y Sociedad (ESS)
Nueva etapa
Vol. 31
ISSN 07981228 (formato impreso)
ISSN 26107759 (formato digital)
Publicación semestral

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ess Educación Superior y Sociedad

Educación Superior y Sociedad (ESS) es una publicación semestral, editada por el Instituto Internacional para la Educación Superior en América Latina y el Caribe (IESALC) de la Unesco, con sede en Caracas, Venezuela.

Educación Superior y Sociedad (ESS) está consagrada a publicar resultados de Investigaciones; identificar brechas del conocimiento y nuevas prioridades de investigación; traer al ámbito del debate cuestiones y problemas actuales; promover la investigación en y sobre la educación superior; diseminar información sobre políticas y buenas prácticas; contribuir al establecimiento de puentes entre los resultados de la investigación y la formulación de políticas; facilitar y estimular arenas internacionales e interdisciplinarias para el intercambio de ideas, experiencias y el debate crítico, estimular la organización de redes y la cooperación entre actores, fortaleciendo las condiciones para la innovación de la educación superior; fortalecer una plataforma comunicacional para investigadores y un repositorio de investigaciones relacionadas con la educación superior en los distintos países de la región.

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Educación Superior y Sociedad (ESS), is a bi-annual journal published by the International Institute for Higher Education in Latin America and the Caribbean (IESALC) of Unesco, located in Caracas, Venezuela.

Educación Superior y Sociedad (ESS) is dedicated to publishing research results; Identify knowledge gaps and new research priorities; bringing to the domain of debate current issues and problems; promoting research in and on higher education; disseminating information about policies and good practices; contributing to the establish bridges between research results and policy formulation; facilitating and fostering international and interdisciplinary arenas for the exchange of ideas, experiences and Crítical dialogue, fostering the organization of networks and cooperation among social actors, strengthening the conditions for innovation in higher education; reinforcing a communications platform for researchers and a repository of research related to higher education in the different countries of the region.

Educación Superior y Sociedad (ESS), is consolidated as an organ of scientific circulation that responds to the mission entrusted since January 1990 and is consistent with the missionary objectives of making knowledge a social value, for a dialogue of knowledge from the local context , transiting the transformation for a new consensus on sustainable human development in the region.

Educación Superior y Sociedad (ESS), est une publication semestrielle, publiée par l'Institut international pour l'enseignement supérieur en Amérique latine et dans les Caraïbes (IESALC) de l'Unesco, basée à Caracas, Venezuela.

Educación Superior y Sociedad (ESS) se consacre à la publication des résultats de la recherche; identifier les lacunes dans les connaissances et les nouvelles priorités de recherche; ramener le niveau de débat des questions et des problèmes actuels; promouvoir la recherche et l'enseignement supérieur; diffuser des informations sur les politiques et les bonnes pratiques; contribuer à la construction de ponts entre les résultats et la politique de recherche; faciliter et encourager les arènes internationales et interdisciplinaires pour l'échange d'idées, d'expériences et un débat critique, stimuler l'organisation de la mise en réseau et la coopération entre les acteurs, le renforcement des conditions de l'innovation dans l'enseignement supérieur; construire une plate-forme de communication pour les chercheurs et un référentiel de la recherche liée à l'enseignement supérieur dans les différents pays de la région.

Educación Superior y Sociedad (ESS), Collection 25e anniversaire, elle-même a mis en place en tant qu'organe de scientifique exceptionnel qui répond au confiée depuis Janvier 1990 et est compatible avec les objectifs de la mission de faire la connaissance d'une valeur sociale, un dialogue de la mission de connaissances à partir contextualité locale, en passant la transformation à un nouveau consensus sur le développement humain durable dans la région.

Educación Superior y Sociedad (ESS), em uma Carta Semestral, editada pelo Instituto Internacional para a Educação Superior em América Latina e Caribe (IESALC) da Unesco, sede em Caracas, Venezuela.

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TABLE OF CONTENTS

FOREWORD

Annette Insanally

Caribbean universities, largely operating in small island states (small-scale economies, populations, and political structures) represent catalysts for national and regional development. In this context, some have been more successful than others in responding to social demands, characterized by their degree of success in developing a critical mass of expertise, maintaining professional and intellectual legitimacy, their efficient use of resources while maintaining qualitative objectives and establishing external links. At the operational level, creating evaluation mechanisms, networks, regional centers, the use of new information technologies and delivery systems, advances in science and technology. (See OECD Publishing, **Beyond GDP: Measuring What Counts for Economic and Social Performance** - ***Country-experiences with using well-being indicators to steer policies***, November 27, 2018).

An important consideration for Caribbean higher education institutions (HEIs) is how to ensure that they are not left behind in the global thrust for resilience and survival amidst a multiplicity of man-made and natural disasters. In this context, the institutions' focus on continuous quality improvement can be a worthy mechanism if a multi-pronged, institution-wide approach is taken for a rational response to the inherent challenges.

Increasingly, Caribbean institutions are recognizing that a value-added mechanism could be transformational partnerships to cultivate global dialogue and expand the capacity of each institution for educating students, conducting research and serving communities. This calls for complementary regional action, whereby the combined strengths of the network of institutions can be harnessed and weaknesses mitigated, strategic action and best practice can be shared and emulated and challenges and failures analyzed. Of merit would be the production of a regional database informing on successful activities and new ideas of higher education practitioners working on solving global problems through innovative international collaboration. This would set the agenda and establish partnerships for future initiatives in key development areas: Priorities for LAC countries; Strategy and Policy; Research Collaboration; Student Mobility (including short-term, project-based and practical professional experiences); Faculty Mobility and Collaboration; Collaboration with the Productive Sector to Address Global Challenges; Innovative Use of Technology for

International Collaboration; Resource Mobilization and Partnership Building for Sustainable Development; Transformative agendas; Curriculum revitalization and cross-cutting themes; Teaching and Learning Effectiveness and implementation of Quality Policy.

An important point of departure is the fact that 2019 is a milestone year for the Sustainable Development Goals (Agenda 2030). It includes the first comprehensive review of progress on the entire 2030 Agenda since implementation began in 2016. This review will be held as the 74th Session of the UN General Assembly (UNGA) kicks off in September 2019. Twenty-one (21) of the SDGs'169 targets will mature in 2020, and with 12 of them focused on biodiversity, they are essential for the success of the SDGs and the Paris Agreement on climate change. The Caribbean has a critical window of opportunity for clear and coherent action by Member States to address the future of these targets.

In January 2019, The University of the West Indies (The UWI) was selected by the International Association of Universities (IAU) as its global leader in the mobilization of research and advocacy for the achievement of a climate-smart world. The UWI has already selected a global cluster of universities from Europe, Africa, Asia, the Americas and Oceania to assist in the task of achieving SDG 13 having recognised decades ago that climate change, rising sea levels and ocean temperatures, were an existential threat to the Caribbean, small island states, and the world, and to this end provided a body of scientific knowledge to prove and promote the case. The UWI's commitment to supporting the Caribbean region in the development of a culture of resilience and resilience planning as part of its Triple A Strategic Plan 2017-2022 is evidenced through a number of initiatives with global impact. In August 2018, The UWI was selected by the Inter-American Development Bank (IDB), the World Bank, and Virgin United to host the launch of the Caribbean Climate-Smart Accelerator, a ground- breaking initiative to support the Caribbean becoming the world's first 'climate-smart zone'. (Sir Hilary Beckles, www. uwi.edu)

Caribbean HEIs would do well to participate in Forums which provide a unique interface for them to share their experiences and strategies for advancing the sustainable development agenda. The Higher Education Sustainability Initiative (HESI), a partnership between UN-DESA, UNESCO, UNEP, UN Global Compact's Principles for Responsible Management Education (PRME) initiative, UNU and UN-Habitat, is one of the key implementation partners of the Global Action Program on Education for Sustainable Development (GAP)[1] and is a forum for dialogue and for sharing how universities are integrating the SDGs into sustainability strategies in the form of research, teaching, pedagogy, and campus

1 GAP, which was launched in 2014 in the follow- up of the Decade of Education for Sustainable Development (ESD) (2005-2014), seeks to generate and scale-up Education for Sustainable Development and accelerate progress towards sustainable development. All higher education institutions may join the network freely.

practices. Students could join, and be actively engaged in national and international student organizations, to ensure their voice is heard and receive the necessary support.

UNESCO-ISEALC has an integral role to play in this and is galvanizing the endorsement by regional HEIs of a consistent and coherent plan of action (CRES 2018 Plan of Action) and so guarantee their commitment to joint action for the sake of the region's sustainable development and to ensure that the region is not left out of global efforts and achievements. It is envisaged that regional networks will contribute to the creation of a Regional Common Knowledge Space intended to harness the productive good of regional HEIs and be conducive to the creation of harmonized accreditation systems, increased facilitation of joint programmes and increased accessibility to the regional HEI product. An important partner would be the Caribbean Nucleus of the Regional Center for Cooperation in Higher Education (CRECES) with which the Universities Caribbean Association has a Cooperation Agreement.

Current strategies and practices at Caribbean HEIs are trending towards a value-creating use of knowledge resources for innovation and entrepreneurship. This stems from an increasing awareness that to effectively support entrepreneurship and innovation, HEIs themselves need to be entrepreneurial and innovative in how they organise education, research and engagement with business and the wider world. Several HEIs have taken a proactive approach and piloted new ways of integrating new teaching methods into their curricula, developing activities to stimulate the entrepreneurial mindset, supporting start-ups, strengthening collaboration with business and the wider world, and taking a more international approach to their activities.

The Youth Progress Index is one of the first ever concepts for measuring the quality of life of young people independently of economic indicators. This framework can be a significant contribution to the policy debate, including for advocacy, as well as scholarly research, on measuring performance of societies related to youth matters, and defining progress beyond economic achievements. Young people from around the globe must be encouraged to take advantage of opportunities to discuss, understand, share, find solutions to and develop strategies on Caribbean and global issues pertaining to ocean conservation and preservation, marine pollution, climate change-related impacts on the oceans, sustainable blue economy, coral reefs and fisheries, among others. Young people are directly affected by these problems, and actively engaging youth on sustaining and improving the health of our oceans is imperative if we want to successfully implement the SDGs, especially Goal 14 (life under water). (POLICY TOOLKIT Youth Entrepreneurship for the Green and Blue Economies, published by The Commonwealth Secretariat, 2018). Linguistic differences must not constitute a barrier to integrated action for development.

Science and technology is generally considered key to the future of all developing countries and an important solution to inequality in our societies. Caribbean HEIs must participate in inter-related local and global action to encourage our children to think as innovators; increase the number of science academies in our communities; increase access to education using internet technology to greater numbers of our population and mobilize policy support for development and capacity.

The articles in this edition address these issues of human capital management and development and provide us with important information for a better understanding of the challenges facing our higher education sector.

2

Topic 2:

Higher education and sustainable development

- **The Strategic Role of Higher Education in the Sustainable Development of the Caribbean**
  Dr Paulette Bynoe
  University of Guyana

- **Owning the Caribbean: Sustainable development, innovation and entrepreneurship**
  Urdine Darius
  Université des Antilles, Pole Martinique

The Strategic Role of Higher Education in the Sustainable Development of the Caribbean

Dr Paulette Bynoe

:: ABSTRACT

Education as a process allows human beings and societies to reach their fullest potential, while improving their capacity to address environment and development issues (Chapter 36, Agenda 21); by reasoning therefore, higher education should be pivotal to the achievement of sustainable development of the Caribbean Region. Currently, however, there are many issues that must be addressed by the Caribbean Community governments and higher education institutions prior to the realization of such laudable goals. The purpose of this Case Study is to demystify the typologies of Education for Sustainable Development, examine the current sustainable development practice of the University of Guyana in respect of its academic programmes and curricula, institutional practice regarding resource consumption (including water, energy, and paper), research agenda, and services (including policy advice) to the wider society. To this end, the research strategy entailed desk review of documents, key informants' semi-structured interviews, and a survey of lecturers. The results highlight good practices can be replicated or scaled up, as well as gaps and opportunities for improvement.

Keywords: higher education, sustainable development, good practices.

Le Rôle Stratégique de l'Enseignement Supérieur dans le Développement Durable des Caraïbes

Dr. Paulette Bynoe

:: RÉSUMÉ

L'éducation en tant que processus permet aux êtres humains et aux sociétés de réaliser tout leur potentiel, tout en améliorant leur capacité à faire face aux problèmes sur l'environnement et le développement (Chapitre 36, Ordre du Jour 21); en conséquence, l'enseignement supérieur devrait être essentiel à la réalisation du développement durable de la région des Caraïbes. Actuellement, cependant, de nombreux problèmes doivent être résolus par les gouvernements de la Communauté des Caraïbes et les établissements d'enseignement supérieur avant la réalisation de ces objectifs louables. Le but de cette Étude de Cas est de démystifier les typologies de l'éducation pour le développement durable, d'examiner les pratiques actuelles de l'Université de Guyane en matière de développement durable en ce qui concerne ses programmes universitaires et d'études, ainsi que les pratiques institutionnelles concernant la consommation de ressources (y compris l'eau, l'énergie et le papier).), les programmes de recherche et les services (y compris conseils sur les politiques) offrit la société au sens large. À cette fin, la stratégie de recherche a comporté une analyse théorique des documents, des entretiens semi-structurés avec des informateurs clés et une enquête auprès des professeurs. Les résultats soulignent que les bonnes pratiques peuvent être reproduites ou étendues, ainsi que les lacunes et les possibilités d'amélioration.

Mots-clés: enseignement supérieur, développement durable, bonnes pratiques.

El Papel Estratégico de la Educación Superior en el Desarrollo Sostenible del Caribe

Dr Paulette Bynoe

:: RESUMEN

La educación como proceso permite que los seres humanos y las sociedades alcancen su máximo potencial, al mismo tiempo que mejoran su capacidad para abordar los problemas del medio ambiente y el desarrollo (Capítulo 36, Agenda 21); por lo tanto, la educación superior debe ser fundamental para el logro del desarrollo sostenible de la Región del Caribe. Actualmente, sin embargo, hay muchos problemas que deben ser abordados por los gobiernos de la Comunidad del Caribe y las instituciones de educación superior antes de llevar a cabo dichos laudables objetivos. El propósito de este Estudio de Caso es desmitificar las tipologías de Educación para el Desarrollo Sostenible, examinar la práctica actual de desarrollo sostenible de la Universidad de Guyana con respecto a sus programas académicos y planes de estudio, la práctica institucional con respecto al consumo de recursos (incluidos el agua, la energía y el papel).), la agenda de investigación y servicios (incluido el asesoramiento sobre políticas) para la sociedad en general. Para este fin, la estrategia de investigación consistió en una revisión teórica de los documentos, entrevistas semiestructuradas a informantes clave y una encuesta a los docentes. Los resultados resaltan que las buenas prácticas se pueden replicar o ampliar, así como las brechas y oportunidades de mejora.

Palabras clave: educación superior, desarrollo sostenible, buenas prácticas.

O papel estratégico da Educação Superior no Desenvolvimento Sustentável do Caribe

Dr Paulette Bynoe

:: RESUMO

A educação como processo permite que os seres humanos e as sociedades atingem seu máximo potencial, ao mesmo tempo que melhorem sua capacidade para abordar os problemas do meio ambiente e o desenvolvimento (capítulo 36, agenda 21), portanto, a educação superior deve ser fundamental para o sucesso do desenvolvimento sustentável da Região do Caribe. Atualmente, entretanto, tem muitos problemas que se devem abordar pelos governos da Comunidade do Caribe e pelas instituições de educação superior antes de realizar esses dignos objetivos. O fim deste estudo de caso é desmistificar as tipologias de educação para o desenvolvimento sustentável e examinar a prática atual do desenvolvimento sustentável da Univeridad de Guyana em relação com seus programas acadêmicos e planos de estudo, a prática institucional em relação com o consumo de recursos (incluídos a água, a energia e o papel), a agenda de pesquisa e os serviços (incluído o assessoramento sobre políticas) para a sociedade em geral. Para este fim, a estratégia de pesquisa consistiu numa revisão teórica dos documentos, entrevistas semiestruturadas a informantes chave e um inquérito aos docentes. Os resultados ressaltam que as boas práticas podem se replicar ou ampliar, assim como as diferenças e oportunidades de melhoria.

Palavras-chave: ensino superior, desenvolvimento sustentável, boas práticas

:: Introduction

Over the years there have been diverse interpretations and definitions of sustainable development. From the outset, there is need to point out that the author does not subscribe to any definition of sustainable development that focuses solely on ecological or environmentally sound development, though, unarguably, development cannot be guaranteed if the environmental resource base is consistently deteriorating. The concept is synonymous to that of sustainability, which strives to promote the continuity of ecological (ecosystem integrity, carrying capacity, biodiversity etc.), economic (growth, development, productivity etc.), institutional (organizations, processes and norms), and socio-cultural (equity, diversity, empowerment, participation, cultural identity, etc.) aspects of our societies" (Abubakar Al-Shihri & Ahmed, 2016, p.3; Leal Filho *et al* 2015; Spangenberg, 2002; and Pfahl, 2005.). It is important to recall that Our Common Future (also known as The Brundtland Report, 1989, p.16) defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Education, on the other hand, is a transformative process that allows human beings and societies to reach their fullest potential, while improving their capacity to address environment and development issues (United Nations, Agenda 21, Chapter 36). Leal Filho (2015, p. 4) defines education for sustainable development as "An educational process characterised by approaches and methods aimed at fostering awareness about the issues pertaining sustainable development (e.g. social, political, economic and ecological matters". Arguably, universities, as the most celebrated higher education institutions have a moral responsibility to educate future generations, including leaders and policy makers to advance knowledge that will lead to the creation of a sustainable world (Moore, 2005; Nicolaides, 2006).

In recognition of this fact, the International Association of Universities (IAU) has been actively encouraging universities to promote sustainable development, and in 1993, adopted a policy statement known as the Kyoto Declaration on Sustainable Development. One of the most notable global initiatives is the Talloires Declaration (**See Box 1**), which is essentially a ten-point plan for integrating sustainability and environmental literacy in teaching, research, operations and outreach at higher education institutions, and (which) has been ratified by more than 500 university leaders in over 50 countries. Additionally, the United Nations in proclaiming the years 2005 to 2014 as "the UN Decade for Education for Sustainable Development called for the integration of education for sustainable development at all levels of education (Hauff & Nguyen, 2014). By reasoning therefore, higher education should play a pivotal to the achievement of sustainable development of the Caribbean Region.

Box 1 The Talloires Declaration

1.	Increase Awareness of Environmentally Sustainable Development Use every opportunity to raise public, government, industry, foundation, and university awareness by openly addressing the urgent need to move toward an environmentally sustainable future.
2.	Create an Institutional Culture of Sustainability Encourage all universities to engage in education, research, policy formation, and information exchange on population, environment, and development to move toward global sustainability.
3.	Educate for Environmentally Responsible Citizenship Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens.
4.	Foster Environmental Literacy For All Create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional students.
5.	Practise Institutional Ecology Set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction, and environmentally sound operations.
6.	Involve All Stakeholders Encourage involvement of government, foundations, and industry in supporting interdisciplinary research, education, policy formation, and information exchange in environmentally sustainable development. Expand work with community and nongovernmental organizations to assist in finding solutions to environmental problems.
7.	Collaborate for Interdisciplinary Approaches Convene university faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula, research initiatives, operations, and outreach activities that support an environmentally sustainable future.
8.	Enhance Capacity of Primary and Secondary Schools Establish partnerships with primary and secondary schools to help develop the capacity for interdisciplinary teaching about population, environment, and sustainable development.
9.	Broaden Service and Outreach Nationally and Internationally Work with national and international organizations to promote a worldwide university effort toward a sustainable future.
10.	Maintain the Movement Establish a Secretariat and a steering committee to continue this momentum, and to inform and support each other's efforts in carrying out this declaration.

Source: Association of University Leaders for a Sustainable Future
http://ulsf.org/wp-content/uploads/2015/06/TD.pdf

This paper aims to demystify Education for Sustainable Development and critically examine the current sustainable development practice of the University of Guyana in respect of its academic programmes and curricula, institutional practice regarding resource consumption (including water, energy, and paper), research agenda, and services (including policy advice) to the wider society. In so doing, the paper highlights current initiatives, gaps and opportunities for improvement.

:: Research Design and Methods

A single case research design was adopted for this study in order to cover the contextual conditions that are very relevant to the subject (a single organization) of investigation. Notably, the case study research facilitates intensive examination of a contemporary phenomenon in depth and within its real-life context, using various sources of evidence… as well as numerous levels of analysis (Yin, 2009; Bryman, 2012).

Survey Design

A self-administered questionnaire was developed to collect data on issues related to the implementation of sustainable development practice from University of Guyana academic staff of the main campus. The first step of the questionnaire design entailed a desk review of previous studies done (for example, the International Association of Universities (IAU) Global Survey on HE and Research for Sustainable Development, 2017; Fisher et al., 2015; Loranzo, 2015), with the view to identifying a set of issues that should be addressed in the questionnaire.

Following the literature review, the author decided to select a total of 20 items for examining the implementation of sustainable development by the University of Guyana. The items were grouped according to five categories: Demographic Characteristics of Respondents (Questions 1 to 6); Respondents 'Awareness and Concern about Sustainable Development (Questions 7-12); Responsibility and Institutional Practice (Questions 13 – 17); Research and Community Services.

(Questions 18-19); and Recommendations (Question 20). Questions focus on the following issues, among others included:

- Familiarity with concept of 'Whole Institution Approach'
- Knowledge of Sustainable Development
- Concern about Sustainable Development
- Interest in Sustainable Development

- Willingness to implement Sustainable Development initiatives
- Responsibility for Sustainable Development
- Curriculum related to Sustainable Development
- Institutional practice
- Faculty research

The survey was conducted in January 2019, prior to the resumption of classes at the University.

Sample

A total of 100 questionnaires were distributed among the faculties to ensure that each academic Unit of the University of Guyana (UG) (main campus) was given equal opportunity to participate in the study. It should be noted that only University academic staff were targeted. 55 completed questionnaires were returned, giving a response rate of 15.3 percent of the total of 359 staff members.

Respondents

The survey involved a sample size of 55 persons. There were more female respondents (56.4%) than male respondents (43.6%). The sex ratio was calculated to be 1:1.29 (male: female). The area(s) of specialization for the respondents were varied but the most common areas were Public Administration/Business Administration, Economics, History and Literature, Language/Linguistics, Social Work, Energy, Project Management, Electrical Engineering, Education/Education Management, Library Sciences, Mathematics, and Finance and Accounting.

There were 29 respondents that worked in a Faculty while 25 respondents worked in another unit on campus. The most common faculty was the Faculty of Natural Sciences, followed by the Faculties of Engineering and Technology and Education and Humanities respectively. Regarding other units on campus, the Library was the most common, followed by the School of Entrepreneurship and Business Innovation. Of the 55 participants, 54 persons responded to this question.

For the Faculty of Engineering and Technology, respondents worked in the Electrical, Mechanical, and Engineering Mathematics and Management Departments. For the Faculty of Earth and Environmental Sciences, respondents worked in the Geography and Environmental Studies Departments. Also, there was only 1 respondent for the Faculty of Social Sciences under the Government and International Affairs Department. Moreover, for the

Faculty of Education and Humanities, respondents worked in the Language and Cultural Studies, Social Studies, and Curriculum and Instructions Departments. For the Faculty of Natural Sciences, respondents worked in the Chemistry, Mathematics, Physics and Statistics Biology Departments. In addition, 1 respondent each worked in the Contact Study Department (School of Medicine) and Medical Technology respectively. There was also only 1 respondent for the Faculty of Agriculture and Forestry under the Forestry Department.

The study also involved 3 of the 7 senior university administrators who completed returned the semi-structured questionnaire that aimed to assess their perceptions, vision, plans, and opinions on challenges and opportunities in respect of the implementation of sustainable development at the main campus (Turkeyen).

Statistical Analysis

Descriptive statistics, characterized mainly by frequency distribution tables were used to describe the degree of implementation of sustainable development by the University of Guyana.

:: The Role of Higher Education in SD: A Conceptual Framework

The role envisaged for higher education (HE) globally is multifaceted. According to Owens (2017) higher education can do much more than offer advanced training and skills; it holds the potential to educate excellent teachers, uncover ground-breaking research, and connect services to communities, and demonstrate the application of sustainability principles to its daily campus operations.

Such actions constitute a "whole-of-university" approach that optimises the role of universities as 'agents of change' and seeks to address sustainable development issues within the curricula and research, as well as through community outreach and engagement and participation of various university stakeholders, including staff and students, civil society, funding agencies, industry and the community (Fischer 2015 ; Abubakar Al-Shihri & Ahmed, 2015; Brinkhurst; Rose, Maurice & Ackerman, 2011; Mc Millin & Byball, 2009; and Cortese, 2003).

Quite clearly, there is need to examine each aspect in greater detail. Firstly, in the area if knowledge transfer in building human capital (Organisation for Economic Cooperation and Development, 2007). HE institutions are expected to provide sustainable development education and training through undergraduate

and graduate programmes to prepare specialists and generalists in response to labour market and societal needs, and more importantly, to develop and restructure curriculum with a broader and flexible approach to the teaching of academic disciplines (Dawe, Jucker & Martin, 2005; Lozano, 2011, Abubakar Al-Shihri & Ahmed, 2015) that provide opportunities for critical thinking and problem solving of 'real life' and societal issues (Perello-Marín, Ribes-Giner & Pantoja Díaz, 2018). This latter point resonates with the notion that sustainability literacy is a critical aspect of higher education. The challenge, however, is for HE to move from 'reductionist' approaches towards a more holistic education that promotes interdisciplinarity as a means of making systemic connections between disciplines (Sterling, 2004). Another challenge relates to the continual practice of establishing academic silos which undermines every effort aimed at systems level integration that is indispensable to the embedding of sustainability (Krizek, Newport, White & Townsend, 2012; Lozano et al. 2015).

Further, every university graduate is citizen of the earth and must therefore be equipped with knowledge that transcends 'examination oriented memorisers' to knowledge that empowers the student to make rational decisions. The Brundtland Report (1989, p.25) categorically states that "making the difficult choices involved in achieving sustainable development will depend on the widespread support and involvement of an informed public and of NGOs, the scientific community, and industry". HE institutions must therefore provide the relevant knowledge and skills for sustainable development to be put into practice.

Secondly, HE has the capacity to bridge the gap between science and environmental policy making and by extension contribute to sustainable development policy making by providing the scientific evidence to inform and/or support policy decisions which are intended to affect society in a positive way (Mickwitz, 2003), for example, by informing the design and choice of policy or by defining the issues and analyzing the impacts. Notably, societal problems necessitate cross-disciplinary research if the aim is to promote policies on sustainability (Dyer & Dyer, 2017). Unarguably, empirical data capture the current real life situation and therefore defines the issue/s.

Thirdly, the academic curricula must be strongly supported by institutional practice by means of their daily operations and management processes (Cortese, 2003; Orr, 2002). Scholars define a sustainable campus as one that is protects the health and well-being of humans and ecosystems by means of effective and efficient environment management, efficient use of natural resources, waste reduction and the promotion of equity and social justice in its engagement with staff and students (Cortese, 2010; Savanick, Strong, & Manning, 2008; Cole & Wright, 2003). It may be argued that a university campus typifies the 'hidden' curriculum that facilities 'hands-on' application of has been taught to students in the classroom. HE institutions must therefore demonstrate sustai-

nability principles in the manner in which they interface with environmental resources, including sustainable water use, energy efficiency in buildings and operations, green transportation, efficient waste management, equity, and reducing environmental pollution into campus operations.

Lastly, a relatively new paradigm for institutions of HE is to operate beyond the academic walls where teaching has been historically accepted as the primary role and provide community service, that is, by finding new and effective ways of developing, transmitting and applying knowledge for the public good (Laing, 2016). Thus, community service is closely related to teaching and research activities, as it seeks to enhance the transfer and adoption of knowledge created in accordance with the community needs-whether local, regional or international (Hauff & Nguyen, 2014; Tilbury & Cooke, 2005; Chatterton & Goddard 2000; Virtanen 2001). Moreover, the CRES 2018-2028 Action Plan states that "the knowledge generated in academic spaces can be introduced, used and adapted to social, economic and environmental goals that benefit all people, to build the mechanisms to live well and have better societies".

Ralph and Stubbs (2013) contended that by demonstrating best practice in their operations, research and teaching, universities have both multiple and multiplier effects on society. The achievement of the above role envisaged for HE institutions is, however, contingent upon the removal of several barriers, as identified in the summary assessment report of the United Nations Educational, Scientific and Cultural Organisation's (UNESCO), at the end of the Decade of Education for Sustainable Development (2005-2014). These include a lack of a coordinated approach at all the levels of the institution to implement the necessary changes; insufficient staff development activities to empower staff to transform curricula and pedagogy towards a sustainable development perspective; and the persistence of disciplinary boundaries that inhibit the potential to address complex sustainable development issues. Others cited by Dawe, Jucker & Martin (2005); Brinkhurst, Rose, Maurice & Ackerman (2011), and Leal Filho (2015) are: overcrowded curriculum, perceived irrelevance by academic staff, limited staff awareness and expertise, limited institutional drive and commitment by Management and a lack of financial support required for implementation of campus sustainability initiatives.

:: Background to the University of Guyana

The UG, the only national University in Guyana, with a current enrolment of approximately 8000 students, offers more than 116 under-graduate and post-graduate Programmes, including the Natural Sciences, Engineering, Environmental Studies, Forestry, Urban Planning and Management, Tourism Studies, Education, Creative Arts, Economics, Law, Medicine, Business, Optometry

and Nursing. Additionally, there are several online programmes, together with the extra-mural classes that are offered through the Institute of Distance and Continuing Education (IDCE) (uog.edu.gy).

:: Analysis of Results

Vision of Role of a University in relation to Sustainable Development

There is currently no campus-wide vision that has been articulated by Management and endorsed by stakeholders; however, a very notable response from one of the Administrators to the question of a vision statement is as follows:

> *UG, because it is a national institution, the only national institution, established by an Act of Parliament, in receipt of an annual subvention, and the principal provider of higher education in Guyana has a unique role in sustainable development, or rather sustainable development in and for Guyana, and by extension the Caribbean. Its contribution should be explicit and implicit, direct and indirect – in science and tech (research, teaching-learning and consultancies/service, in political discourse (contributing to a strong, relevant evidence-base; community and national 'conversations', discussions, debate, but not politicking), in engaging the international community, with the confidence and concurrence of the Government of Guyana in diverse areas, such as international fora, international debate, youth and community development, human rights, etc., all of which are interlinked with sustainable development goals and agendas.*

Administrators disagreed with the statements:

- HEIs play a key role in achieving the 2030 Agenda for Sustainable Development
- Sustainable development activities of HEIs should be limited to "greening campus" initiatives and the integration of sustainability related topics into existing curricula.
- The involvement of external societal actors (e.g. the government, NGOs, civic organizations) in defining the research aims is incompatible with the researchers' scientific freedom.

On the other hand, there was general agreement with the following statements:

- HEIs can put forward innovation and innovative solutions.
- HEIs should train current and future implementers of sustainable development.

- HEIs should advocate for sustainable development.
- HEIs should provide opportunities for inter-stakeholder dialogues and actions related to sustainable development.
- HEIs should develop joint courses and programmes or research groups with other institutions in topics related to sustainable development.
- Research in a sustainable HEI should be relevant to society.

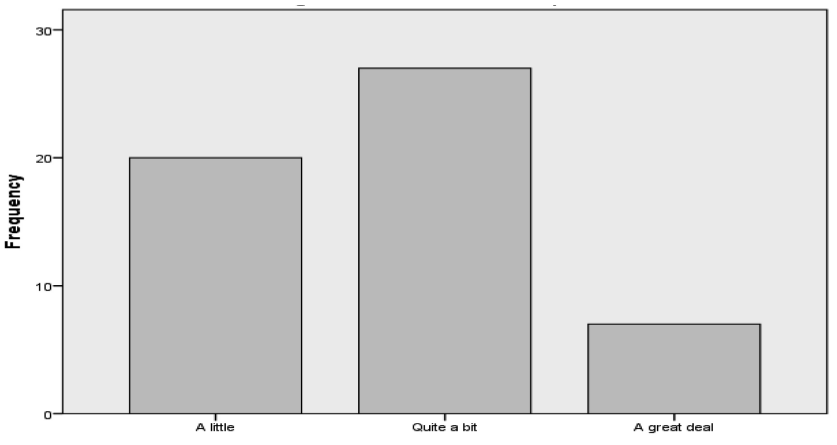
The study reveals that are differing views on of the statements, namely:

- HEIs have the ability to help policymakers make decisions based on real evidence.
- HEIs play a key role in the evaluation and follow-up of policies undertaken by governments.
- The SDGs are a key aspect of the social responsibility of HEIs.
- The involvement of external societal actors (e.g. the government, NGOs, civic organizations) in defining the research aims is incompatible with the researchers' scientific freedom.

:: Awareness and Concern about Sustainable Development

Of the 52 respondents, 51.9% stated that they were familiar with the concept of 'Whole Institution Approach'. Of the 54 respondents, the majority cited that they possessed quite a bit of knowledge of Sustainable Development. See Figure 2.

Figure 2. Knowledge of Sustainable Development



When knowledge was compared with the level of concern about sustainable development, the majority of respondents, who had quite a bit of knowledge, were very concerned about sustainable development. See Table 1.

Items		Concern about Sustainable Development		Total
		A little concerned	Very concerned	
Knowledge	A little	8	12	20
of Sustainable	Quite a bit	7	20	27
Development	A great deal	0	7	7
Total		15	39	54

Table 1: Comparison between Knowledge and Concern about Sustainable Development

When knowledge was compared with the level of interest in sustainable development, the majority of respondents, which had quite a bit of knowledge, were very interested about sustainable development, however, when compared with the willingness of respondents to plan and implement sustainable development initiatives, the majority that had quite a bit of knowledge, responded in the affirmative. See Table 2 and Table 3.

Items		Willingness to plan Sustainable Development initiatives			Total
		Not at all	A bit willing	Very willing	
Knowledge	A little	2	9	9	20
of Sustainable	Quite a bit	1	6	20	27
Development	A great deal	0	0	7	7
Total		3	15	36	54

Table 2: Comparison between Knowledge and Willingness to plan Sustainable Development initiatives

Items		Willingness to implement Sustainable Development		Total
		A bit willing	Very willing	
Knowledge	A little	10	10	20
of Sustainable	Quite a bit	6	21	27
Development	A great deal	0	7	7
Total		16	38	54

Table 3: Comparison between Knowledge and Willingness to implement Sustainable Development initiatives

:: Responsibility and Institutional Practice

More than a third of the respondents believed that everyone should be responsible for sustainable development, followed by the Government. The private sector and non-governmental organisations were the least selected as single entities with responsibility for sustainable development.

With respect to SD related courses offered by faculties of Units of the university the study indicates the following:

For the Faculty of Engineering and Technology, there are courses for refrigeration, solar energy, engineering management, renewable and alternative energy management. There are also Geography courses on sustainability for Architecture students and courses on hydrology and water supply for Civil Engineering students.

On the other hand the Faculty of Earth and Environmental Sciences, there are courses for fundamentals of land use planning, participatory community planning and development, urban planning, urban geography, sustainable land management, and environmental management. There are also courses in environmental impact assessment with environmental and developmental tools, energy and environment; as well as policy and governance.

Additionally, the faculty offers a joint PhD biodiversity programme that allows students to conduct graduate research on biodiversity conservation, biodiversity systematic, biodiversity and society, among other broad thematic areas. It should be noted that many of the courses offered by this faculty are interdisciplinary and provide opportunities for cross disciplinary studies and research related to sustainable development.

Within the Faculty of Social Sciences, Economics courses address topics related to sustainable development, while the Faculty of Education and Humanities offers a few courses in its Associate of Anthropology programme through the Department of Language and Cultural Studies.

The Faculty of Natural Sciences offers courses in renewable energy, natural product chemistry course, bio-materials, biology conservation, as well as natural resource management, environmental management and coastal zone management. Topics related to sustainable development are also covered in students' course and final year projects.

Within the Faculty of Health Sciences, the Health Policy addresses topics related to sustainable development. Additionally, in the Faculty of Agriculture and Forestry, most courses offered address issues of sustainable management and development, e.g. human resource and financial management; wildlife management; forest reserves and management plans; planning, design and management of forest harvesting infrastructure. Additionally, principles of crop production expose students to concepts, principles and practices of sustainable production.

The programme of the recently established School of Entrepreneurship and Business Innovation includes a single course to its students: Environment and Development in Guyana and the Caribbean that is offered by the Faculty of Earth and Environmental Sciences. Moreover, information related to the role of businesses in sustainable development is also shared minimally within courses

45 percent of respondents indicated their unawareness how sustainable development is being governed at the UG. The majority of the remaining 55 percent of the respondents were of the view that there is no structure approach to governance or that there is very minimal focus; although initiatives are usually pursued by individual staff.

Despite the lack of a structured governance framework for the implementation of sustainable development at UG, respondents cited several activities that promote mostly ecological sustainability. These include energy conservation practices (including lighting, heating, cooling, ventilation, windows; solid waste reduction (including paper, glass, plastic, metal), water conservation practices (including efficient toilets, minimal irrigation, rainwater harvesting); and sustainable landscaping (for example, emphasizing native plants); however, the University has no sustainable transportation programme (such as bicycle and pedestrian friendly systems, car pools, bus programmes, biodiesel projects, etc.).

:: Research

Table 4 below indicates that six faculties have conducted research that can inform policy making for the sustainable development of Guyana. A cursory glance at the table suggests that the topics cover most ecological and socio-cultural elements of sustainability. Importantly, research under the Faculty of Natural Sciences and the Faculty of Technology can be considered as scientific innovation. To a large extent, the research is compartmentalized and is driven by the lecturer's area of interest and expertise.

Name of Faculty		
	Engineering and Technology	• Pyrolysis of waste products for biofuel production • Renewable Energy/Solar PV systems • Agro-processing • Solid Waste Management and Recycling • Water Treatment Plant at UG • Shredding Machine for plastic bottles
	Earth & Environmental Sciences	• Environmental protection • Solid waste management and technologies to treat effluent • Occupational Health and Safety in the workplace • Integrated water resource management • Climate change adaptation • Green economy • Disaster vulnerability and resilience • Biodiversity and gender
	Education & Humanities	• Prehistoric Breadth & Settlement to Model a Low Carbon Life Way • Documentation and revitalisation of the Lokono language by the Guyanese Language Unit • Documentation and Preservation of traditional medicine and knowledge and the • Lokono relationship with the environment

	Natural Sciences	• Use of cellulose rich agro-waste to produce bio-fuels • Use of coconut shells to form activated charcoal for water treatment • Extraction of pectin from fruit waste • Renewable energy • More efficient solar powered systems • Bio-materials • Alternative use of agricultural raw materials • Use of rice husk for energy generation • Better management of artisanal fishery
	Health Sciences	• Effectiveness of community based leaders to inform the population and promote behavioral change relating to the prevention and control of Non-Communicable Diseases (NCDs) • Prevalence of pre-diabetes and its relation to waist circumference among University students
	Agriculture & Forestry	• Sustainable management of coastal mangroves • Research in communities e.g. rehabilitation, degraded mining areas

Table 4. Research related to Sustainable Development

:: Community Service

Each of the six faculties of UG is engaged in community service by training and awareness activities, research, representation at the level of State Boards that make decision that affect sustainable development practice at the national level, or activities aimed at enhancing the quality of the bio-physical environment. See details in Table 5. Interestingly, special projects conducted by the Faculty of Earth and Environmental Sciences have created opportunities for interdisciplinary research that is critical to sustainable development: for example, the diagnostic study, referred to in Table 5, was undertaken by staff drawn from technology, natural sciences, social sciences, and led by Faculty of Earth and Environmental Sciences.

Community service(s) that have been rendered

Name of Faculty	Engineering and Technology	• Information dissemination on solar PV systems and its advantages and disadvantages
	Earth & Environmental Sciences	• Improve knowledge and awareness of environmental issues, e.g. the mining sector's relationship with multilateral environmental agreements, and social dimension of sustainable development • Conduct awareness and training programmes on sustainability issues for various target groups • Function as members of national boards that deal with resource conservation, green economy, and environmental protection, among others. • Undertakes special projects that inform policy development related to sustainability; for example, the diagnostic study that helped inform the Guyana's Green State Development Strategy.
	Education & Humanities	• Beach cleanups • Exhibitions • Tutoring of remedial mathematics and Language subjects for community programmes in East Ruimveldt • Revitalization of Lokono language in the Wakapoa village • Special courses in reading and writing Guyanese Creole • Recognition of Mother Language Day and International Day of Creole Language • Inter-faculty linguistics support • Provision of water to Wakapoa village during a drought

	Natural Sciences	• Use of renewable energy for community development by local communities such as Wowetta, Shulinab, Moraikabai and Powaikuru • Assist CSEC and CAPE Physics students with School Based Assessments by offering access to lab facilities and personnel
	Health Sciences	• Raising awareness on prevention and control of Non-Communicable Diseases (NCDs) using lay people in the community • School feeding programme • Disaster/fire relief for victims
	Agriculture & Forestry	• Planting of mangroves • Public awareness on the benefits of mangroves • Development of two manuals for Guyana Mangrove Restoration Project

Table 5. Community Service provided by Faculties of UG

:: Challenges and Opportunities

The study has identified a number of challenges and opportunities-some of which resonate with the literature that has been cited earlier. Challenges include the following:

i. Staff's limited knowledge of sustainable development ;

ii. Limited shared appreciation for the issues;

iii. Limited budget to finance sustainable development projects;

iv. Absence of a single 'champion';

v. Absence of explicit vision statement and related goal and plan of action;

vi. Inadequate human resource capacity at both the academic and administrative levels; and

vii. Lack of metrics for assessing progress or the lack thereof.

Conversely, opportunities cited include the following:

i. Increased awareness across the board, starting with the senior Administrative officials of the university as an entity, and those within faculties/ school;

ii. Sustainable development policy formulation by amending the current Environmental Policy of the UG;

iii. Budgetary provision for training of faculty in sustainable development; and

iv. The 2019-2025 Strategic Plan, which is currently being developed will spearheaded by Office for International Engagement.

Respondents offered several recommendations considered critical to the increased implementation of sustainable development initiatives by the University of Guyana. The principal ones which are catogorised either as governance, awareness, education and training, research, stakeholder engagement, community service, and institutional practice are identified as follows:

Governance

- Develop and implement policies to address sustainable development issues, such as encouraging recycling; reducing paper waste via paperless communication across campus and within departments and faculties; rainwater harvesting; energy conservation and utilizing renewable energy.
- Change management structure/establish an Office of Sustainability responsible for mainstreaming sustainability within campus operations.
- Ensure that the University's internal policies and practices are aligned with the Green State Development Strategy and the goal of sustainability.

Awareness, Education and Training

- Promote and facilitate effective communication and greater awareness of sustainable development issues on campus.
- Invest in human resource development through Conduct workshops, seminars and presentations for staff to ensure sufficiently trained staff can undertake work on the SD.
- Offer more programmes and courses in sustainable development areas, e.g. Renewable Energy and Sustainable Agriculture.

- Review and revamp current curriculum to ensure better integration with sustainable development.
- Develop an introductory/specialized course that addresses sustainable development and make this course compulsory across all faculties.

Research

- Fund research and demonstration projects for sustainable development, such as renewable energy, waste management models, waste to energy projects, etc.
- Research on electric cars through Faculty of Technology.
- Encourage a multidisciplinary approach best suited to complex sustainable development issues in Guyana.
- Establish a database of research on sustainable development undertaken by UG staff.

Stakeholder Engagement

- Design a plan with options involving stakeholders, including government, civil society and or private sector in the development and execution of projects.
- Engage local communities through Faculty of Social Sciences.
- Collaborate and build partnerships with other universities regionally and internationally to promote sustainable development.

Community Service

- Promote and facilitate public education and awareness and community meetings
- Encourage student participation in projects that can be linked to community services to educate and promote sustainable development.

Institutional Practice

- Design buildings to have positive impact on the environment.
- Adapt infrastructure to be more environmentally friendly.
- Develop better waste management practices e.g. composting, recycling of stationery, discourage use of straws at food outlets, penalties for improper waste disposal, and plan an e-waste recycling drive.

:: Discussion

It is reasonable to describe UG's implementation of sustainable development as 'ad-hoc', with no clearly articulated aims and objectives, given that the university has not (as yet) formulated a sustainable development policy with a clear vision and mandate. Nevertheless, the results clearly indicate that some noteworthy initiatives have by taken. Chief among these is curriculum development, though to a large extent on a faculty or simply departmental basis, and has the potential to undermine any attempts aimed at systems thinking that is extremely relevant to sustainable development, as noted by (Krizek, Newport, White & Townsend, 2012; Lozano et al, 2015).

The study also notes that the research undertaken by staff is country specific and relevant to societal problems (as contended by Cortese, 2003, Orr, 2002, and Perello-Marín, Ribes-Giner & Pantoja Díaz, 2018); thereby contributing to the development of national policies and strategies; in particular, the Green State Development Strategy (2018); institutional practice with specific reference to natural resource conservation (energy and water), sustainable landscaping, and waste reduction. Areas of improvement include transportation and the built environment, particularly with regard to architectural design. Once this is done, the campus itself will serve as a laboratory for staff and students to observe and practise sustainable development, focusing on ecological aspects.

The 'ad-hoc' approach adopted can also be explained by the limited knowledge of sustainable development. The fact that the majority of respondents knew 'quite a bit' suggest limitations in their university's human resource capacity to implement sustainable development. On a more positive note, responses by staff overwhelmingly suggest their willingness to plan and implement sustainable development initiatives at the university; therefore programmes aimed at awareness and knowledge creation should be considered a priority intervention by the UG senior administration. This brings to the fore the importance of developing appropriate curriculum-whether there be specialist programmes, core courses, infusion of topics in existing courses, sustainable development related research programmes at both the undergraduate and graduate levels or the production of creative educational products such as a booklet or a video that could be utilised during seminars and workshops to create and enhance staff awareness and knowledge. The intention should be to empower everyone within the university community to be actively engaged in the policy making and implementation of sustainable development on the campus. Additionally, the formal curriculum needs to move beyond the ecological aspects of sustainable development, and include issues related to economic growth, equity,

stakeholder engagement and participation in sustainable development initiatives, governance arrangements, among others. It is important for students to understand the complex and holistic nature of sustainable development, and to appreciate the necessity of adopting a holistic approach.

Much more could be achieved in the area of community service; although this will require adequate funding. UG should be empowered to plan and implement demonstration projects related to energy, waste management etc. at the community level. This will not only bridge the gap between theory and practice, but will only provide an opportunity for the university to respond practically to real-life sustainable development issues. Moreover, such initiatives can be conceptualised by students as an aspect of their final year projects and can include the ideas of the host communities.

A good starting point for the UG is a campus wide discussion of the Talloires Declaration and, in response, the formulation of a holistic university policy that will embrace the 'whole university approach' and clearly articulate the University's vision, mission, plan of action and metrics to facilitate periodic monitoring and evaluation with respect to the implementation of sustainable development. Such an initiative will provide a framework for affirmative action, help transform the institutional culture, boost staff morale, and therefore should include other stakeholders from 'outside' of the university, including representative of civil society, government and industry as encouraged by several scholars, including Fischer 2015; Abubakar, Al-Shihri & Ahmed, 2015; Brinkhurst, Rose, Maurice & Ackerman, 2011; Mc Millin & Byball, 2009; and Cortese, 2003. The latter is necessary given the challenges related to limited human and financial capital.

The key lessons that can be drawn from the study can be summarised in the following statements:

- A change in the organizational culture that will support SD.
- Policy development, supported by a decentralized governance structure, is a pre-requisite for the implementation of SD at universities.
- Disciplinary silos undermine the multidisciplinary, interdisciplinary and complexity of SD.
- Successful implementation of SD requires a clearly articulated vision, leadership, adequate financial resources and well-informed staff.
- The development of metrics to assess progress or lack therefore is an essential success factor.
- Staff development initiatives that aim to create and enhance their knowledge and appreciation of SD, and ultimately promote individual and collective actions that are aligned with the university vision of SD.

:: Conclusion

There is no doubt that both the UG Senior and academic staff have recognised the importance of their role in contributing to societal change at local, national and international levels. Importantly, the realization of such a role is contingent upon their willingness and readiness to adopt the "Whole of University" approach that requires various degrees of transformation in the development and delivery of curriculum, research, institutional practice, and community services and engagement – each of which is mutually dependent.

This study has highlighted several factors that account for the absence of more focused and strategic sustainable development interventions. Chief among these are limited knowledge of sustainable development among staff, absence of a single 'champion' or ambassador, absence of a vision statement, budgetary constraints, and the lack of metrics to assess progress or the lack thereof. On the other hand, those sustainable development initiatives that have been implemented successfully are as a result of committed individuals with faculties and departments, in collaboration with members of Senior Administration. Nevertheless, much more can be accomplished if a policy that promotes the "Whole of University" approach is implemented to give 'direction' and provide guidance by means of the university's vision, mission, core values, among other aspects. Moreover, the UG must appreciate the relevance of partnerships and therefore endeavour always to engage civil society, government, industry, staff and students in all discussions related to the implementation of SD at the sole national University of Guyana.

The study is the first of its kind in Guyana and therefore serves as a point of reference for further research which should involve non-academic staff and students. Additionally, it will be useful to include a SWOT (Strengths, Weaknesses, Opportunities and Threats) análisis that will further elucidate those factors that will either create, enhance of constrain sustainable development efforts of the university.

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Acknowledgement

I wish to express sincere gratitude to those University of Guyana staff who willingly participated in the study, and in particular to Ms. Lavern Simon Greene and Ms. Shevon Wood for their kind assistance with the survey process.

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